

**“Stop or I’ll Shoot, Comply and I Won’t”:
Coercive Assurance in International Politics**

by

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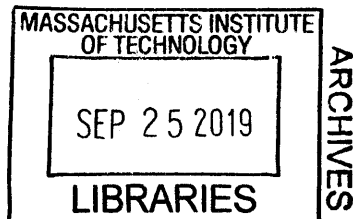
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ABSTRACT

Why do some coercive threats succeed while others fail? Successful coercion requires not only that I credibly threaten you until you comply, but also that I credibly assure you that I will *not* punish you after you comply. This is the overlooked dilemma at the heart of coercive strategies. I develop and test Coercive Assurance Theory to show that coercion is more likely to succeed when credible threats are paired with credible assurance. Threats often fail because they are insufficiently *contingent*. I then step back to test theories on how states make their assurances believable in the process of coercive bargaining. Existing literature on commitment-making in international politics implies a tradeoff between threat and assurance credibility. Instead, I propose that threats and assurances sometimes require different conditions and that fluctuations in their credibility do not always correlate. In particular, states can generate credible assurance through three strategies: disentangling demands, exerting coercive control, and reducing visibility. Coercers often make multiple demands of targets but fail to keep punishments and demands discretely linked. Coercers also navigate their own domestic and international coalitions, which contain actors with varying interests. Unified coercers mitigate fears of capricious punishment. Finally, visibility reduction—for example, by allowing targets to plausibly deny their concessions—diminishes target fears of paying reputational costs. All three mechanisms also signal that the coercer is not seeking a pretext for punishment.

I test my theory by examining cases of coercive bargaining between non-allies over nuclear weapons programs, with chapters on South Africa, Libya, and Iran. A policy evaluative chapter also applies the theory to North Korea. I explain not only the occurrence but also the timing of nonproliferation bargains using primary documents from U.S. government archives, the South African apartheid-era government archives, and the International Atomic Energy Agency (IAEA) archives. I supplement these documents with the memoirs, recollections, and writings of target state policymakers, military leaders, and nuclear scientists. I also conducted interviews with participants in relevant policy-making processes. By introducing a theory of assurance and highlighting its role in striking coercive bargains, the dissertation aims to improve policymaking in a critical realm.

Thesis Supervisor: Barry R. Posen

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CHAPTER 1: INTRODUCTION

Why do some coercive demands succeed while others fail? Why are some states unable to achieve their coercive aims despite making credible threats? Why do targets defy coercive demands backed by credible and severe threats? To answer these questions, this book investigates a common practice in international politics: coercion—how states use threats to affect the behavior of others. It also investigates an uncommonly appreciated practice in international politics: coercive assurance—how coercer states convince targets that punishments will *not* be carried out if they comply. This book will show that threats and assurances combine to produce that most potent and effective form of coercion in international affairs. Policymakers and scholars too often choose to see coercion only as the realm of threat-making. This book therefore agrees with Robert Jervis’s insight that “something is wrong with our common understanding” of coercion theory and seeks to improve the practice of coercive diplomacy by expanding it to include coercive assurances.¹

It is perhaps the most striking empirical regularity in the study of coercion that material power does not portend coercive success.² Strong states are typically poor coercers. Todd

¹ Robert Jervis, “Bridges, Barriers, and Gaps: Research and Policy,” *Political Psychology* 29, 4 (2008), p. 589.

² Todd Sechser shows, for example, that between 1918 and 2001 stronger coercers have achieved their compellent aims only 36% of the time. “Stronger” is measured by higher military expenditures. See Todd S. Sechser, “Militarized Compellent Threats, 1918-2001,” *Conflict Management and Peace Science* 28, 4 (2011), p. 389. Todd S. Sechser, “Goliath’s Curse: Coercive Threats and Asymmetric Power,” *International Organization* 64 (Fall 2010).

Sechser shows, for example, that between 1918 and 2001 stronger coercers have achieved their compellent aims only 36% of the time.³ He dubs it “Goliath’s Curse.”⁴

In this book, I provide an answer. I argue that credible “coercive assurance” is a primary cause of coercive success. If I am stronger than you, you are more likely to believe that I will punish you if you do not comply with my demands (threat credibility). But, the stronger I am, the more you must be concerned that I will hurt you anyway, even if you comply with my demands (assurance credibility).

States do have trouble communicating the contingent nature of their threats. Some scholars, for example, attribute the George W. Bush administration’s inability to coerce Saddam Hussein into accepting weapons inspectors to a lack of coercive assurance. Commenting at the time, Robert Jervis noted that “Saddam may have become convinced (I would be) that Bush will try to overthrow him even if he gives up his WMD... Credible threats can fail because the other side believes the acts will be taken in any event.”⁵ President Franklin Roosevelt, too, failed to articulate any contingency to the American oil embargo on Japan prior to the Pacific War. Roosevelt merely wished “to slip a noose around Japan’s neck, and give it a jerk now and then.”⁶ Far short of acquiescing, Japan lashed out. Washington failed to appreciate that its target might not want to live with a noose around its neck, unsure of when the next jerk might come.

Coercive assurances, explicit and implicit, have also been publicly reneged by coercers. When Russia annexed Crimea in 2014, observers decried the violation of coercive assurances

³ “Stronger” is measured by higher military expenditures. See Sechser, “Militarized Compellent Threats, 1918-2001” (2011), p. 389.

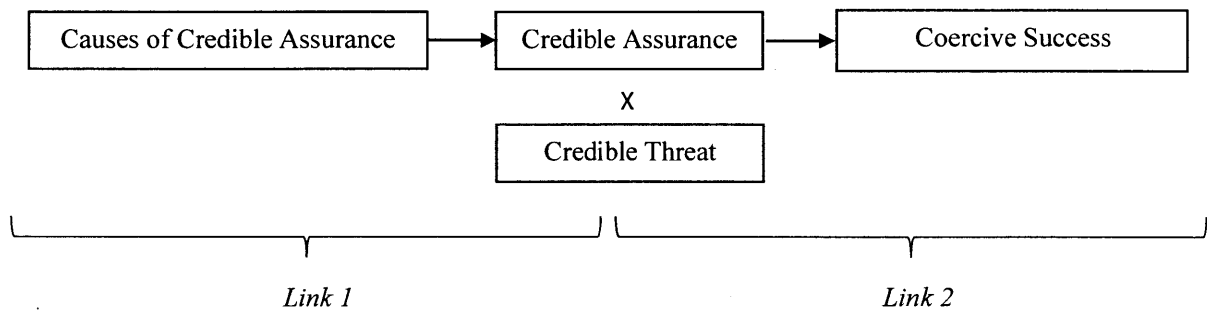
⁴ Todd Sechser uses the term “Goliath’s Curse” to describe how “military power can undermine the effectiveness of compellent threat.” Sechser prescribes that strong coercers offer side payments at the price of the weak state’s reputation. I believe assurance theory provides a more compelling solution. Sechser, “Goliath’s Curse: Coercive Threats and Asymmetric Power” (2010), p. 627.

⁵ Robert Jervis, “Confrontation between Iraq and the US: Implications for the Theory and Practice of Deterrence,” *European Journal of International Relations* 9, 2 (2003), p. 325.

⁶ Doris Kearns Goodwin, *No Ordinary Time* (New York, NY: Simon and Schuster, 1994), p. 266.

offered to Ukraine at the end of the Cold War to compel the removal of former Soviet nuclear weapons.⁷ The United States and Britain similarly reneged on coercive assurances made to Libya in 2003 when they toppled the Qaddafi regime in 2011. In February 1991, the United States attacked the Iraqi Republican Guard despite receiving desired concessions from Baghdad.⁸ And in 2018, the Trump administration reimposed economic sanctions waived under the terms of a 2015 agreement with Iran. Given the duplicity of statesmen and the uncertainty of the international system, can states ever communicate credible coercive assurance? You simply cannot trust coercers, or so the argument goes.

From this starting point, I investigate the following causal chain.



This book thus serves two primary purposes and achieves them by working backwards through the causal links in the chain. First, I establish that credible assurance is necessary to achieve coercive aims; credible threats, while necessary, are insufficient causes of coercive success (Link 2). Second, I develop and test competing theories on the causes of coercive assurance credibility (Link 1).

⁷ “Memorandum on Security Assurances in connection with Ukraine’s accession to the Treaty on the NPT,” United Nations, December 19, 1994.
 <https://www.msz.gov.pl/en/p/wiedenobwe_at_s_en/news/memorandum_on_security_assurances_in_connection_w_ith_ukraine_s_accession_to_the_treaty_on_the_npt>.

⁸ Phil Haun, working paper, presented at MIT Security Studies Working Group, April 2018.

Definitions and Scope

From a theoretical perspective, this field of study is woefully underdeveloped. In English vernacular, the term “assurance” is often used ambiguously, simply to refer to a promise of any kind. I seek to repair this inexact usage and must, therefore, begin with some conceptual brush-clearing.

First, existing usage chiefly divides assurance into two camps distinguished by the relationships between the target state and the assurer. Are they allies or adversaries? Allies are targeted with positive reassurances (ally reassurance), adversaries with negative assurances. Second, the negative assurance of adversaries takes on different meanings depending on whether the assurer is coercing the target (coercive assurance) or not (non-ally reassurance). I discuss each category in turn, but the focus of this book is on coercive assurance.

Ally Reassurance

In the international relations literature, ally reassurance is a pledge of assistance to mollify an ally. It is an attempt to say: “I will defend you,” a promise to come to their aid if necessary. Ally reassurance captures concepts such as security guarantees or extended deterrence commitments. Article Five of NATO’s founding treaty, for example, enshrines a principle of collective self-defense—“The Parties agree that an armed attack against one or more of them in Europe or North America shall be considered an attack against them all and ... will assist the Party or Parties so attacked by taking ... such action as it deems necessary.”⁹ Relatively weaker states often request such assurances from stronger patrons.

⁹ “The North Atlantic Treaty, Article V” Washington, DC, April 4, 1949. <https://www.nato.int/cps/ie/natohq/official_texts_17120.htm>.

Note that this is a positive assurance—a pledge to do something. I do not investigate reassurances that are aimed at allies, unless they are a tool employed in the process of assuring an adversary. We have little scholarship that explains what policies best mollify allies.¹⁰ Recent literature on alliance coercion has greatly expanded this field of study.¹¹ As scholars have begun to appreciate how coercive patrons can be to allies, so too should we appreciate how assuring states can be to adversaries.¹²

Non-Ally Reassurance

Non-ally reassurance is a type of negative assurance—a pledge not to do something. It describes an effort to communicate to a non-ally that you mean them no harm. For example, non-ally reassurance may include promises to remain neutral, non-aggression pacts, or non-intervention pledges. The principle of state sovereignty, first conceived in 1648 at the end of the bloody Thirty Years War, is at root a non-ally reassurance—a pledge of non-intervention. Today, international treaties and diplomatic communiques include ‘live and let live’ aphorisms, respecting sovereignty and pledging non-interference. The United Nations Charter, for example, declares that “All Members shall settle their international disputes by peaceful means in such a

¹⁰ Some good work includes, Matthew Fuhrmann and Todd S. Sechser, “Signaling Alliance Commitments: Hand-Tying and Sunk Costs in Extended Deterrence,” *American Journal of Political Science* (2014); Neil Narang, “When Nuclear Umbrellas Work,” working paper.

¹¹ Gene Gerzhoy, for example, shows how the United States credibly threatened to abandon its security guarantees to West Germany to keep the federal republic from developing nuclear weapons. Gene Gerzhoy, “Alliance Coercion and Nuclear Restraint,” *International Security* 39, 4 (Spring 2015). Nicholas Miller similarly argues that the threat of economic sanctions, even against U.S. allies, has contributed to the success of American nuclear nonproliferation efforts. Nicholas Miller, “The Secret Success of Nonproliferation Sanctions,” *International Organization* 68, 4 (October 2014). See also Alexander Lanoszka, *Atomic Assurance: The Alliance Politics of Nuclear Proliferation* (Cornell University Press, 2018).

¹² Coercive assurance of adversaries is the counterintuitive cousin of alliance coercion.

manner that international peace and security, and justice, are not endangered.”¹³ These reassurances among non-allies fall outside of the realm of coercion.

Coercive Assurance

A final category—coercive assurance—describes assurances communicated in the process of coercive bargaining. It is the focus of this book. Coercive assurance is an attempt by a threatener to communicate the contingent nature of a threat by guaranteeing “if you comply, I will not carry out my threat.” This is what Thomas Schelling meant when he used the term “assurance” in *Arms and Influence*.¹⁴

I define coercive assurance as a pledge in the context of coercion not to punish you once my coercive demands are met. It is distinguished from threats (pledges to punish by inflicting a cost) and inducements (pledges to reward by providing a benefit).¹⁵

Coercion is the practice of employing threats to change the behavior of a target. All coercive assurances occur in the context of coercion. To qualify as a case of coercion or coercive

¹³ *Charter of the United Nations*, San Francisco, 1945, p. 3.

¹⁴ The concept was also included in *The Strategy of Conflict*, but not explicitly called “assurance.” Thomas C. Schelling, *Strategy of Conflict* (Harvard University Press, 1960), pp. 6-7.

¹⁵ This is generally accepted in literature on coercion theory. “Assurance, or what some call ‘reassurance,’ is not to be confused with inducements [i.e. carrots]. ... If assurances are akin to contracts, inducements are akin to side payments.” Robert Art and Kelly Greenhill, “Coercion: A Primer,” in Greenhill and Krause (eds.), *Coercion: The Power to Hurt in International Politics* (Oxford University Press, 2018), p. 23. Art and Greenhill further lament that a dearth of research on assurances. Failing to distinguish between carrots and assurances has led to some confusion in the coercion literature. The removal of sanctions, for instance, tends to be lumped into a broader category of “positive” inducements or other carrots. See, for instance, Etel Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (Cambridge University Press, 2012). See also Robert Jervis, who comes closest to unpacking assurance as a concept, yet still breaks down the tools of coercive diplomacy into threats and promises, which mixes together carrots and assurances in the latter category. Robert Jervis, “Getting to Yes with Iran: The Challenges of Coercive Diplomacy,” *Foreign Affairs* (January-February 2013). This conceptualization papers over a concept that is distinct and studiable on its own: coercive assurance. Scholars have overlooked coercive assurance by conceiving of the coercers’ toolkit as Sticks and Carrots (punishment and benefit). It is neither Stick nor Carrot. Using those terms, it is actually best described as withholding or removing a stick.

bargaining, at least one coercer state must threaten at least one target state with the goal of affecting its behavior.¹⁶

All coercive interactions have at least three components: a looming threatened punishment, a demand communicating what behavior the threat is contingent upon, and an assurance communicating that the punishment will not be carried out if conditions are met. Note that a coercive threat always implies an assurance. This is one reason that scholars have overlooked the concept of coercive assurance for closer analysis. It has been correctly, but invisibly taken as axiomatic.¹⁷ One cannot communicate “stop or I’ll shoot,” without implying that “if you comply, I won’t shoot.”¹⁸ But instead of assuming coercive assurance to be necessary in my work, I show it to be true and then back up to study its causes.

Some might wonder whether all threats indeed have implicit assurances. Saying, for example, “I’m going to kill you” has no implied assurance. But that is not a *coercive* threat. There is no contingency; no demand made of the target. Statesmen do sometimes make threats of this non-coercive nature. At the time of the 2003 invasion of Iraq, for example, when asked what message Washington wished Tehran would learn from the invasion, a senior Bush administration

¹⁶ This book considers the problem of assurance in coercion and crisis, not in wartime. The context of ongoing war is sufficiently different to warrant separate analysis. On coercive dynamics in wartime, see Alex Weisiger, *Logics of War* (Cornell University Press, 2013). Several scholars extend the bargaining theory of war onset to wartime itself, especially to understand war termination. See R. Harrison Wagner, “Bargaining and War,” *American Journal of Political Science* 33, 3 (2000), pp. 469-484; Robert Powell, “Bargaining and Learning while Fighting,” *American Journal of Political Science* 48, 2 (2004), pp. 344-361; Hein Goemans, *War and Punishment: The Causes of War Termination and the First World War* (Princeton University Press, 2000).

¹⁷ Greenhill and Krause, *Coercion: The Power to Hurt in International Politics* (Oxford University Press, 2018), p. 24. This book investigates axiomatic assurance, not merely explicit assurances. This is something that is underappreciated in existing theoretical investigations of assurances as complements to threats. Assurance need not be explicit to exist. This is distinct from Kydd and McManus, who discuss assurance in the context of coercion, but conceive of it as something leaders choose to say or do, as opposed to something that is implied by every threat. See Kydd and McManus, “Threats and Assurances in Crisis Bargaining,” *Journal of Conflict Resolution* 61, 2 (2017), pp. 325-348.

¹⁸ Paraphrased from Thomas C. Schelling, *Arms and Influence* (Yale University Press, 1966), p. 74.

official replied, “take a number.”¹⁹ Whether credible or not, this was a threat of invasion. It also lacked any coercive assurance. What behavior on the part of Iran (or, for that matter, North Korea, the other member of the “Axis of Evil”) could have avoided the punishment remained opaque.

The concept of coercive assurance is also reminiscent of international relations scholarship on the “security dilemma” and whether and how states can mitigate uncertainty in anarchic international politics. While I draw and apply many lessons from this work, what is different about the context of coercion is the fact that the coercer *intends* to threaten the target. There is no connotation of “I mean you no harm” in coercive assurance; rather I *am* threatening you today and I need to you to believe that I mean it! The coercer wishes the target to believe that its threats are credible, just also contingent upon the target’s behavior.

Coercion also manifests in two ideal types: deterrence and compellence. Schelling distinguished them by the initiative of action. Deterrent threats intend to coerce a target into inaction, while compellent threats intend to coerce a target into action.

This study focuses on compellence. While coercive assurances may complement either deterrent threats or compellent threats, assurances are more difficult to communicate credibly in cases of compellence.²⁰ I pick the harder case so that the results of this study can travel more generally.

¹⁹ Sonni Efron, “Looking Past Baghdad to the Next Challenge,” *Los Angeles Times*, April 6, 2003, <<http://articles.latimes.com/2003/apr/06/news/war-whatnext6>>.

²⁰ Schelling, *Arms and Influence*. Assurance is, in a sense, baked into mutual deterrent relationships—any renegeing can be punished by the other side. Asymmetric deterrent threats, however, still face the assurance dilemma.

This is a theory proposing, theory testing, and policy prescriptive study,²¹ and it contributes to our understanding of how and why states succeed or fail in their attempts to alter the behavior of adversaries.

Summary of Findings

This book poses three types of questions about coercive assurance. First, is it necessary? That is, does it matter to the outcome of coercion? Second, what are the sources of assurant fears among targets of coercion? That is, why would targets believe that they might be punished anyway? And, accordingly, what are the causes of credible coercive assurance? Third, what is the relationship between threat credibility and assurance credibility? Is there a tradeoff between them?

The fundamental intuition behind this study is that the causes of credible threats are distinct from the causes of credible assurances. Strategists and scholars throughout history have put much more emphasis on understanding the causes of threat credibility than on understanding the causes of credible assurance. The field is long past due to treat these concepts distinctly.

I find that target perceptions of incredible assurance hinder coercers, even when they make credible threats. Increases in the perception of assurance credibility, not threat credibility, are most proximately associated with acquiescence. These results affirm what I call Coercive Assurance Theory.

I also find that three mechanisms augment assurance credibility: Disentangling Demands, Coercive Control, and Reducing Visibility. I derive these mechanisms from two commitment problems that coercive assurances aim to mitigate in the context of compellence. The Coercive

²¹ Stephen Van Evera, *Guide to Methods for Students of Political Science*, (Ithaca, NY: Cornell University Press, 1997), pp. 89-91.

Restraint Commitment Problem causes targets to fear that if they comply they will be punished anyway. The Snowballing Demands Commitment Problem causes targets to fear that if they make concessions today coercers will be back for more later. Disentangling multiple demands and demonstrating coercive control both reduce target fears of non-contingent punishment, while visibility reduction mitigates target fears of reputation formation. The three mechanisms have both practical and signaling effects that communicate coercer intent not to seek a pretext for aggression and augment the credibility of coercive assurance.

Each of the three mechanisms bolsters the credibility of coercive assurance without undermining threat credibility; hence their contribution to what I call Threat-Assurance Independence Theory, which posits that the credibility of threats and assurances may vary individually. The primary rival theory derived from existing literature on commitment-making in international politics is Threat-Assurance Tradeoff Theory, which proposes an inverse linear relationship between threat and assurance credibility; anything a coercer does to bolster one undermines the other.

Through the mechanisms, I find evidence in favor of Threat-Assurance Independence Theory. Yet, Threat-Assurance Tradeoff Theory is not falsified, as material signals that bolster threat credibility—such as investments in or movements of military forces—do have a negative impact on assurance credibility. The relationship between threat and assurance credibility is therefore conditional on the type of signal being sent. I test each theory with case studies of coercive bargaining over nuclear weapons programs.

South Africa succeeded in building a secret nuclear arsenal despite international pressure to sign the Nuclear Nonproliferation Treaty (NPT). Owing to intense coercive demands to end its practice of apartheid, Pretoria's leaders feared that acquiescence on the nuclear issue would

provide no relief from the pain of economic sanctions. President Reagan's attempts to disentangle the issues in the mid 1980s failed when Congress overrode his veto of apartheid sanctions. South Africa also planned and executed an acquiescence strategy that covered up the extent of its nuclear concessions. I show for the first time that the IAEA and others tacitly cooperated with this effort.

In bargaining with Libya, the United States and Britain took pains to assure Muammar Qaddafi that giving up his nuclear ambitions would not result in regime change. Although eight years later the coercers reneged on their bargain, their signals of coercive assurance were critical to closing the 2003 deal. Earlier, in the 1980s and 1990s, Qaddafi had correctly perceived that the United States sought his ouster, leading him to invest further in his nuclear weapons program. Until the United States dropped this maximalist demand of regime change upon resolution of accountability for the Lockerbie bombing, Libya's defiance was not due to a problem of coercive assurance but to demand magnitude. Once Washington scaled back its demands, however, it still struggled to coercively assure Tripoli.

During negotiations over his WMD program, Qaddafi was continually concerned that the West intended to disarm him and attack. Washington and London overcame this perception slowly. They froze out spoilers and shared intelligence gleaned from their penetration of the AQ Khan Network with Libya in private to reduce the visibility of Libya's concessions and demonstrate that they were not building a case for war.

Moreover, signals that increased Tripoli's perception of threat credibility—such as the invasion of Iraq and the capture of Saddam Hussein—provide a good test of the relationship between threat and assurance. Each spike in threat credibility resulted not in acquiescence but a greater appetite for assurance. After the invasion of Iraq, Qaddafi accelerated his nuclear

program.²² He saw that the U.S. and UK made the case for war against Iraq based on WMD proliferation and feared that coming clean about his own program would provide ammunition for them to make the same case for war against Libya. Later, the capture of Saddam Hussein increased the severity of the threatened punishment to Qaddafi personally. Again, the timing of this augmented threat severity suggests that it was counterproductive for coercion. Qaddafi was indeed fearful, but after Saddam's capture he balked one last time on a deal that was nearly completed. Blair spent another 30 minutes on the phone with Qaddafi, reassuring him that his fate would not be the same as Saddam's.

Finally, Iran remains an adversary of its primary coercer, the United States. Yet, in 2015 Iran struck a bargain with the P5+1 coalition (USA, UK, France, Russia, China, and Germany) to accept enhanced verification and limits on its nuclear program. Another adversary, Israel, was not party to the negotiations and was therefore a potential spoiler. I show that Tehran came to the table only after the window of a credible Israeli threat closed. The Obama administration also disentangled demands and punishments to make clear that they were negotiating over Iran's nuclear program and not its missiles or foreign policy. Iran sought the specific separation of entangled sanctions designations during JCPOA negotiations. Moreover, the Obama administration crafted legislation to bound congressional oversight over sanctions relief. Washington also did not intensively pursue the "Possible Military Dimensions" of Iran's past nuclear programs in a successful effort to reduce the visibility of Tehran's concessions.

The Iran case, however, provides mixed results for Coercive Assurance Theory. In 2003, Iran scaled back a nuclear weaponization program because of highly credible and severe military

²² The invasion of Iraq began in March 2003. Congress voted to give Bush the authority to use force in October 2002.

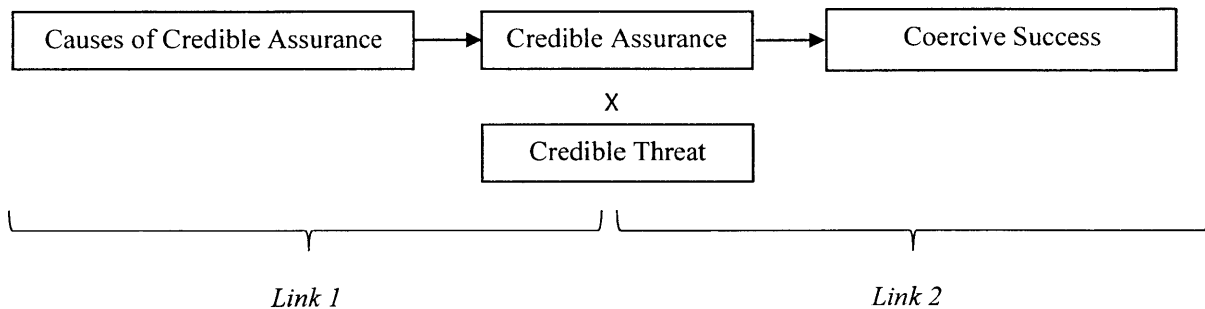
threats bolstered by the U.S. invasion of Iraq. These concessions are best explained by Threat Credibility Theory and not Coercive Assurance Theory.

Outline of the Book

The rest of the book proceeds as follows. In Chapter 2, I derive theory on the causes of compellent success and competing hypotheses on why and how coercer states credibly assure adversaries. Chapters 3, 4, 5, and 6 perform theoretical tests qualitatively in case studies of coercive bargaining over the nuclear weapons programs of South Africa, Libya, Iran 2003-2008, and Iran 2009-2019, respectively. Chapter 7 presents a policy evaluative analysis of contemporary efforts to compel North Korea, a rapidly developing and highly policy-relevant case. Chapter 8 concludes and considers the future of research on coercive assurance. An appendix codes and narrates fifteen observed cases of non-allied compellence over nuclear weapons programs.

CHAPTER 2: THEORY

This chapter sets up the theoretical propositions to be tested in the rest of the book. It mirrors the dual purpose of each empirical chapter that follows. The twin purposes are: to show that credible assurance is critical to coercive success (Link 2) and to identify causes of coercive assurance credibility (Link 1). Note, as discussed in Chapter 1, that I tackle them in the reverse order.



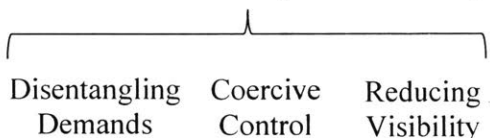
Link 2 investigates the causes of compellence success. Why do states comply with coercive demands? Why do targets of coercion defy credible threats? In each chapter I test Threat Credibility Theory against Coercive Assurance Theory. These tests establish that coercion can fail because targets perceived their coercers assurances to be incredible. Any coercive threat always implies an assurance. Yet the two concepts—threat and assurance—are distinct. Both are

necessary causes of successful compellence, but neither one is a sufficient cause of compellent success. Coercive assurance communicates that threatened punishments are contingent upon the behavior of a target; that targets can reliably avoid costs through compliance. Without complementary assurances, coercive threats are no more than bullying.

Investigating Link 2 alone is a major contribution to the political science literature, yet policymakers would be understandably unsatisfied if the book stopped there.

Having established that incredible coercive assurance impedes compellent success, the book turns to investigating the causes of coercive assurance credibility (Link 1). As such, this theory chapter also derives testable theoretical predictions from novel mechanisms on the causes of credible assurance.

Table A: Summary of Theoretical Tests

	<i>Rival Theories</i>	<i>My Theories</i>
Causes of Compellence Success (Link 2)	Threat Credibility Theory	Coercive Assurance Theory
Causes of Assurance Credibility (Link 1)	Threat-Assurance Trade-off Theory	Threat-Assurance Independence Theory <div style="text-align: center;">  </div>

The primary rival theories to be tested are: Threat-Assurance Tradeoff Theory and Threat-Assurance Independence Theory. The former is derived from existing literature on commitment-making in international politics and proposes an inverse linear relationship between threat and assurance credibility; anything a coercer does to bolster one undermines the other. The latter proposes that the credibility of threats and assurances may vary independently and are not always inverse.

Within the latter category—Threat-Assurance Independence Theory—I test three ingredients of credible assurance: Disentangling Demands, Coercive Control, and Reducing Visibility. I derive these ingredients from two commitment problems that coercive assurances aim to mitigate in the context of compellence. In brief, targets fear that if they comply they will be punished anyway; this is the Coercive Restraint Commitment Problem. Targets also fear that if they make concessions today coercers will be back for more later; this is the Snowballing Demands Commitment Problem. Disentangling multiple demands and demonstrating coercive control both reduce target fears of non-contingent punishment, while visibility reduction mitigates target fears of reputation formation. Each bolsters the credibility of coercive assurance without undermining threat credibility, hence their contribution to Threat-Assurance Independence Theory. Table A above summarizes these multiple theory tests.

Finally, this chapter ends by introducing the empirical universe that I will use to test these theories—coercive bargaining over nuclear weapons programs—and explaining how the theoretical tests will be performed in the chapters that follow.

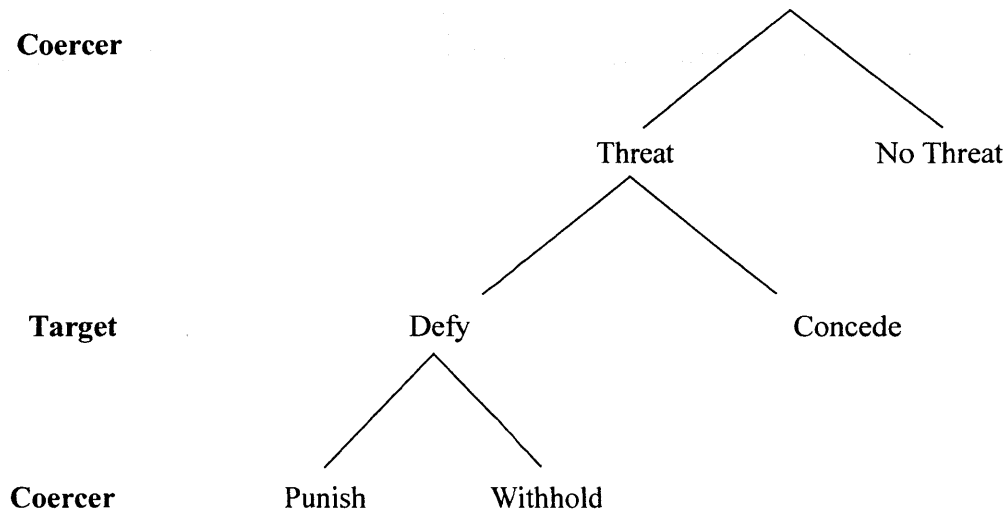
Causes of Compellence Success: Threat Credibility Theory vs. Coercive Assurance Theory

Threat Credibility Theory

What causes successful compellence? Conventional wisdom and the vast majority of political science literature on coercion point to one critical variable: threat credibility. Consider Table B. A coercer observes some behavior it does not like, and it chooses whether the stake is worth coercing over; if it is, the coercer issues a threat to the target. The next move is up to the target, which can decide whether to defy or concede the stake. If the target concedes, there is

peace. If it defies, the coercer may either carry out its threat (its threat was credible) or back down (its bluff has been called).

Table B: The Traditional Model of Compellence



In order for a target to acquiesce, it must believe that it will actually be punished for defiance. Coercers therefore take great pains to demonstrate both the capability to hurt and interests over the stakes at hand to show that they are resolved to punish if their demands are not met. I call this Threat Credibility Theory.

A related proposition, which I also include within the bounds of Threat Credibility Theory, is that threatened punishments must be sufficiently *severe* to the target. Meager library fines may not compel some patrons to return their books. Rationally, the cost of the punishment should outweigh the benefit of defiance; otherwise the target will not comply.

The literature on coercive diplomacy, the art of influencing targets with threats and signals, emphasizes these variables. Beginning with Thomas Schelling and later Alexander

George, there has been much empirical work on the practice of coercive diplomacy.²³ The basic model describes how a threat is credible if a state has both the capability (a.k.a. power) to carry out the threat, and the interest (a.k.a. stakes) in carrying it out.²⁴ First, a threat will not be credible if a state does not have the capabilities to carry it out at a worthwhile cost. A mugger without a gun cannot credibly threaten to shoot; neither can a well-armed mugger in plain view of the police. Second, a threat will not be credible if a state does not have sufficient interest in the stakes at hand to be resolved to act. A homeowner may be resolved to shoot trespassers on their own property but not on their neighbors' property. Thus, we have several generations of theories about military threats that explain how states can signal their resolve over a stake and make their threats credible—costly signaling (hand tying and sunk costs),²⁵ audience costs,²⁶

²³ Alexander L. George, *Forceful Persuasion: Coercive Diplomacy as an Alternative to War* (Washington, DC: United States Institute of Peace, 1991); Alexander L. George and William E. Simons (eds.), *The Limits of Coercive Diplomacy*, 2nd edition, (Westview Press, 1994); Robert J. Art and Patrick M. Cronin (eds.), *The United States and Coercive Diplomacy* (Washington, DC: United States Institute of Peace, 2003); and Barry M. Blechman and Stephen S. Kaplan, *Force Without War: U.S. Armed Forces as a Political Instrument*, (Washington, DC: Brookings Institution, 1978).

²⁴ Much of the literature refers to signals of “resolve” to bolster threats. In this book I am interested in “credibility.” “Credibility” is a narrower concept than “resolve,” i.e. a state can be “resolved” despite not issuing specific threats, while “credibility” refers to a qualitative assessment of a specific threat, assurance, or promise. See Joshua D. Kertzer, Jonathan Renshon, and Keren Yarhi-Milo, “How Do Observers Assess Resolve?” *British Journal of Political Science* (Forthcoming). “Resolve” is sometimes called “will”.

²⁵ James D. Fearon, “Domestic Political Audiences and the Escalation of International Disputes,” *American Political Science Review*, 88, 3 (September 1994), pp. 577-592; James D. Fearon, “Signaling Foreign Policy Interests: Tying Hands versus Sinking Costs,” *Journal of Conflict Resolution* 41, 1 (February 1997); Branislav L. Slantchev, “Military Coercion in Interstate Crises,” *American Political Science Review* 99, 4 (November 2005). On signaling in general see Robert Jervis, *The Logic of Images in International Relations* (Princeton, NJ: Princeton University Press, 1970).

²⁶ Fearon 1994 and 1997; Kenneth A. Schultz, *Democracy and Coercive Diplomacy* (Cambridge University Press, 2001); Kristopher W. Ramsay, “Politics at the Water’s Edge: Crisis Bargaining and Electoral Competition,” *Journal of Conflict Resolution* 48, 4 (August 2004); Jessica L. Weeks, “Autocratic Audience Costs: Regime Type and Signaling Resolve,” *International Organization* 62, 1 (Winter 2008).

reputation,²⁷ strategies of commitment,²⁸ and brinksmanship.²⁹ This literature is all about threat credibility.³⁰ I discuss each in turn.

Foremost in the literature, states demonstrate their resolve with costly signals. The costlier the signal, the more credible the commitment. Moves that pay a cost up front are sunk cost signals, while acts that impose a future cost are hand-tying signals.³¹

Military mobilization in crisis is one such sunk cost signal. It is costly for a state to keep its forces on ready alert for the duration of a crisis; a state that was unresolved would not pay such a cost to demonstrate their interests. Shows of force invoke similar sunk cost logics. For example, gunboat diplomacy, or the modern equivalent, using aircraft carriers as geopolitical chess pieces. Sabre rattling (e.g. the U.S. sending nuclear capable B-29s to Britain during the 1948 Berlin Crisis) and swaggering (e.g. parading military equipment at public rallies) are similar and related concepts.

Hand-tying signals, on the other hand, defer costs to the future, and the imposition of those costs depends on the behavior of the signaler. The signaler only pays the cost if it violates its commitments. The specter of future costs thus credibly conveys the interests of the signaler to follow through. For example, a leader may decide to make public statements to demonstrate resolve. Commonly derided as “cheap talk,” these statements are meant to signal resolve by

²⁷ Daryl G. Press, *Calculating Credibility* (Cornell University Press, 2005); Jonathan Mercer, *Reputation and International Politics* (Cornell University Press, 1996); Anne E. Sartori, *Deterrence by Diplomacy* (Princeton, NJ: Princeton University Press, 2005).

²⁸ Schelling 1960 and 1966.

²⁹ Schelling 1960 and 1966.

³⁰ A small portion of these signaling works mention signaling to reassure allies. See James D. Fearon, “Signaling Foreign Policy Interests: Tying Hands versus Sinking Costs,” *Journal of Conflict Resolution* 41, 1 (February 1997); and Matthew Fuhrmann and Todd S. Sechser, “Signaling Alliance Commitments: Hand-Tying and Sunk Costs in Extended Nuclear Deterrence,” *American Journal of Political Science* 58, 4 (2014), pp. 919-935. As a signal of commitment, however, reassuring allies is theoretically akin to threatening adversaries; both a commitment to *do something* (carry out a threat or provide security assistance). Neither should follow the same theoretical logic as coercive assurances, which are pledges *not to punish*.

³¹ James D. Fearon, “Signaling Foreign Policy Interests: Tying Hands versus Sinking Costs,” *Journal of Conflict Resolution* 41, 1 (February 1997).

entangling the reputation of a leader with the outcome of a crisis.³² Public statements are also supposed to invite the prospect of “audience costs” if the leader backs down. For example, after President Kennedy’s public address at the height of the Cuban Missile Crisis, Soviet Ambassador Dobrynin wrote to Moscow that “[Kennedy] has put at stake his reputation as a statesman and politician, and thus his prospects for reelection in 1964.”³³

The debate about reputation in international politics bears on questions of coercion and credibility, but also focuses entirely on threat credibility. Daryl Press argues that states cannot form reputations for making empty threats,³⁴ while Anne Sartori argues that the fear of acquiring a reputation makes states eschew bluffing.³⁵ On every side of this debate, scholars are concerned with bluffing, threatening, and resolve.

States can also employ strategies of commitment to attempt to tie their own hands and signal resolve. In a game of chicken, drivers can throw their steering wheel out the window, forcing their opponent to swerve. Military commanders have ordered their ships burned upon

³² A similar concept is “the commitment trap,” whereby a leader sets a red line and, once the line is crossed, feels pressure to respond because of reputational concerns, regardless of their true interest in the stakes. See Scott D. Sagan, “The Commitment Trap,” *International Security* 24, 4 (2000), pp. 85-115.

³³ “Cable from Soviet ambassador to the U.S. Dobrynin to Soviet Foreign Ministry (2),” October 25, 1962, History and Public Policy Program Digital Archive, Archive of Foreign Policy, Russian Federation (AVP RF), Moscow; copy obtained by NHK (Japanese Television), provided to CWHIP, and on file at National Security Archive, Washington, D.C.; translation by Vladimir Zaemsky, <<http://digitalarchive.wilsoncenter.org/document/110449>>.

³⁴ Daryl G. Press, *Calculating Credibility* (Cornell University Press, 2005). See also Jonathan Mercer, who argues that reputations for resolve are not worth fighting for, because adversaries attribute past backing down to (context specific) situational factors. Thus, adversaries can sometimes get reputations for having resolve, but not for lacking resolve; and allies can sometimes get reputations for lacking resolve but cannot get reputations for having resolve. Jonathan Mercer, *Reputation and International Politics* (Cornell University Press, 1996).

³⁵ Anne E. Sartori, *Deterrence by Diplomacy* (Princeton University Press, 2005). Rationalist theory on the causes of war also assumes that states acquire reputations for renegeing on commitments. See Robert Powell, “War as a Commitment Problem,” *International Organization*, 60, 1 (Winter 2006), pp. 169-203; and Robert Powell, *In the Shadow of Power: States and Strategies in International Relations*, (Princeton University Press, 1999). For another argument affirming the impact of reputation on signals, see Robert F. Trager, “Long-term Consequences of Aggressive Diplomacy: European Relations after Austrian Crimean War Threats,” *Security Studies* 21, 2 (2012), pp. 232-265.

landing, signaling to both their own soldiers and the enemy's that they will conquer or die, there will be no retreat.³⁶

Finally, states may engage in brinkmanship to communicate resolve through the limited and calibrated use of force in crisis to manipulate the risk of greater conflict. Brinkmanship is a strategy employed in the nuclear age, when the fates of each belligerent are intertwined and they are better off making “threats that leave something to chance.”³⁷ The Cuban Missile Crisis is again the archetypal example of brinkmanship. The quarantine of Cuba raised the possibility that shots would be fired, as did limited uses of force by ships at sea (e.g. using grenades in toilet paper rolls as warning depth charges).³⁸

Overall, Threat Credibility Theory says that credible threats are a necessary and sufficient cause of compellent success. Its many component theories of credible threat-making are vast and dense. In sum, we know that compellence can fail when threats are insufficiently credible or severe. Credible because a target must believe that it will incur costs for defiance. Severe because the target must be unwilling to pay the cost of punishment in pursuit of the stakes.³⁹

Yet few understand how threats can fail when they are insufficiently conditional/contingent. This is the lacuna addressed by Coercive Assurance Theory.

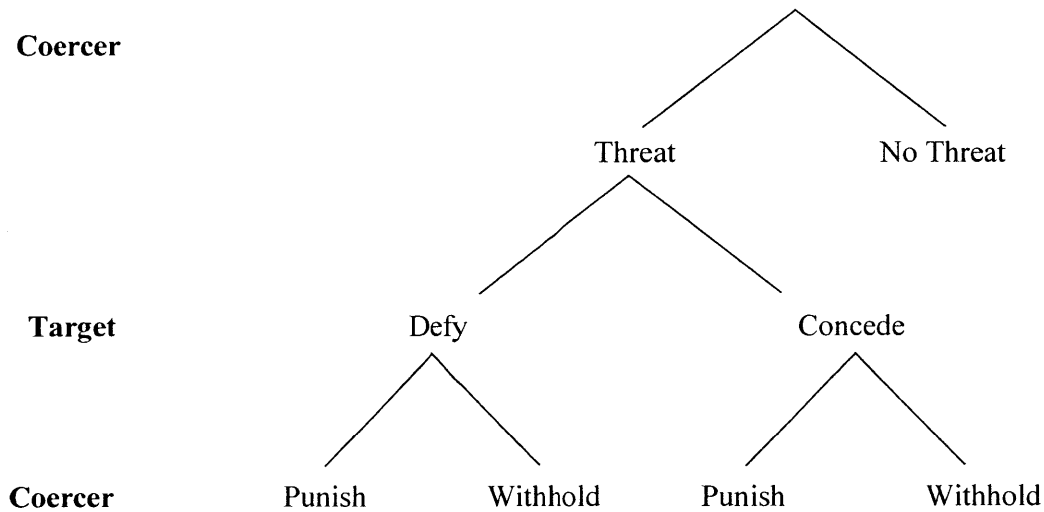
³⁶ Most famously, Schelling uses the story of Xenophon: In retreat and pursued by the Persians, his army runs into an impassable ravine. As his generals begin to panic, Xenophon turns and confidently recognizes that the tables have turned, saying: “I should like the enemy to think it easy going in every direction for him to retreat; but...that there is no safety for us except in victory.” Schelling, *Strategies of Commitment*, 1. Captain Hernán Cortés also burned his ships upon landing in Veracruz in 1519.

³⁷ Schelling, *Strategy of Conflict*; Schelling, *Arms and Influence*.

³⁸ See Michael Dobbs, *One Minute to Midnight* (New York: Alfred A. Knopf, 2008).

³⁹ Said another way, severity accounts for the target's willingness to suffer. Some credible threats fail because the target is resolved enough bear the pain.

Table C: A New Model of Compellence



Coercive Assurance Theory

Coercive Assurance Theory recognizes the paradox at the heart of coercion. Successful compellence requires not only that I threaten you until you comply, but also that I credibly commit to not punish you if you comply. Yet communicating that I will not punish you later is undercut by the fact that I am threatening you today!⁴⁰ In other words, Coercive Assurance Theory says that both credible assurance and credible threats are necessary causes of compellence success. Neither is sufficient alone.

⁴⁰ In terms of Glaser’s distinction between “greedy” and “security-seeking” types, states issuing compellent demands have already demonstrated that they are not status quo powers and are therefore at risk of being seen as greedy, exacerbating the security dilemma. Charles Glaser, “The Security Dilemma Revisited,” *World Politics* 50, 1 (1997), pp. 171-201.

Table C adds this additional (bottom right) aspect of coercer action to a stylized model of compellence. When/if a target concedes, the coercer again faces a choice of whether to punish or withhold. Most importantly, targets know this and factor their expectations about the coercer's behavior into their decision about whether to concede in the first place.

Such a theory of coercion can be derived from the application of the security dilemma to the realm of coercion. International politics are conducted under the fog of a tragic security dilemma—no country can be sure of another's intentions and there is no 9-1-1 to call if you are in trouble. States therefore must guard against the possibility of aggression by arming, forming alliances, and seeking relative power advantage.⁴¹ The structural theory of the security dilemma is typically reserved to explain peacetime relations and spirals of conflict, but it is no less useful within the bounds of coercion.⁴²

What follows is a defensive realist application of the security dilemma to the realm of coercion. Defensive realism is not sanguine about the prospect of assuring adversaries, but it allows for the possibility.⁴³ States' intentions are opaque, but they attempt to communicate them.⁴⁴ Indeed, some theories in the canon are premised on the notion that adversaries can be reassured (for example, scholarship on offense-defense theory,⁴⁵ the spiral and deterrence models

⁴¹ Robert Jervis, "Cooperation Under the Security Dilemma," *World Politics* 30, 2 (1978), pp. 167-214; Kenneth N. Waltz, *Theory of International Politics* (1979).

⁴² Barry Posen in *Inadvertent Escalation* was the first to apply the security dilemma to the realm of limited war. Following this lead, I bring security dilemma theory to the realm of compellence. Barry Posen, *Inadvertent Escalation* (Cornell University Press, 1991), pp. 12-13.

⁴³ Offensive realism, on the other hand, assumes that assuring adversaries is impossible. It would be a puzzle for offensive realists why assurances are ever attempted, effective, or credible. John J. Mearsheimer, *The Tragedy of Great Power Politics* (New York: W.W. Norton, 2001), p. 3. Sebastian Rosato similarly argues that the great power intentions are "inscrutable" to other states, because they are always changing. Sebastian Rosato, "The Inscrutable Intentions of Great Powers," *International Security* 39, 3 (2015), pp. 48-88.

⁴⁴ Assessing or at least perceiving the intentions of adversary is critical to some defensive realist theories. For example, Stephen M. Walt, *The Origins of Alliances* (Cornell University Press, 1987).

⁴⁵ If offense is indistinguishable from defense and conquest is relatively easy, the security dilemma is intensified. If, on the other hand, defense is distinguishable from offense and conquest is relatively difficult, adversaries are more assured of each other's intentions and the security dilemma is mitigated. Robert Jervis, "Cooperation under the Security Dilemma" and "Offense, Defense, and the Security Dilemma" in Robert J. Art and Robert Jervis,

with perception and misperception,⁴⁶ other expositions of the security dilemma,⁴⁷ and the formal “assurance game”⁴⁸). This book also, counterintuitively, applies lessons from the literature on trust and cooperation to the realm of coercion.⁴⁹

With respect to the context of coercion, the structural fears that drive the security dilemma should be most acute between adversaries engaged in compellence. Those who threaten

International Politics, 3rd ed. (Pearson, 1992), pp. 146-169. Stephen Van Evera, *Causes of War* (Ithaca, NY: Cornell University Press, 1999), ch. 6; Stephen Van Evera. “Offense, Defense, and the Causes of War,” *International Security* 22, 4 (1998), pp. 5-43; George Quester, *Offense and Defense in the International System* (New York: John Wiley and Sons, 1977); Charles Glaser and Chaim Kaufman, “What is the Offense-Defense Balance and Can We Measure It?” *Offense, Defense, and War*, *International Security Reader*; and Sean Lynn-Jones, “Offense-Defense Theory and Its Critics,” *Security Studies* 4 (Summer 1995), pp. 660-691. See also critiques of Offense-Defense Theory: Keir Lieber, “Grasping the Technological Peace: The Offense-Defense Balance and International Security,” *International Security* 25, 1 (2000), pp. 71-104; James Davis Jr., Bernard Finel, Stacie Goddard, Stephen Van Evera, Charles Glaser, and Chaim Kaufmann, “Correspondence: Taking Offense at Offense Defense Theory,” *International Security* 23, 3 (1999), pp. 179-206.

⁴⁶ Robert Jervis formulated the Spiral and Deterrence Models, also articulating why states were apt to misperceive which model applied in which contexts. Robert Jervis, *Perception and Misperception in International Politics* (Princeton University Press, 1976).

⁴⁷ Glaser adds another wrinkle to the security dilemma literature, arguing that states can communicate their “type” through their actions, revealing themselves to be greedy or security-seeking. If the latter, other states are assured of their intentions. Greedy states may, for example, invest in offensive military capabilities above a level required for security; while security-seeking states may adopt defensive military doctrine or negotiate arms control agreements. The key result being that the security dilemma does not require misperception to operate. Charles Glaser, “The Security Dilemma Revisited,” *World Politics* 50, 1 (1997), pp. 171-201.

⁴⁸ In contrast to the classic “Prisoner’s Dilemma,” in which two untrustworthy players who fear their cooperation will be exploited choose to defect, the “Assurance Game” postulates two players who would rather reciprocate cooperation than exploit it. Andrew Kydd uses this game as a starting point for a formal exposition of a theory of trust and mistrust in international politics, for which he prescribes costly signals as the mechanism by which states build trust. Andrew Kydd, *Trust and Mistrust in International Relations* (Princeton University Press, 2005), pp. 5, 8, 18. Scholars have also explained or prescribed U.S. foreign policies with reference to the strategic assurance of adversaries. None of these scholars contribute to the literature on coercion, although their theories deductively imply that credible assurance is possible. John Ikenberry argues that the United States has been uniquely capable of assuring the world of its benign intentions, chiefly through two mechanisms: dedication to liberal American values and a transparent political system. John Ikenberry, *After Victory: Institutions, Strategic Restraint, and the Rebuilding of Order after Major Wars* (Princeton University Press, 2001). And Josh Shiffrin shows how the United States reneged on assurances offered to a disintegrating Soviet Union by expanding NATO in the 1990s. Shiffrin suggests three mechanisms by which reassurances to the Soviet Union could have been effective: (1) by altering their perceptions of U.S. intentions, (2) empowering moderates within Russia, and (3) removing justifications within Russia for continued aggression. Joshua R. Itzkowitz Shiffrin, “Deal or No Deal? The End of the Cold War and the U.S. Offer to Limit NATO Expansion,” *International Security* 40, 4 (Spring 2016), pp. 7-44.

⁴⁹ Milner, for example, shows the impact of similar independent variables on the dependent variable of cooperation in international politics. Helen Milner, *Interests, Institutions, and Information: Domestic Politics and International Relations* (Princeton University Press, 1997). Kydd explains cooperation and conflict by examining the communicated trustworthiness of states and proposes “Bayesian Realism” as an alternative theory of state behavior—states can learn about each other’s trustworthiness and converge to correct beliefs about that trust. He uses the history of the Cold War to illustrate how Soviet expansionism bred mistrust at the beginning of the Cold War, while Soviet assurances communicated trustworthiness at the end of the Cold War. Andrew Kydd, *Trust and Mistrust in International Relations*, 5, 8, 18.

me today are likely to be the same enemies who will threaten me again in the future. Yet acquiescence to compellence is still possible. A target may wish to make a concession to avoid severe and credible punishment. It may have conceded some stake, but it lives to fight another day. In conceding, however, the target is striking an implicit bargain with its coercer. If I concede, you will not punish me. It is fundamentally a commitment problem.⁵⁰ No target will concede if it expects to be punished capriciously. All successful compellence therefore requires coercive assurance that punishment is *contingent* upon the behavior of the target. Otherwise, there can be no tacit bargain at the core of a target's concession. Coercers must overcome this paradox of coercion by communicating credible coercive assurance.

The godfather of coercion theory, Thomas Schelling, understood this problem of coercive assurance. In his classic formulation of coercion theory, *Arms and Influence*,⁵¹ Schelling states:

The victim [of coercion] has to know what is wanted, and he may have to be assured of what is not wanted. The pain and suffering have to appear *contingent* on his behavior; it is not alone the threat that is effective—the threat of pain or loss if he fails to comply—but the corresponding assurance, possibly an implicit one, that he can avoid the pain or loss if he does comply.⁵²

Later, Schelling added:

⁵⁰ James D. Fearon, "Rationalist Explanations for War," *International Organization* 49, 3 (Summer 1995), pp. 379-414. Consider also that power transition theory is premised on a fundamental commitment problem between rising powers and declining powers. See Robert Gilpin, *War and Change in World Politics* (Cambridge University Press, 1981); Dale C. Copeland, *The Origins of Major War* (Cornell University Press, 2000).

⁵¹ Schelling did note the logic of assurance in his earlier book, *Strategy of Conflict*, but he did not give it the name "assurance" until 1966. Thomas Schelling, *The Strategy of Conflict* (Cambridge, MA: Harvard University Press, 1960), pp. 6-7.

⁵² Schelling, *Arms and Influence*, p. 4.

Actually, any coercive threat requires corresponding *assurances*; the object of a threat is to give somebody a choice. To say, “One more step and I shoot,” can be a deterrent threat only if accompanied by the implicit assurance, “And if you stop I won’t.” Giving notice of *unconditional* intent to shoot gives him no choice...⁵³

Thus, Schelling introduces the concept of coercive assurance, but he stops there. He and others who followed did not explore the causes of credible assurances.⁵⁴ To date, Coercive Assurance Theory is underdeveloped and underappreciated.

This hole in the field of international relations exists for at least three reasons. First, most work on coercion theory studied deterrence; not compellence, where assurance is a bigger challenge.⁵⁵ Second, nuclear weapons preoccupied policymakers and the academy. For seventy years, scholars concentrated on how to make threats credible, especially when extending

⁵³ Schelling, *Arms and Influence*, p. 74.

⁵⁴ Schelling did imply that assurances, like threats, may have reputational causes. Schelling, *Arms and Influence*, p. 74.

⁵⁵ Deterrence theory first began deductively, as scholars theorized how to raise the prospect of costs in the minds of a rational adversary, and how deterrers could credibly commit to punish aggression. Bernard Brodie, *Strategy in the Missile Age* (1959), Herman Kahn, *On Thermonuclear War* (Princeton University Press, 1960), William W. Kaufmann, *The Requirements of Deterrence* (1954), Schelling 1960, Schelling 1966, Glenn H. Snyder, *Deterrence and Defense* (1961), Albert Wohlstetter, “The Delicate Balance of Terror,” *Foreign Affairs* (January 1959). A second wave of deterrence theory emerged inductively, as scholars tested the rationalist theories of deterrence against historical empirics. Bruce M. Russett, “The Calculus of Deterrence,” *Journal of Conflict Resolution* 7, 2 (1963); Alexander L. George and Richard Smoke, *Deterrence in American Foreign Policy: Theory and Practice* (New York: Columbia University Press, 1974); John J. Mearsheimer, *Conventional Deterrence* (New York: Cornell University Press, 1983); Paul Huth and Bruce Russett, “What Makes Deterrence Work? Cases from 1900 to 1980,” *World Politics* 36, 4 (1984); Paul Huth and Bruce Russett, “Deterrence Failure and Crisis Escalation,” *International Studies Quarterly* 32, 1 (1988), pp. 29-45. This new deterrence school critiqued the validity of rigid deterrence models in the real world of imperfect decision-making and psychological biases. Richard Ned Lebow and Janice Gross Stein, “Deterrence: The Elusive Dependent Variable,” *World Politics* 42, 3 (1990), pp. 336-369; Richard Ned Lebow and Janice Gross Stein, “Rational Deterrence Theory: I Think, Therefore I Deter,” *World Politics* 41, 2 (1989), pp. 208-224. Finally, the empirical deterrence scholars ceased their work when they were confronted with the specter of selection effects. James D. Morrow, “Capabilities, Uncertainty, and Resolve: A Limited Information Model of Crisis Bargaining,” *American Journal of Political Science*, 33 (1989), pp. 941-972; James D. Fearon, “Selection Effects and Deterrence,” *International Interactions* 28, 5 (2002), pp. 5-29.

deterrence of allies. Stable nuclear deterrence required that either side in the Cold War believe that each was willing to use nuclear weapons.⁵⁶ Third, coercion theory has rarely questioned its own unitary actor assumptions.⁵⁷ Coercion theory was largely developed in a bipolar international system, a context more stable and predictable than multipolar or unipolar systems.

Exceptions to these trends were uncommon. A body of coercive diplomacy scholarship compared the utility of threatened punishments (sticks) versus promised benefits (carrots),⁵⁸ largely concluding that a mixed strategy is optimal.⁵⁹ However, this debate evaluated the credibility of carrots and sticks and missed coercive assurance.

⁵⁶ Signaling about a state's willingness to use nuclear weapons is in general a paradoxical concept. If my nuclear threats were truly credible, I would not need to signal.

⁵⁷ In general, coercion theory has poorly accounted for the role of third parties. Traditional, dyadic models of coercion ignore the fact that there may be multiple coercers, each independently capable of imposing punishment on the target. Some scholars began the move away from the unitary actor assumptions of coercion models. Schultz introduced domestic opposition party to a bargaining model of war. Kenneth A. Schultz, "Domestic Opposition and Signaling in International Crises," *American Political Science Review* 92, 4 (1998), pp. 829-944. Crawford explains the role of third parties in deterring both sides of a crisis from going to war, called "pivotal deterrence." Timothy Crawford, *Pivotal Deterrence* (Cornell University Press, 2003). Keren Fraiman included a third actor in her theory of "transitive compellence," how coercers can compel base states to rein in non-state actors within their territory. Keren E. Fraiman, "Underestimating Weak States and State Sponsors: The Case for Base State Coercion," in Greenhill and Krause, *Coercion: The Power to Hurt in International Politics* (Oxford University Press, 2018), pp. 117-137. And Christensen accounted for the fractiousness of alliances in his study of coercive diplomacy in East Asia. Thomas J. Christensen, *Worse Than a Monolith: Alliance Politics and the Problem of Coercive Diplomacy in Asia* (Princeton University Press, 2011). Still, even the most recent surveys of the literature on coercive diplomacy include calls for the expansion of theory to include the role of third parties. Todd Sechser, "A Bargaining Theory of Coercion," in Greenhill and Krause (eds.), *Coercion: The Power to Hurt in International Politics* (Oxford University Press, 2018), p. 76.

⁵⁸ Some even acknowledge the efficacy of carrots alone. See Miroslav Nincic, "Getting What You Want: Positive Inducements in International Relations," *International Security* 35, 1 (Summer 2010), pp. 138-183. Alexander George did draw a distinction between "compellence" and "coercive diplomacy," to highlight that the latter included carrots. Alexander George and William E. Simons, *The Limits of Coercive Diplomacy* (Boulder, CO: Westview Press, 1994), pp. 7-8.

⁵⁹ See Richard N. Haass and Meghan L. O'Sullivan, *Honey and Vinegar: Incentives, Sanctions, and Foreign Policy* (Washington, DC: Brookings Institution Press, 2000). For a recent defense of "sticks," see Eliot A. Cohen, *The Big Stick: The Limits of Soft Power & the Necessity of Military Force* (Basic Books, 2016). For a defense of "carrots," see James W. Davis, *Threats and Promises: The Pursuit of International Influence* (Baltimore, MD: Johns Hopkins University Press, 2000); or Thomas Bernauer and Dieter Ruloff (eds.) *The Politics of Positive Incentives in Arms Control* (Columbia, University of South Carolina Press, 1999). On nuclear proliferation cases, see also Hans Dorussen, "Mixing Carrots with Sticks: Evaluating the Effectiveness of Positive Inducements," *Journal of Peace Research* 38, 2 (2001), pp. 251-262.

Testing Threat Credibility Theory vs. Coercive Assurance Theory

Threat Credibility Theory and Coercive Assurance Theory differ in their predictions about the sticking point of coercive bargaining. They are therefore, in a sense, cumulative. Each theory is falsifiable and empirically testable; nonetheless, while evidence in favor of Coercive Assurance Theory falsifies Threat Credibility Theory, evidence in favor of Threat Credibility Theory does not falsify Coercive Assurance Theory. Table D below shows this visually.

Table D: Competing Theoretical Predictions

	Threat Credibility Theory ("compellence will succeed if...")	Coercive Assurance Theory ("compellence will succeed if...")
Threats Perceived as Credible and Painful	✓	✓
Pain Perceived as Contingent	✗	✓

The two theories make different empirical predictions about coercive bargaining among states. If Threat Credibility Theory is operating, targets of compellence should concede if a coercer communicates sufficiently credible and severe threats. A target that perceives these two criteria yet still chooses to defy compellence would provide evidence against Threat Credibility Theory.

H1a: Targets will justify defiance with assessments that a Coercer's threats are not credible.

H1b: Targets will make concessions when a Coercer's threats become more credible.

H2a: Targets will justify defiance with assessments that a Coercer's punishments are not so severe.

H2b: Targets will make concessions when a Coercer's punishments become too severe.

Coercive Assurance Theory, on the other hand, predicts that such a target may not comply if it perceives the credible and severe threat to be insufficiently conditional.

H3a: Targets will justify defiance with assessments that a Coercer's punishments will be applied whether or not they make concessions.

H3b: If Targets perceive that a Coercer's compelling threats are credibly contingent on their behavior, they will make concessions.

For Threat Credibility Theory to be confirmed, variations in threat credibility should be associated with target decisions to concede. For Coercive Assurance Theory to be confirmed, variations in coercive assurance credibility should be associated with target decisions to comply. The empirical chapters in this book investigate these propositions and find stronger evidence in favor of Coercive Assurance Theory.

After establishing that coercive assurance is a powerful variable affecting the likelihood of successful compellence, the natural follow-on question is "what causes credible coercive assurance?" The next section proposes competing causes to be tested.

The intention is to be constructive, above and beyond existing thought about coercive assurance, which, if it recognizes the concept at all, tends to identify it as a barrier to effective coercion without proposing or studying solutions. As Krause and Greenhill's holistic review of the state of coercion theory notes, "Schelling's assertion that assurances must accompany coercive threats has generally been taken as axiomatically true, but not much systematic

empirical work has been done to support it.”⁶⁰ Traditional models of coercion simply assume that target compliance leads to peace. Only recently has scholarship challenged coercers “to find ways to credibly tie their own hands and make promises of restraint believable.”⁶¹ Thus, instead of assuming coercive assurance is necessary in my work, I show it empirically and then back up to study its causes. As Peter Jakobsen bemoaned, “it goes without saying that policy makers will pay more attention to theorists offering solutions than theorists who merely identify problems, and coercion theorists have been far better at doing the latter than the former.”⁶²

Causes of Credible Coercive Assurance

In this section I introduce two competing theories on the relationship between threat and assurance credibility: Threat-Assurance Tradeoff Theory and Threat-Assurance Independence Theory. The former is derived from existing literature on signaling and credible commitment. The latter functions as the ‘mother theory’ for proposed solutions to the dual commitment problems confronting coercers who make compelling demands. These solutions are Disentangling Demands, Exerting Coercive Control, and Reducing Visibility. But first I explain the commitment problems.

The Commitment Problems of Compellence

All compelling demands are comprised of two types of stakes. The first is the “issue stake”—the matter over which a demand is made. A demand to end a nuclear weapons program

⁶⁰ Greenhill and Krause, *Coercion: The Power to Hurt in International Politics* (2018), p. 24.

⁶¹ Todd Sechser, “A Bargaining Theory of Coercion,” in Greenhill and Krause (eds.), *Coercion: The Power to Hurt in International Politics* (2018), p. 74.

⁶² Peter Viggo Jakobsen, “Pushing the Limits of Military Coercion Theory,” *International Studies Perspectives* 12 (2011), p. 160.

is over the issue of nuclear weapons. The second stake, intrinsically tied to the first, is the “reputational stake.” Targets of coercion must wonder whether in backing down they will incur a reputational cost.⁶³ Thus, faced with compelling threats, targets states have two legitimate fears: (1) If I comply, how do I know that I will not be punished anyway? (2) If I comply today, how do I know you or others will not be back for more later?⁶⁴ All coercive threats at least imply assurances that address these fears, but they are not always credible. Both are commitment problems rooted in an acute security dilemma.⁶⁵

The Coercive Restraint Problem

Targets of compellence may fear that the threatened pain is not in fact contingent on their own behavior—the threatener may punish them regardless of whether they comply. Schelling identified this challenge when his children defied his wrath if they saw that he was “mad already.”⁶⁶ If targets expect punishments to be capriciously applied, defiance runs little or no additional risk and compliance is fruitless.

Existing theory overlooks this fear, because punishing capriciously is supposed to be irrational. A coercer should have no incentive to punish its target after it complies. It would be gratuitous. Such a view overlooks two rational causes of assurance fears: Entangled Stakes and Fragmented Coercers.

⁶³ Sechser, “Goliath’s Curse,” (2010).

⁶⁴ Note that I am not talking about promised rewards (carrots). A target of coercive threats might also not believe that its adversary will follow through with inducements pledged during negotiations. This is indeed a threat to stable coercive bargains, but it is not coercive assurance.

⁶⁵ Fearon, “Rationalist Explanations for War,” (1995).

⁶⁶ “In personal life,” wrote Schelling, “I have sometimes relied, like King Lear, on the vague threat that my wrath will be aroused (with who knows what awful consequences) if good behavior is not forthcoming, making a tentative impression on one child, only to have the threat utterly nullified by another’s pointing out that ‘Daddy’s mad already.’” Schelling, *Arms and Influence*, p. 74 (footnote 18).

Entangled Stakes. First, coercers sometimes make multiple demands of a target; for example, to both abandon a nuclear weapons program and stop human rights abuses. If the target considers conceding to one demand, it may legitimately fear that it will have to bear the pain of the threatened punishment anyway over the other issue which it has not conceded. These demands have become “entangled.”

Multiple Coercers. Second, the pluralism of coercers varies. They may be “unified” or “fragmented”.⁶⁷ Removing the unitary coercer assumption exposes rational sources of assurant fears among targets.⁶⁸ Domestically, multiple actors within a coercing state may be simultaneously empowered to impose punishments, such as multiple branches of a government; or one actor may be in power now and another may be in power in the future, such as multiple political parties in competition. Internationally, coercers sometimes compel by coalition. Facing multiple independent coercers, targets must calculate *ex ante* whether every coercer in a coalition will be satisfied by a concession, or whether an individual coercer within a fractious coalition may “spoil” any coercive bargain it strikes with the others.⁶⁹

Targets of compellence, in general, have reason to question their coercer(s)’ restraint.

The Snowballing Demands Problem

Targets of compellence also fear complying because they think they will acquire a reputation for backing down, which will encourage demands for additional concessions in the

⁶⁷ While coercer unity actually varies along a spectrum, I compress it to a dichotomous variable.

⁶⁸ The literature on signaling and coercive bargaining generally assumes that actors, either states or individual leaders, are unitary, leaving little room for multiple signals emerging from the same actor at the same time. To the extent that unitary actor assumptions have been questioned and removed in the study of nonproliferation and sanctions, it tends to be the proliferator or target state whose domestic politics are factored in. Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (Cambridge University Press, 2012), pp. 10-11.

⁶⁹ Tsebelis points to a parallel phenomenon in institutions whereby increasing the number of veto players reduces the likelihood of reaching international or domestic agreements. George Tsebelis, *Veto Players: How Political Institutions Work* (Princeton University Press, 2002).

future. Even if a coercer could pledge not to make more demands in the future, they cannot make the same pledge on behalf of other potential coercers, either domestic or international, who are observing today's interaction.

An important debate rages in the literature over whether states can indeed acquire reputations for backing down.⁷⁰ Nonetheless, for this commitment problem to function, it does not so much matter whether states indeed do acquire reputations for backing down, only that they believe that they will. Todd Sechser shows that this belief is common among targets of compellence.⁷¹ As for domestic audiences, leaders who draw their political authority from looking strong should most fear acquiescing to coercion.⁷²

Comparing the Commitment Problems

The two commitment problems—Coercive Restraint and Snowballing Demands—are logically distinct and derived from different theory. They are also, however, ideal types and may

⁷⁰ Note that this literature also focuses entirely on threats and not assurances. Daryl Press argues that states cannot form reputations for making empty threats, while Jonathan Mercer finds that adversaries can sometimes get reputations for having resolve, but not for lacking resolve, and allies can sometimes get reputations for lacking resolve, but cannot get reputations for having resolve. Harvey and Mitton dissent and argue that states derive reputational benefits from fighting for credibility. Daryl G. Press, *Calculating Credibility* (Cornell University Press, 2005); Jonathan Mercer, *Reputation and International Politics* (Cornell University Press, 1996); Frank P. Harvey and John Mitton, *Fighting for Credibility: U.S. Reputation and International Politics* (Toronto: University of Toronto Press, 2016). Michael Tomz finds evidence of reputational effects in sovereign debt markets. Michael Tomz, *Reputation and International Cooperation: Sovereign Debt across Three Centuries* (Princeton University Press, 2007). Allan Dafoe and Devin Caughey show that leaders who are more concerned with reputation and honor are more likely to use force in international politics. Allan Dafoe and Devin Caughey, "Honor and War: Southern U.S. Presidents and the Effects of Concern for Reputation," *World Politics* 68, 2 (2016), pp. 341-381. Alex Weisiger and Keren Yarhi-Milo show that backing down in crises increases your probability of being challenged again in the future. Alex Weisiger and Keren Yarhi-Milo, "Revisiting Reputation: How Past Actions Matter in International Politics," *International Organization* 69, 2 (Spring 2015), pp. 473-495. For a review of this literature, see Allan Dafoe, Jonathan Renshon, and Paul Huth, "Reputation and Status as Motives for War," *Annual Review of Political Science* 17 (2014), pp. 371-393.

⁷¹ Sechser, "Goliath's Curse," (2010). Anne Sartori relatedly argues that the reputational fears makes states eschew bluffing. Anne E. Sartori, *Deterrence by Diplomacy* (Princeton University Press, 2005). And Posen argues that targets of compellence invite future predation if they do not resist. Barry Posen, "Military Responses to Refugee Disasters," *International Security* 21, 1 (Summer 1996).

⁷² Weber would call these "charismatic" leaders. Max Weber, "Politics as a Vocation."

overlap in the real world. They may also interact in ways that magnify the problem of assurance. Each fragmented actor within a coercing state may make different demands of a target, exacerbating the entanglement of multiple issues even further within fractious domestic politics. Issuing multiple demands or issuing more severe threats (e.g. threats of invasion as opposed to threats of embargo or punitive strikes) may make a coercer look very hostile, enhancing a target's fears of snowballing demands to come. In practice, these may be different manifestations of the same commitment problem core to the paradox of coercion—perceptions about the limits (or lack thereof) of coercer aims.⁷³ Regardless, they are analytically useful as distinct fears.

The commitment problems also differ in one key respect: time horizons. Fears of non-contingent punishment (Coercive Restraint Problem) hang over the whole of a coercive bargaining interaction but dissipate soon after a target concedes. Fears of greater demands to come (Snowballing Demands Problem) extend farther into the future. Such a distinction is useful for theory-building to identify which targets will be most worried about which commitment problems. For weak states, for example, the shadow of the future is quite short. They must concern themselves with survival today, before planning for prosperity tomorrow. Stronger states contain more “ruin.”⁷⁴ They can afford to bear more risk. Their leaders concern themselves with both short-term foreign policy and long-term statecraft. The Snowballing Demands commitment problem may therefore be more or less acute depending on the target of coercion, but all targets concern themselves with the Coercive Restraint commitment problem.

⁷³ Schelling acknowledged that coercers needed to communicate the limits of their aims; where they intended to stop should be clear to both. Schelling, *The Strategy of Conflict*; Schelling, *Arms and Influence*, p. 137.

⁷⁴ The phrase “there is a great deal of ruin in a nation” is attributed to Adam Smith. Ian Simpson Ross, *The Life of Adam Smith*, (Oxford University Press, 1995), p. 32.

Other Explanations for Compellence Failure: The Magnitude of Demands

Coercive assurance, and its constituent commitment problems, is only one important obstacle to compellent success. There are many others. Here I discuss the most common in the literature and whether they are alternative explanations for compellence failure. All are related to the *magnitude* of the stakes.

First, a coercer may undermine its own coercive strategy by making maximalist demands of a target. Phil Haun shows, for example, that the United States often asks for too much and therefore fails to coerce weak states.⁷⁵ Demands for regime change, for example, are unlikely to succeed coercively because they are akin to asking a target to commit suicide. Nonetheless, this is not a commitment problem. The coercer is not merely perceived to have greater aims, it actually has them and has pursued them by making maximalist demands.⁷⁶ In such a case, defiance is not due to a lack of coercive assurance but to a lack of bargaining space. This is an alternative explanation to coercive assurance theory.

One related problem is that of issue indivisibility, which Fearon identified, but largely dismissed, as a rationalist explanation for war.⁷⁷ If a stake cannot be divided, then asking for a part of that stake is akin to asking for the whole of that stake. Relatively small demands appear to the target as large demands. Again, the explanation boils down to the problem of stake magnitude.

Another related problem is identified by Sechser as a reason for the low success rate of coercers with a relative power advantage over their targets: a relative power advantage may

⁷⁵ Phil Haun, *Coercion, Survival, and War: Why Weak States Resist the United States* (Stanford University Press, 2015).

⁷⁶ There is an element of misperception at play here, as the coercer may not realize how maximalist its demands really are. However, it is still not a commitment problem. Haun argues that the United States often knows what it is doing. As in the case of Iraq in the 1990s, the US was pursuing a strategy of containment under the guise of coercion.

⁷⁷ Fearon, "Rationalist Explanations for War," (1995).

produce excessive demands.⁷⁸ Again, this explanation for coercion failure boils down to the problem of stake magnitude.

Second, compellence success may depend on the nature of the stake and its relationship to the relative power between coercer and target. That is, some coercers make demands over stakes which bear on the target's ability to defend itself, such as nuclear weapons programs. Targets may not acquiesce if conceding the stake makes them weaker relative to their coercer(s). When Czechoslovakia gave up the Sudetenland to Germany in 1938, they also gave up their border fortifications. Conceding the stake constituted a shift in relative power. Nonetheless, Czechoslovakia did acquiesce. This is not, however, an alternative explanation to coercive assurance theory. Rather, I account for this potential explanation in my case selection, as I pick cases of stakes with security implications. Credible assurance is all the more important in these cases. (See case selection section.)

Finally, theories on misperception in international politics are not alternative explanations for compellence failure. Rather, my investigation of the causes of coercive assurance assumes that targets are apt to misperceive the intentions of their coercers, but that assuring signals can overcome such bias. My theoretical propositions assume that relative power and relative will can be measured without war. This is the basic assumption of all theories of coercion, crisis bargaining, signaling and commitment—states can attempt to communicate private information about their intentions.

⁷⁸ Sechser, "A Bargaining Theory of Coercion," in Greenhill and Krause (eds.), *Coercion: The Power to Hurt in International Politics* (2018).

We have plenty of work that suggests that commitment problems should be difficult to navigate.⁷⁹ Yet scholars have also studied how to solve commitment problems.⁸⁰ So how do coercers mitigate these two fears?

Table E: Compellence Commitment Problems

<i>Commitment Problem</i>	<i>Driving Sources of the Problem</i>	<i>Time Horizon</i>
Coercive Restraint	• Entangled demands	Shorter
	• Fragmented coercers (domestic or international)	
Snowballing Demands	• Reputational fears (domestic or international)	Longer

⁷⁹ Fearon, “Rationalist Explanations for War,” (1995). Jervis says that states tend to see others’ behavior as threatening and their own behavior as non-threatening. Jervis, *Perception and Misperception*, p. 354. Consider also that power transition theory is premised on a fundamental commitment problem between rising powers and declining powers. Gilpin, *War and Change in World Politics* (1981; Copeland, *The Origins of Major War* (2000).
⁸⁰ Barbara Walter, for example, argues that third party interveners can end civil wars by guaranteeing the security of each side in a settlement, overcoming the commitment problem. This removes the problem of anarchy. Barbara Walter, “The Critical Barrier to Civil War Settlement,” *International Organization* 51 (Summer 1997), pp. 335-364. Alex Weisiger argues that wars last longer when both sides cannot credibly commit to limited aims, but sometimes they are able to keep wars limited. Alex Weisiger, *Logics of War* (Cornell University Press, 2013). Simmons and Danner argue that states join the ICC as a hand-tying mechanism to signal to rebels that the government will not engage in atrocities after signing a peace deal. Beth A. Simmons and Allison Danner, “Credible Commitments and the International Criminal Court,” *International Organization* 64 (Spring 2010), pp. 225-256. Page Fortna shows that the contents of peace agreements can impact the likelihood of war recurrence; demilitarized zones, dispute resolution commissions, peacekeeping, and external guarantees can maintain peace by mitigating commitment problems. Post-war bargaining should be an easier case for making credible assurances, because war should also help to reveal the balance of power among belligerents. Credible assurances provided outside of war are more puzzling. Page Fortna, *Peace Time* (Princeton University Press, 2004). One empirical study of “non-aggression pacts” finds that such agreements reduce conflict among signatories because of credible reassurance. Mattes and Vonnahme theorize that these agreements carry weight because they increase domestic and international audience costs. Michaela Mattes and Greg Vonnahme, “Contracting for Peace: Do Nonaggression Pacts Reduce Conflict?,” *Journal of Politics* 72, 4 (2010), pp. 925-938. I have focused here on the IR/Security literature, but see also other IPE literature on “time inconsistency problems,” which are commitment problems in a different context.

Deriving Causes of Credible Assurance from Existing Theory: Threat-Assurance Tradeoff

To derive theoretical propositions about coercive assurance from existing theory, I return to the literature on signaling and credible commitments. As established, most of this literature is concerned with the causes of credible threats and was never intended to speak to the problem of coercive assurance. We can, however, extend some generalizable propositions about credible commitments.

In international politics, and crisis bargaining in particular, states try hard to discern the capabilities and intentions of their adversaries. While still opaque, capabilities are relatively easier to discern than interests. As Jervis observed, “while a state’s intentions may be obvious in retrospect, they are often obscure at the time.”⁸¹ Leaders therefore use words and deeds to signal foreign policy interests and communicate resolve.⁸² They do so by engaging in costly signaling—hand tying and sunk costs.⁸³ Proposed mechanisms include mobilizing military forces,⁸⁴ raising the prospect of audience costs⁸⁵ or reputational costs,⁸⁶ strategies of commitment,⁸⁷ and brinksmanship.⁸⁸

⁸¹ Jervis, *The Logic of Images in International Relations* (1970), p. 9.

⁸² The faith that intent and credibility can be “signaled” and shape international politics beyond the dictates of relative power stems back to Schelling, *Strategy of Conflict* (1960) and *Arms and Influence* (1966), and Jervis, *The Logics of Images in International Relations* (1970). In Jervis’ words, “a desired image...can often be of greater use than a significant increment of military or economic power.” Jervis, *The Logic of Images in International Relations*, (1970), p. 6. See also Fearon, “Signaling Foreign Policy Interests: Tying Hands versus Sinking Costs,” (1997).

⁸³ Fearon, “Domestic Political Audiences and the Escalation of International Disputes,” (1994); Fearon, “Signaling Foreign Policy Interests: Tying Hands versus Sinking Costs,” (1997); Slantchev, “Military Coercion in Interstate Crises,” (2005).

⁸⁴ Fearon, “Signaling Foreign Policy Interests: Tying Hands versus Sinking Costs,” (1997); Fuhrmann and Sechser, “Signaling Alliance Commitments: Hand-Tying and Sunk Costs in Extended Nuclear Deterrence,” (2014).

⁸⁵ Fearon, “Domestic Political Audiences and the Escalation of International Disputes,” (1994); Fearon, “Signaling Foreign Policy Interests: Tying Hands versus Sinking Costs,” (1997); Schultz, *Democracy and Coercive Diplomacy* (2001); Ramsay, “Politics at the Water’s Edge: Crisis Bargaining and Electoral Competition,” (2004); Weeks, “Autocratic Audience Costs: Regime Type and Signaling Resolve,” (2008).

⁸⁶ Press, *Calculating Credibility* (2005); Mercer, *Reputation and International Politics* (1996); Sartori, *Deterrence by Diplomacy* (2005).

⁸⁷ Schelling, *Strategy of Conflict* (1960); and Schelling, *Arms and Influence* (1966).

⁸⁸ Schelling, *Strategy of Conflict* (1960); and Schelling, *Arms and Influence* (1966).

This body of theory is limited in its applicability to signaling coercive assurance credibility for two reasons. First, it is assumed in the canon of signaling that threateners would rather not carry out their threats.⁸⁹ This may be true of certain leaders, but not necessarily all, and especially not all potential future leaders.⁹⁰ Even a proportion of the intended “audience” invoked with audience costs theory may prefer punishment not contingent upon the targets actions. Second, and most importantly, the canon speaks to how states can credibly commit to doing something—making good on threats or coming to the aid of allies.⁹¹ Strategies of coercive assurant commitment, on the other hand, look for ways to credibly commit not to do something. To torture an analogy, rather than burning the bridges behind you, they seek to burn the bridges some distance in front of you.

I derive Threat-Assurance Tradeoff theory from this canon. It proposes that threat and assurance credibility are locked in an inverse linear relationship. Anything I do to improve my threat undermines my assurance; and anything I do to improve assurance undermines my threat.

The theory is logically sound. As Jervis acknowledged, limiting capabilities can “provide convincing evidence of peaceful intentions by revealing that the state does not have the capability to perform aggressive actions.”⁹² Perhaps that is why existing invocations of

⁸⁹ Fearon, “Signaling Foreign Policy Interests: Tying Hands versus Sinking Costs,” (1997).

⁹⁰ Fearon does admit that longer-term audience costs are harder to generate, suggesting that if audience costs are useful for signaling assurance at all they are more useful for mitigating the Coercive Restraint commitment problem and not the Snowballing Demands commitment problem. Fearon, “Signaling Foreign Policy Interests: Tying Hands versus Sinking Costs,” (1997).

⁹¹ As a signal of commitment, reassuring allies is theoretically akin to threatening adversaries. Adversaries are indeed the ultimate (though not the only) target of ally reassurances. On ally reassurance credibility, see Fearon, “Signaling Foreign Policy Interests: Tying Hands versus Sinking Costs,” (1997); Fuhrmann and Sechser, “Signaling Alliance Commitments: Hand-Tying and Sunk Costs in Extended Nuclear Deterrence,” (2014). Only a small proportion of the literature on commitment and signaling pertains to reassuring allies. Far more concerns threats only.

⁹² Jervis, *The Logic of Images in International Relations* (1970), p. 38. Such a proposition is practically limited, however, as Jervis recognized: “Sometimes a state can provide the kind of evidence about its intentions which a deceiver could not. For example, a state could prove it was peaceful by totally and unilaterally disarming,” but then he cautioned, “it is apt to be costly or risky.” Jervis, *The Logic of Images in International Relations* (1970), p. 11.

incredible assurances as an independent variable conform to this logic. For example, the “madman strategy” is said to fail because the very condition of being mad or unpredictable, which bolsters threat credibility, undermines assurance.⁹³ Terrorist violence is similarly said to fail to compel concessions because terrorist tactics undermine assurance.⁹⁴ And Feaver and Lorber, writing of the challenge of “unwinding” complex sanctions once the target has complied, advise that sanctions “stickiness” makes them “more effective in the short run, but counterproductive in the long run.”⁹⁵ Indeed, the very framing of the puzzle of much work on coercive diplomacy—that powerful states are ironically poor coercers—is premised on this notion that the ingredients of threat credibility, such as relative power, undermine assurance credibility.⁹⁶

Nascent theory on the causes of assurance credibility also treats the concept as an inverse linear trade-off with threat credibility. Andrew Kydd and Roseanne McManus using a game theoretical model have shown the utility of assurances as a complement to threats (both relying on audience costs for a hand-tying signaling effect).⁹⁷ Using a bargaining model of war, they argue that assurances are necessary only when war would result without them. Their theory embraces the tradeoff of threats and assurances. “Assurances may hamper the coercive impact of

⁹³ Roseanne McManus, “Crazy Like a Fox? Do Leaders Perceived as Mentally Unstable Achieve Better Conflict Outcomes?” Working Paper.

⁹⁴ Max Abrahms argues that terrorism fails to achieve concessions through coercion because the use of terrorist violence undermines the coercive assurance that violence will cease if compliance is forthcoming. Max Abrahms, “The Credibility Paradox: Violence as a Double-Edged Sword in International Politics,” *International Studies Quarterly* 57, 4 (December 2013), pp. 660-671.

⁹⁵ Peter D. Feaver and Eric B. Lorber, “Coercive Diplomacy: Evaluating the Consequences of Financial Sanctions,” Legatum Institute (November 2010), p. 7.

⁹⁶ Sechser, “Goliath’s Curse,” (2010); Haun, *Coercion, Survival, and War* (2015); even older work on coercive diplomacy emphasized the “limits” of coercion, even for major powers such as the United States, Alexander L. George and William E. Simons (eds.), *The Limits of Coercive Diplomacy*, 2nd edition, (Westview Press, 1994); Robert J. Art and Patrick M. Cronin (eds.), *The United States and Coercive Diplomacy* (Washington, DC: United States Institute of Peace, 2003).

⁹⁷ Andrew H. Kydd and Roseanne W. McManus, “Threats and Assurances in Crisis Bargaining,” *Journal of Conflict Resolution* 61, 2 (2017), pp. 325-348.

threats, and threats may inhibit the peace-inducing function of assurances,” they write. “This raises the question of how often it is truly optimal to make both threats and assurances.”⁹⁸ Kydd and McManus also only examine hand-tying signals; they argue that sunk cost signals would introduce even more of a tradeoff between threat and assurance credibility.⁹⁹ Todd Sechser has also followed up his scholarship on compellence with a recent statistical testing of the impact of some assurant independent variables on the outcome of compellence.¹⁰⁰ Using his Militarized Compellent Threats dataset, Sechser reveals a correlation between compellence failure and closer geographic proximity, a history of past aggression, and the ability to project military power. All of these variables assume a direct tradeoff between threat and assurance credibility—what bolsters one weakens the other.¹⁰¹ Finally, Tristan Volpe leverages the concept of coercive assurance to develop a theory of how potential nuclear proliferators compel concessions from the United States with threats to build the bomb.¹⁰² Volpe’s “Goldilocks principle” of a “sweet spot” for bargaining explicitly theorizes that proliferators trade off threat and assurance credibility as they develop greater nuclear latency (infrastructure and expertise) and move closer to the bomb. Too close, he argues, and proliferators undermine the assurance that they will not proliferate even if the U.S. strikes a deal.

Threat-Assurance Tradeoff theory makes clear predictions about what we should observe empirically. Variations in threat and assurance credibility should be inversely linear. If targets of compellence concede, they should do so when a threat is credible, but not too credible. Coercers

⁹⁸ Ibid, p. 328.

⁹⁹ Ibid, p. 345.

¹⁰⁰ Todd S. Sechser, “Reputations and Signaling in Coercive Bargaining,” *Journal of Conflict Resolution* 62, 2 (2018), pp. 318-345.

¹⁰¹ The same can be said of Liebman, who argues that rising powers have trouble credibly assuring because in the future they will be more capable. Alexander Liebman, “The Timing of Power: Threats, Assurances and Expanding Interests,” PhD Thesis, Harvard University, Cambridge, MA (2009).

¹⁰² Tristan A. Volpe, “Atomic Leverage: Compellence with Nuclear Latency,” *Security Studies* 26, 3 (2017), pp. 517-544.

making extremely credible threats are less likely to successfully compel their targets, because threats need to be balanced with assurance. Moreover, variables that contribute to credible assurance should also reduce the credibility of threats, such as changes in relative capability.

H4a: When perceptions of threat credibility spike, assurance credibility will decrease and targets will demand greater assurance.

H4b: Perceptions of greater assurance credibility should be accompanied by decreases in threat credibility.

H4c: Threats increasing in credibility will reach a point of diminishing returns. If a threat is increasing in credibility, a target will be more likely to concede before the threat becomes maximally credible (i.e. threats can be too credible).

Threat-Assurance Independence

An alternative theory proposes that threat and assurance credibility can be perceived independently. Of course, they remain *interdependent*, as threats always imply assurances. But rather than trading off credibility, Threat-Assurance Independence theory says that the credibility of threats and assurances may be individually judged by a target. They are not strictly inversely related. Threat and assurance credibility may both be high, or both be low, at any given time. Indeed, some existing theory suggests that it is possible to communicate the contingency of states' actions.¹⁰³

¹⁰³ Contributing to the literature on “linkages,” Kenneth Oye identified three types of contingent action—exchange, extortion, and explanation—differentiated by the interest of the linker. (Elsewhere he calls these backscratching, blackmailing, and bracketing.) “While extortionists and backscratchers [i.e. exchangers] are seeking to construct a connection between issues,” wrote Oye, “the explainer is pointing to an already existing connection between issues.” While Oye did not put it in these terms, credible assurance is what makes explanation work. “To increase the credibility of threats and promises, a shrewd linker will seek to manipulate the linkee’s image of the linker’s beliefs. If the linkee can be convinced that the linkage is explanation, both threats and promises become entirely credible.”

H5a: Perceptions of threat credibility may remain the same or increase as perceptions of assurance credibility increase.

H5b: Variables may bolster the perception of assurance credibility without affecting the perceived credibility of threats.

Within this framework, I propose three additional theories on the causes of coercive assurance credibility, which I deduce from the variables that drive each commitment problem.

Mitigating the Coercive Restraint Commitment Problem: Disentangling Demands and Exerting Coercive Control

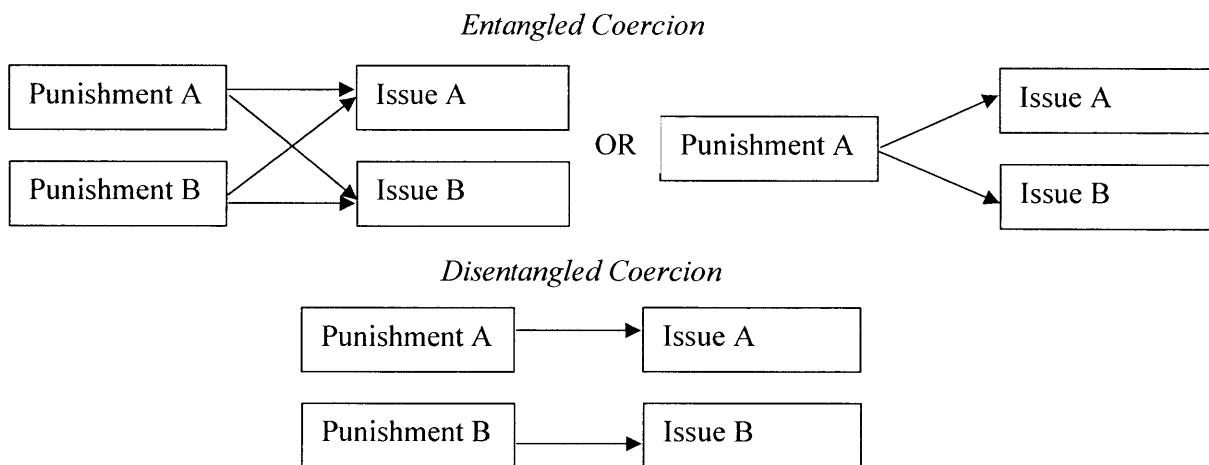
Two propositions on the causes of credible assurance can be derived from an investigation of the variables that drive the Coercive Restraint commitment problem. I call these proposition Disentangling Demands and Exerting Coercive Control.

Targets of compellence legitimately fear that a coercer may punish them regardless of whether they comply. If a coercer is “mad already,” a target’s defiance runs little or no additional risk of pain.¹⁰⁴ A rational, unitary coercer with a single demand would have no incentive to punish a target after it complies, but targets do not always perceive their coercers as such. Instead, coercers often make multiple demands of targets and navigate their own domestic and international coalitions which contain actors of varying interests.

Unfortunately, there has been little scholarly follow up on Oye’s innovative “logics of contingent action.” Kenneth A. Oye, *Economic Discrimination and Political Exchange* (Princeton University Press, 1992), pp. 43-45.

¹⁰⁴ Schelling, *Arms and Influence*, p. 74, footnote 18.

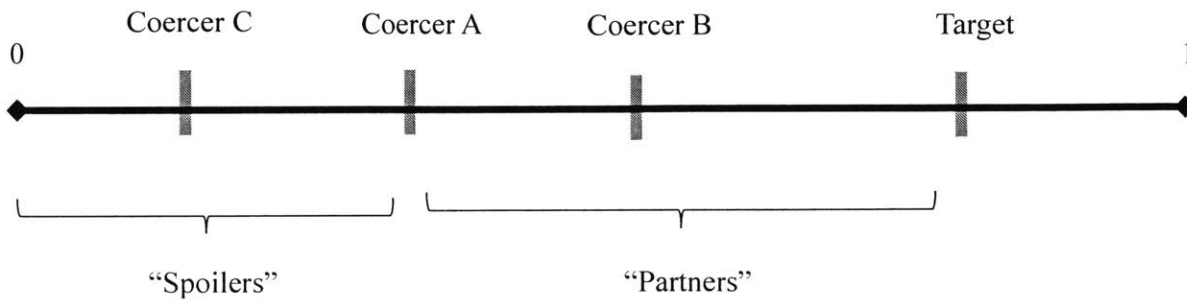
First, coercers sometimes make multiple demands of targets. When they do so, they may either entangle the multiple issues or disentangle them (see diagram below). Multiple issues are entangled if they are tied to the same threatened punishment(s). Disentangled issues are independently contingent on separable threatened punishments. If the issues are entangled, a target may rationally calculate that it cannot avoid punishment by conceding to one demand while the other demand remains unsated. Unless the multiple demands are kept disentangled, each with its own discrete punishment, a target faces a choice between conceding to all demands or conceding to none. It lacks the coercive assurance to make partial concessions. Coercive bargains therefore are more easily struck when issues are disentangled.¹⁰⁵



Second, targets may perceive a lack of coercive assurance because of the capabilities and interests of third parties. Arrayed on a notional bargaining space, multiple coercers capable of

¹⁰⁵ This runs counter to the cooperation literature, which finds that cooperation is more likely “by breaking up one larger transaction into a series of smaller ones.” “At each transaction each can see whether the other has cooperated; and its losses, if the other defects, will be small.” Robert Jervis, “Cooperation Under the Security Dilemma,” *World Politics* 30, 2 (1978), p. 181. He cites Schelling, *The Strategy of Conflict* (1960), pp. 134-135. See also Robert O. Keohane, *After Hegemony* (Princeton University Press, 2005).

independent punishment may have greater or smaller demands of the target. Those with greater demands I call “spoilers” while those with smaller demands are “partners.” Consider this visually on a bargaining spectrum.



Coercer C’s demands of the target are greater than Coercer A’s demands. Coercer B’s demands are smaller than Coercer A’s demands. (These should be ranges, but to keep it simple I visualize them as reservation points, minimally acceptable bargaining positions.) If the target concedes to the demands of Coercer A, Coercer B will go along with the agreement, but Coercer C may not. In fashioning coalitions of coercers, therefore, from the perspective of Coercer A, anyone to the right (closer to 1) is a “partner” while anyone to the left (closer to zero) is a potential “spoiler”.

For targets, the existence of “partners” may be assuring—the costs of one actor reneging may be mitigated by the others not reneging. But the existence of “spoilers” undermines coercive assurance—how do I know that if I strike a bargain with *you* that *they* will not punish me anyway? Domestic or international spoilers can undermine a bargain (and thus can ex ante prevent the target from conceding) if they will refuse to abide it and take it upon themselves to punish. A coercer must therefore signal control over spoilers on the terms and tools of coercion both domestically and internationally.

Domestically, a coercer government might have to contend with organized political opposition. The context that would most undermine the coercive assurance of a government is one in which the other domestic actor is concurrently empowered to impose punishments. The United States Congress, for example, serving as a check against the executive, sometimes serves this role. The Obama administration experienced this problem up close during negotiation of the 2015 Iran Deal (JCPOA), having to either convince or creatively circumvent skeptical senators to unravel nuclear sanctions against Iran. At other times, domestic actors with greater coercive aims may not be empowered to impose punishments themselves but could otherwise rally opposition to a coercive bargain or torpedo the process. Signaling control over these domestic third-party impediments to credible coercive assurance should make successful compellence more likely.¹⁰⁶

Understanding how domestic factors affect international signaling is not a new observation.¹⁰⁷ Robert Jervis observed early on that “internal divisions and multiple audiences...usually reduce the ability of a state to control and manipulate its behavior to influence selected foreign audiences.”¹⁰⁸ And these divisions are most salient on the international stage when they divide elites.¹⁰⁹ Nevertheless, domestic factors have generally been studied by

¹⁰⁶ What I call domestic “control,” might otherwise be called aligning domestic interest groups with the Executive such that there is a single “national interest.” See Helen Milner, *Interests, Institutions, and Information: Domestic Politics and International Relations* (Princeton University Press, 1997).

¹⁰⁷ The field has long known that domestic politics matter to international outcomes—that states are not unitary actors. The assumption is often useful. Still, it is best to shake it off from time to time and assess the consequences of removing the assumption. In coercion, this has large effects on existing theory. On the impact of domestic cohesion on international cooperation, see Helen Milner, *Interests, Institutions, and Information: Domestic Politics and International Relations* (Princeton University Press, 1997). On how national security institutions shape signal reception, see Tyler Jost, “Decision by Design: National Security Institutions and Interstate Crisis,” PhD Thesis, Harvard University (2018). Jost’s work is at the intersection of bureaucratic politics and signaling theory. Recent work looks even further down at the first image level of analysis to argue that how signals (e.g. military mobilization signals) are received and interpreted is determined by individual-level dispositional factors, such as hawk/dove disposition. Keren Yarhi-Milo, Joshua D. Kertzer and Jonathan Renshon, “Tying Hands, Sinking Costs, and Leader Attributes,” *Journal of Conflict Resolution* 60, 10 (2018).

¹⁰⁸ Jervis, *The Logic of Images in International Relations* (1970), p. 14.

¹⁰⁹ Elizabeth N. Saunders, “War and the Inner Circle: Democratic Elites and the Politics of Using Force,” *Security Studies* 24, 3 (2015), pp. 466-501. On elite drivers of public opinion, see Adam Berinsky, “Assuming the Costs of War: Events, Elites, and American Public Support for Military Conflict,” *Journal of Politics* 69, 4 (2007), pp. 975-997.

coercion scholars only as they relate to threat credibility (they would call it resolve or leverage).¹¹⁰ Putnam's "two level game" framework, for example, explains how stalwart domestic veto players can improve a negotiator's bargaining positions in international fora.¹¹¹ Byman and Waxman discuss the negative effects of domestic constraints—such as the necessity of public justification for the use of force, the need to avoid killing civilians, and casualty sensitivity—on American threat credibility.¹¹² Finally, Schultz's novel incorporation of domestic opposition party into a model of crisis bargaining was the first attempt to introduce a third actor into Fearon's bargaining model of war.¹¹³ He found that a domestic opposition party "decreases the ex ante probability of war by helping to reveal information about the state's preferences." War by bargaining failure due to private information is less likely between democracies. But Schultz did not extend his model to capture the divergent preferences of competing parties over whether to punish even after a target concedes.

Coercers may struggle to communicate credible coercive assurance because of international third-parties as well. First, coercers sometimes compel by coalition. In so doing, they must signal that each member of the coalition will be restrained by a bargain and not defect to carry out punishments independently. Second, other potential "spoiler" states must be coopted into the coalition or otherwise controlled by the coercer(s) such that the target believes it is

¹¹⁰ One exception exists in the study of international cooperation. Helen Milner counters the Putnam hypothesis that internal divisions are a source of external leverage by showing that "the more divided the government, the less likely international cooperation is but the better off the legislature will be in any agreement that can be made." No one has applied this insight to the study of coercion. See Milner, *Interests, Institutions, and Information*, p. 97.

¹¹¹ Robert D. Putnam, "Diplomacy and Domestic Politics: The Logic of Two-level Games" *International Organization* 42, 3 (Summer 1988), pp. 427-460.

¹¹² Daniel Byman and Matthew Waxman, *The Dynamics of Coercion* (RAND, 2002), pp. 130-151. In a similar framing, Pfundstein Chamberlain argues that the United States issues "cheap threats," because the American way of war reduces the cost of conflict on society, thus its threats are backed by limited resolve and are more likely to fail. Dianne Pfundstein Chamberlain, *Cheap Threats: Why the United States Struggles to Coerce Weak States* (Georgetown University Press, 2016).

¹¹³ Kenneth A. Schultz, "Domestic Opposition and Signaling in International Crises," *American Political Science Review* 92, 4 (1998), pp. 829-944.

bargaining with the right interlocutor. They would find no sense in acquiescing to one coercer's demands only to have another coercer punish them despite their concessions.

Existing theoretical work on international coalitional coercion also typically addresses the mechanisms by which having multiple coercers can either bolster or diminish threat credibility and bargaining leverage.¹¹⁴ Christensen is a rare outlier. He shows that a lack of credible assurance due to “disorganization and discord in alliance politics” made “the maintenance of peace through coercive diplomacy in Asia very difficult.”¹¹⁵ Related relevant theories comes from the literature on alliance restraint. If more powerful allies can constrain the behavior of weaker allies, they should send more credible signals of coercive assurance.¹¹⁶ This work, however, does not take the additional step of connecting alliance dynamics to the context of coercion with adversaries. Intra-alliance communication among coercers in an alliance can serve a signaling function to targets. As both Jervis and Schelling appreciated, “messages in a strategic dialogue are often best conveyed not by speaking directly to the adversary, but rather by speaking ‘seriously to some serious audience and let[ting] him overhear.’”¹¹⁷

Overall, targets need to know that concession will lead to no punishment and that they are bargaining with the right coercer who will be able to control whether and when any punishment is carried out. Disentangling demands and reducing the prospect of spoilers to a coercive bargain

¹¹⁴ Byman and Waxman, *The Dynamics of Coercion*, p. 152-174.

¹¹⁵ Thomas J. Christensen, *Worse Than a Monolith: Alliance Politics and the Problem of Coercive Diplomacy in Asia* (Princeton University Press, 2011), p. 260. Christensen's excellent book does not focus on compellence nor on specifying the causes of credible assurance.

¹¹⁶ Pressman argues that “merely being the more capable ally is not sufficient to prevail in an alliance restraint dispute.” Rather, the more powerful ally must mobilize its power. Jeremy Pressman, *Warring Friends: Alliance Restraint in International Politics* (Cornell University Press, 2008), p. 15. Glenn Snyder was not primarily interested in explaining alliance restraint in his classic book, *Alliance Politics*, but his framework points to reassurance of an allies security fears, dependence, and norms will help powerful states restrain allies. Glenn Snyder, *Alliance Politics* (Cornell University Press, 1997).

¹¹⁷ Thomas Schelling, “Signals and Feedback in the Arms Dialogue,” *Bulletin of the Atomic Scientists* 21 (January 1965), p. 10. Jervis, *The Logic of Images in International Relations* (1970), p. 44.

will bolster the credibility of coercive assurance by mitigating the effects of the commitment problem of Coercive Restraint.

These theories predict that we should observe empirically that targets will not concede when multiple demands are linked to the same punishment(s) and that domestically or internationally fragmented coercers are less likely to achieve coercive success because targets will not perceive credible assurance. Targets should concede only after a coercer disentangles demands and/or signals that potentially rogue veto players will not act independently against the coercer's wishes.

H6_{D1}: Targets will not concede if multiple demands are linked to the same punishment(s).

H6_{D2}: Targets will concede after a coercer disentangles multiple demands by making them independently contingent on separable punishments.

H7_{C1}: Targets will fear fragmented coercers

H7_{C2}: Targets will not concede if a veto player could act independently to spoil a coercive bargain

Mitigating the Snowballing Demands Commitment Problem: Reducing Visibility

A final theoretical proposition on the causes of credible assurance can be derived from the variables that drive the Snowballing Demands commitment problem. I call this proposition Reducing Visibility.

Scholars of coercion have long noted that states are loath to concede to compellent demands. Robert Art argued that, compared to deterrence, compellence “demands more

humiliation.”¹¹⁸ Targets of compellence fear acquiring a reputation for backing down, leading to snowballing demands.¹¹⁹ While scholars continue to debate whether it is possible for states to develop certain reputations,¹²⁰ states and leaders consistently believe it to be so. The historical record is littered with such examples. Saddam Hussein privately fretted about his reputation in the eyes of Iran and other regional rivals if he capitulated to the demands of the United States. Nehru believed that making even a single concession on the Sino-Indian border would encourage Chinese “nibbling.” “If we show weakness advantage will be taken immediately,” he argued.¹²¹ U.S. leaders frequently cited reputational concerns in justifying military actions and obstinate positions in disputes. Face is worth saving, targets of coercion believe, because others will be less likely to come asking for more in the future.

To shelter a target state from these perceived costs of acquiescence, coercers can reduce the visibility of the coercive episode by restricting the amount of information that other potential coercers (domestic or international) can use to draw inferences. Coercers can achieve this by allowing targets to plausibly deny the extent of their concessions.¹²² When a coercer possesses good information about a target’s transgressions, it may choose not to publicize the information. Even after any deal becomes public, which it eventually will, obfuscation by the coercer means that the most humiliating aspect of the agreement may never come to light. Both the coercer and

¹¹⁸ Robert J. Art, “To What Ends Military Power,” *International Security* 4, 4 (Spring 1980), p. 10.

¹¹⁹ Sechser, “Goliath’s Curse” (2010).

¹²⁰ Press, *Calculating Credibility* (2005); Ted Hopf, *Peripheral Visions* (University of Michigan Press, 1995); Mercer, *Reputation and International Politics* (1996); Tomz, *Reputation and International Cooperation* (2007); Weisiger and Yarhi-Milo, “Revisiting Reputation: How Past Actions Matter in International Politics” (2015); Harvey and Mitton, *Fighting for Credibility: U.S. Reputation and International Politics* (2016); Allan Dafoe, Jonathan Renshon, and Paul Hutch, “Reputation and Status as Motives for War,” *Annual Review of Political Science* 17 (2014), pp. 371-393.

¹²¹ Cable to Raghavan, December 10, 1952, in Sarvepalli Gopal et al., eds., *Selected Works of Jawaharlal Nehru* (Second Series) (New Delhi: Jawaharlal Nehru Memorial Fund, 1984). Cited in Jost, “Decision by Design” (2018).

¹²² This is similar to the concept of face-saving. On helping your adversary to save face, see Schelling, *Arms and Influence* (1966), p. 125.

the target will collude to whitewash history. The proscribed behavior never occurred and the target never conceded. This mechanism is notably akin to the strategic manipulation of “selection effects” in coercion.¹²³ A low visibility concession takes a compelling demand and turns it into a deterrent demand in the eyes of third parties.¹²⁴ If a target believes that it can avoid forming a reputation in the eyes of third-parties, it should concede more readily.¹²⁵

¹²³ Scholars of deterrence have long noted how selection effects impede the empirical study of deterrence. The struggle for scholars of deterrence has always been knowing the ex ante preferences of actors. How do we know that a state was deterred? Perhaps it had no intention of changing the status quo in the first place. This selection problem has nonetheless always been strategically useful. States can be deterred but save face because they do not have to publicly concede to coercion. Plausible deniability is simply the strategic manipulation of this effect. For work on deterrence and selection effects see Christopher H. Achen and Duncan Snidal, “Rational Deterrence Theory and Comparative Case Studies,” *World Politics* 41, 2 (1989):143-169; Huth and Russett, “What Makes Deterrence Work: Cases from 1900 to 1980” (1984): 496-526; Lebow and Stein, “Deterrence: The Elusive Dependent Variable” (1990); Paul Huth and Bruce Russett, “Testing Deterrence Theory: Rigor Makes a Difference,” *World Politics* 42 (1990); James D. Fearon, “Signaling versus the Balance of Power and Interests,” *Journal of Conflict Resolution* 38, 2 (1994): 68-90; and Eugene Gholz and Daryl Press, “Untangling Selection Effects in Studies of Coercion,” Manuscript 2006.

¹²⁴ The coercer may continue to demand a change in behavior by the target. That is, the coercer’s demand remains a compelling one. But it can be perceived by third parties as one of deterrence, because obfuscation hides the concessions and therefore intentions of the target.

¹²⁵ A co-author and I have further developed a theory on the role of secrecy in coercion, although not focused on coercive assurance, in Cullen Nutt and Reid B.C. Pauly, “The Strategic Logic of Concealing the Sins of the Guilty,” Working Paper.

This theory of reducing visibility recognizes that states use secrecy strategically,¹²⁶ challenging the conventional wisdom that public commitments are best.¹²⁷ Existing work does not sufficiently appreciate this possibility of opaque concessions.¹²⁸

Empirically, this theory expects to find that coercers who refrain from publicizing the concessions of their targets will be more likely to achieve compelling success. Targets should fear making public concessions; and targets will be assured by a coercers' demonstrated ability and willingness to keep secrets about the them.

H8_{v1}: Targets will fear making public concessions

H8_{v2}: Targets confronted by coercers with unpublicized, private information about the target will be more likely to concede; that is, targets will be assured by a coercers' demonstrated ability and willingness to keep secrets about the them

¹²⁶ Others do this as well. Morgenthau acknowledged that secrecy enables leaders to make deals that would be distasteful to domestic audiences. Hans J. Morgenthau, *Politics Among Nations* (McGraw-Hill, 1948), p. 374. Carson and Yarhi-Milo argue that states can signal resolve through covert action. Austin Carson and Keren Yarhi-Milo, "Covert Communication: The Intelligibility and Credibility of Signaling in Secret," *Security Studies* 26, 1 (2017), pp. 124-156. McManus and Yarhi-Milo argue that the U.S. sends secret signals of support to autocratic protégés to avoid domestic charges of hypocrisy. Roseanne W. McManus and Keren Yarhi-Milo, "The Logic of 'Offstage' Signaling: Domestic Politics, Regime Type, and Major Power-Protégé Relations" *International Organization* 71, 4 (2017), pp. 701-733. Other work outside of literature on signaling agrees that deniability can be useful in diplomacy. "Constructive ambiguity" in negotiations can paper over sticking points with language sufficiently vague to allow different interpretations by each party. In the international political economy field, Jacqueline Best argues that a careful balance between coherence and ambiguity has held together consensus around post-war institutions. Jacqueline Best, *The Limits of Transparency: Ambiguity and the History of International Finance* (Cornell University Press, 2005).

¹²⁷ Fearon, "Domestic Political Audiences and the Escalation of International Disputes" (1994); Kenneth A Schultz, "Domestic Opposition and Signaling in International Crises," *American Political Science Review*, 92, 4 (1998), pp. 829-844.

¹²⁸ Greenhill and Art, for example, lament that "successful compellence requires that the target publicly give way to a coercer's demands," which can "damage the target's reputation." This need not always be so. Robert Art and Kelly Greenhill, "Coercion: A Primer," in Greenhill and Krause (eds.), *Coercion: The Power to Hurt in International Politics* (2018), p. 18. Perhaps the work comes closest to appreciating how concessions can be hidden is by Austin Carson, who shows how plausible deniability about the use of force can prevent conflict escalation through tacit bargaining. Austin Carson, "Facing off and Saving Face: Covert Intervention and Escalation Management in the Korean War," *International Organization* 70, 1 (2016), pp. 103-131. Even implausible deniability can have this effect. See Austin Carson, "Hidden in Plain Sight: Escalation Control and the Covert Side of the Vietnam War," Working Paper (February 8, 2017); Austin Carson, *Secret Wars: Covert Conflict and International Politics* (Princeton University Press, 2018).

Unpacking the Effects of Each Mechanism

All three of the mechanisms—Disentangling Demands, Coercive Control, and Reducing Visibility—bolster the credibility of coercive assurance in two ways: (1) by a direct effect of removing some barrier to target concession, and (2) by a signaling effect that conveys information to the target about a coercers’ intentions. Strong states are always capable of renegeing, but their actions communicate information about their intent. Targets seeking to avoid punishment look for these signals to judge the credibility of coercive assurance.

Mechanism	Direct Effect	Signaling Effect
<i>Disentangling Demands</i>	Punishments possible to lift separately	Willing to strike a limited bargain
<i>Coercive Control (Domestic and International)</i>	Spoilers less likely to act independently	Not building a coalition for aggression
<i>Reducing Visibility (Domestic and International)</i>	Less information for others to draw inferences	Not seeking a pretext for aggression

Disentangling demands has both a direct effect and a signaling effect. First, by separating the punishments applied to each demand, it removes a practical impediment to coercive assurance. Punishments once impossible to lift separately may now be lifted individually. Second, disentangling demands sends a signal of a coercer’s sincerity to strike a bargain. If a duplicitous coercer intends to meet a limited concession with only further demands and punishment, it would have no reason to do the work of disentangling its demands in the first place. Disentanglement requires some change to existing policy, including the prioritization of

aggregated demands. Lumping demands together is the easier option. Disentangling them is more difficult, as states have to make multiple specific threats instead of one big one or upset an interest group whose demands they deprioritized. A coercer who will only accept all or nothing should struggle to compel concessions. Tying each of one's demands to separable punishments signals that one is not after 'all or nothing'.

The coercive assurance effects of disentangling demands stem from its manipulation of the number of stakes, distinct from the manipulation of the magnitude of stakes. Disentangling demands may have the additional effect of decreasing the magnitude of a coercer's demands. That is, abandoning a larger demand for regime change in favor of a smaller demand to end human rights abuses will make coercion more likely to succeed. But, as discussed in this chapter's section on alternative explanations, this is not a problem of coercive assurance.

Exerting coercive control also has two effects, direct and signaling. First, the direct effect of removing veto players from the coercive interaction assures targets that they are bargaining with the right coercer(s). It is thus less likely that another actor will emerge to make further demands after the target concedes. Second, coercive control also conveys signaling information about the intent of the coercer. Freezing spoilers out of coercive bargaining communicates to the target that its coercers are not seeking a pretext for punishment. A duplicitous coercer bent on punishment would not put in the work of controlling spoilers, for example, with reassurance or bribery. The interests of spoilers and duplicitous coercers overlap. An assuring coercer thus takes action to distinguish itself from potential spoilers.

Finally, the mechanism of reducing visibility bolsters coercive assurance in two ways. First, it has the direct effect of limiting the amount of information available to third parties about a target's concessions. With less information, audiences (domestic or international) can draw

fewer inferences about the nature of a target's acquiescence. Targets who are concerned about acquiring a reputation for making concessions will find it easier to concede if they are spared the reputational costs. Second, reducing visibility conveys a signal about the coercer's intent not to renege and punish capriciously. A coercer intent on building the case for greater punishment would wish to publicize the wrongdoings of a target. Through its forbearance a coercer is sending a signal to targets that it is withholding additional pain and risk that it could have brought to bear on the target. I could hurt you more but I'm choosing not to. Targets perceive that the coercer is not merely building a public justification for aggression. And if the target complies now, the coercer will continue to obfuscate about its past misdeeds.¹²⁹ Sacrificing transparency may also cost the coercer the foregone benefits of a domestic political victory lap or the demonstration benefits of revealing that violators will be caught and punished.

Are Attempts to Communicate Coercive Assurance Rare? If so, Why?

Why don't states seek to disentangle demands, exert coercive control, and reduce visibility all the time? There are three potential answers to this question. First, coercers may assure more than scholars realize and thus the empirical record will bear out the logic of these coercive assurance theories in practice. Second, it may be that coercers think that assurance is not necessary in compellence and so they do not try to communicate it. Third, it is possible that assurance is somehow costly to coercers. Coercers believing in Threat-Assurance Tradeoff theory could explain a lack of coercer attempts at assurance. They may simply prioritize making credible threats over credible assurances and think that only one is possible. Coercers may also

¹²⁹ Complementary to Yarhi-Milo, who argues that secret signals are credible because they can be revealed by targets, I show that secret signals are credibly assuring because they could be revealed but are hidden by a forbearing coercer. Keren Yarhi-Milo, "Tying Hands Behind Closed Doors: The Logic and Practice of Secret Reassurance," *Security Studies* 22 (2013): 405-435.

think that demonstrating coercive control is detrimental for other reasons, for example, spending the political capital necessary to overcome alliance or congressional opposition may not be worth it. Coercers may also think that reducing the visibility of target concessions is disadvantageous, for instance because publicly compelling an adversary accrues domestic or international reputational benefits to the coercer, a coercer's domestic norms demand transparency, or publicizing violations helps to defend normative regimes.¹³⁰

Structural impediments may also hinder the opportunity of coercers to leverage the mechanisms of coercive control and reducing visibility. Legislatures, for example, are often institutionally designed to be a check on executives, limiting the prospect of say a U.S. president exerting control over Congress. Moreover, in order to reduce the visibility of concessions, at least some portion of a target's transgressions must be secret to begin with. A target without secrets would not be possible to assure through the mechanism of reducing visibility.

Finally, it should be empirically rare to observe cases of reneged assurance after a coercive bargain is struck. Coercers that cannot credibly communicate coercive assurance should not successfully compel their targets to make concessions in the first place. Thus, non-contingent punishments are feared by targets, but uncommonly observed in practice.

Case Selection

To investigate all competing theories, I chose a universe of cases that is (1) substantively important, (2) in which adversaries make a range of compelling threats over similar stakes, and

¹³⁰ Allison Carnegie and Austin Carson, "The Spotlight's Harsh Glare: Rethinking Publicity and International Order," *International Organization* 72, 3 (Summer 2018), pp. 627-657. On the other hand, covering up the nuclear proliferation violations of a transgressor state may also be useful for defending the nonproliferation regime. Enforcer states or institutions may not want others to know that it is possible to clandestinely pursue nuclear weapons and evade detection. Studies of human cognition reveal such dynamics at the individual-level. People are more likely to break rules if they are told that others have violated them and gotten away with it before. See Robert A. Cialdini, "Managing Social Norms for Persuasive Impact," *Social Influence*, 1, 1 (2006), pp. 3-15.

(3) in which there is sufficient available evidence to adjudicate my explanations versus alternatives. These criteria led me to coercive bargaining between non-allies over nuclear weapons programs.

First, nuclear weapons proliferation is a consequential problem of our time. There is important variation in the outcome of coercion over nuclear weapons programs. Many more states have pursued nuclear weapons than have acquired nuclear weapons, some ending their pursuit at an acceptable level of nuclear “latency” as a hedge to leave open future decisions. And while not all cases of nonproliferation success can be attributed to coercion, more can than scholars have recognized. Nonproliferation is often, in fact, a process of coercive bargaining over how much nuclear capability coercers are willing to accept from potential proliferators.¹³¹ Sometimes target states accede to coercer demands in formal agreements. Other times they do so tacitly. Still other times they defy. I explain the occurrence of these nuclear nonproliferation bargains.

Second, selecting this universe controls for some potential confounding variables which makes these hard cases to make coercive assurance credible. The results are therefore more likely to generalize beyond the universe. Each case is high stakes for the states involved. Targets care deeply about the outcome, mainly because it bears so greatly on their own security.¹³² Indeed, we should expect that only the most determined proliferators select into the dataset, as

¹³¹ Thus, nuclear counter-proliferation is not an inherently maximalist demand. Nuclear weapons programs may be decoupled from the survival of the state.

¹³² Credible coercive assurance should be difficult to communicate if the target is giving up a security asset, such as a nuclear weapons program. As Greenhill and Art acknowledge, “giving way once can weaken the target enough militarily that it is harder to stand up to the compeller if it comes back for more concessions.” Robert Art and Kelly Greenhill, “Coercion: A Primer,” in Greenhill and Krause (eds.), *Coercion: The Power to Hurt in International Politics* (2018), p. 18. Kydd and McManus concur, writing, “assurances are most likely to be needed when a state is attempting to compel a change to the status quo, changing the status quo would shift the balance of power, and other states wonder how far its ambitions extend.” Kydd and McManus, “Threats and Assurances in Crisis Bargaining” (2017), p. 326.

states calculate ahead of time that they are willing to run the risks of proliferating.¹³³ Coercers also select into countering some programs and not others. We should expect coercers to attempt to compel only those targets whose compliance they deem to be possible. But because the consequences are so grave, the toolkit that coercers use to prevent proliferation is vast. Plus, nuclear proliferation is an issue where significant resources are devoted to intelligence collection, often offering compellers ample data to calibrate their demands and threats.

Third, I pick cases of non-allied coercive bargaining, as it is the harder case for theories of assurance. Allies, with shared interests or a history of peaceful interaction, should have an easier time assuring each other that they will not carry out threats.¹³⁴

Fourth, this universe is ideal for case studies and process tracing because there is ample evidence available. The scholarship on nuclear proliferation is rich. Much investigation has gone into uncovering who has and has not attempted to build nuclear weapons. I can be reasonably confident that I have not systematically overlooked a portion of the case universe.

As the literature on nuclear proliferation has moved beyond research on the demand side¹³⁵ (why states want nuclear weapons) and supply side¹³⁶ (what makes it easier for states to

¹³³ Nick Miller explains this selection effect. States are deterred from proliferating before they even begin a program. Miller, "The Secret Success of Nonproliferation Sanctions" (2014).

¹³⁴ On alliance coercion, see Alexander Lanoszka, *Atomic Assurance: The Alliance Politics of Nuclear Proliferation*, (Cornell University Press, 2018); Robert Reardon, "Nuclear Bargaining: Using Carrots and Sticks in Nuclear Counter-proliferation," PhD dissertation, Massachusetts Institute of Technology, 2010; and Gerzhoy, "Alliance Coercion and Nuclear Restraint" (2015).

¹³⁵ Scott D. Sagan, "Why do States Build Nuclear Weapons? Three Models in Search of a Bomb," *International Security* 21, 3 (Winter 1996), pp. 54-86; Peter J. Katzenstein (ed.), *The Culture of National Security: Norms and Identity in World Politics* (Columbia University Press, 1996); Sonali Singh and Christopher R. Way, "The Correlates of Nuclear Proliferation: A Quantitative Test," *Journal of Conflict Resolution* 48, 6 (2004); Etel Solingen, *Nuclear Logics: Contrasting Paths in East Asia and the Middle East* (Princeton University Press, 2007); Philipp C. Bleek, "Why Do States Proliferate? Quantitative Analysis of the Exploration, Pursuit, and Acquisition of Nuclear Weapons," in *Forecasting Nuclear Proliferation in the 21st Century: The Role of Theory, Volume 1* (2010), pp. 159-192; Nuno P. Monteiro and Alexandre Debs, "The Strategic Logic of Nuclear Proliferation," *International Security* 39, 2 (Fall 2014), pp. 7-51.

¹³⁶ Stephen M. Meyer, *The Dynamics of Nuclear Proliferation* (University of Chicago Press, 1984); Dong-Joon Jo and Erik Gartzke, "Determinants of Nuclear Weapons Proliferation," *Journal of Conflict Resolution* 51, 1 (2007), pp. 167-194; Matthew Fuhrmann, "Taking a Walk on the Supply Side: The Determinants of Civilian Nuclear Cooperation," *Journal of Conflict Resolution* 53, 2 (2009), pp. 181-208; Matthew Kroenig, *Exporting the Bomb:*

get nuclear weapons), scholars have grown to appreciate the non-linear process of proliferation with work on nuclear rollback, reversal, and the political and technical processes of proliferation (decisions that states make along the way to the bomb).¹³⁷ With this turn to examining the process of proliferation, scholars also began to ask why states attack nuclear programs,¹³⁸ whether economic sanctions impede proliferation,¹³⁹ how nuclear patrons coerce allies into remaining non-nuclear,¹⁴⁰ and how superpower adversaries colluded to stem proliferation.¹⁴¹ The focus of this book thus fits with a recent turn in the political science literature on nuclear proliferation toward understanding the strategic interaction of proliferators and counterproliferators.¹⁴² However, little work has been done to understand the role coercive assurance in these interactions.¹⁴³

Technology Transfer and the Spread of Nuclear Weapons (Cornell University Press, 2010); David Albright, *Peddling Peril: How the Secret Nuclear Trade Arms America's Enemies* (Free Press, 2010); R. Scott Kemp, "The Nonproliferation Emperor Has No Clothes: The Gas Centrifuge, Supply-Side Controls, and the Future of Nuclear Proliferation," *International Security* 38, 4 (Spring 2014), pp. 39-78.

¹³⁷ Ariel E. Levite, "Never Say Never Again: Nuclear Reversal Revisited," *International Security* 27, 3 (Winter 2002/2003), pp. 59-88; Vipin Narang, "Strategies of Nuclear Proliferation: How States Pursue the Bomb," *International Security* 41, 3 (Winter 2016/2017); Jacques E.C. Hymans, *Achieving Nuclear Ambitions: Scientists, Politicians, and Proliferation* (Cambridge University Press, 2012); Malfrid Braut-Hegghammer, *Unclear Physics: Why Iraq and Libya Failed to Build Nuclear Weapons* (Ithaca, NY: Cornell University Press, 2016).

¹³⁸ Matthew Fuhrmann and Sarah E. Kreps "Targeting Nuclear Programs in War and Peace: A Quantitative Empirical Analysis, 1941-2000," *Journal of Conflict Resolution* 54, 6 (2010), pp. 831-859; Rachel Whitlark, "All Options on the Table? Nuclear Proliferation, Preventive War, and a Leader's Decision to Intervene," Book Manuscript.

¹³⁹ Miller, "The Secret Success of Nonproliferation Sanctions" (2014); Fuhrmann and Kreps, "Targeting Nuclear Programs in War and Peace," (2010). See also IPE explanations, such as Solingen, *Nuclear Logics* (2007).

¹⁴⁰ Gerzhoy, "Alliance Coercion and Nuclear Restraint" (2015); Francis J. Gavin, "Strategies of Inhibition: US Grand Strategy, the Nuclear Revolution, and Nonproliferation" *International Security* 40, 1 (2015), pp. 9-46; and Miller, "The Secret Success of Nonproliferation Sanctions" (2014).

¹⁴¹ Andrew J. Coe and Jane Vaynman, "Collusion and the Nuclear Nonproliferation Regime," *Journal of Politics* 77, 4 (2015), pp. 983-997.

¹⁴² Alexandre Debs and Nuno P. Monteiro, "Conflict and Cooperation on Nuclear Nonproliferation," *Annual Review of Political Science* 20 (2017). Other scholars have also turned to the proliferation universe of cases to test generalizable theory on economic sanctions. See Etel Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (Cambridge University Press, 2012), p. 6.

¹⁴³ The best work that bears on coercive assurance in nonproliferation is a volume on security assurances in nonproliferation, edited by Jeffrey Knopf. However, the volume is light on theory and the dependent variable is not consistent between chapters. To the extent that the logic of negative assurance is interrogated, the authors focus on non-ally reassurance, rather than coercive assurance, or they conflate the two. This volume is evidence that the field needs a theory of coercive assurance, one that has relevance for coercion theory and the practice of coercive diplomacy. Jeffrey W. Knopf (ed.), *Security Assurances and Nuclear Nonproliferation* (Stanford University Press, 2012). Phil Haun has also recently shown how non-credible assurances contributed to unsuccessful American

Case Selection Within the Nonproliferation Universe

From the universe of coercive bargaining over nuclear weapons programs I selected individual cases for process tracing and comparative case study. I looked for variation in independent variables of interests, plus variation in the type of commitment problem vexing coercers—coercive restraint and snowballing demands. I also picked cases where there is evidence available to the researcher, as a target state’s perception of coercive threats and assurances are critical to adjudicating theories of coercion.

Coercive bargaining over the nuclear programs of South Africa, Libya, and Iran meet these criteria. These are substantively important cases. South Africa is the only country known to have built and then dismantled a nuclear arsenal in its entirety. Qaddafi negotiated away Libya’s nuclear program in 2003 only to be toppled in 2011 by the United States and its NATO allies. And Iran is the most recent case of successful coercive bargaining over a nuclear weapons program. Lessons to be learned from this case are still emerging, and no definitive history of the Iran case has yet been written, let alone an analysis of its coercive dynamics.

These cases also capture variation on the dependent variable—success or failure of coercion. While the culmination of negotiations between Iran and the P5+1 in the 2015 JCPOA was a temporary success of coercion, many years of fretting over Iranian nuclear ambitions, with started and stalled communications, make for important variation across time. It took several failures before reaching success. Then the leading coercer reneged. The cases of Libya and South Africa contain similar variation where one must explain not only the occurrence but the timing of

coercion of Iraq throughout the 1990s. Phil Haun, “Airpower, Sanctions, Coercion and Containment: When Foreign Policy Objectives Collide,” in Greenhill and Krause (eds.), *Coercion: The Power to Hurt in International Politics* (Oxford University Press, 2018).

a bargain over the nuclear weapons program. Over time, therefore, each of these cases contains instances of coercive failure as well as instances of coercive success. These outcomes give us greater confidence that in each case there was bargaining space, yet it took some determined coercive diplomacy to find it. Within each chapter, I show that coercion failures usually did not merely reflect a lack of bargaining space. Cases without bargaining space would not make for good case studies to test nuanced coercion theories.¹⁴⁴

Chapter 3 examines the case of South Africa, which succeeded in building a secret nuclear arsenal despite international pressure to sign the Nuclear Nonproliferation Treaty (NPT). It is the only country to have done so and subsequently dismantled its weapons completely. Existing coercion theories expect a proliferator with such an advanced program to be harder to compel than a state struggling to produce fissile material or weapons designs.¹⁴⁵ Substantial documentary records of the South African nuclear weapons program are also now available to scholars, and many South African policymakers and nuclear scientists have written firsthand accounts of their nuclear decision-making. The case is ripe for reexamination and coercion theory testing.

South Africa's coercers primarily confronted the commitment problem of coercive restraint. Many in the United States (and the rest of the world) detested South African apartheid policies while at the same time demanding Pretoria sign the NPT. Owing to their practice of apartheid, Pretoria's leaders feared that acquiescence on the nuclear issue would provide no

¹⁴⁴ They did, however, make for a good book, in which Phil Haun argues that the United States often makes maximalist demands of adversaries. Phil Haun, *Coercion, Survival, and War: Why Weak States Resist the United States* (Stanford University Press, 2015).

¹⁴⁵ It should be more difficult to get a nuclear weapons state to give up its weapons than to get a potential proliferator to give up its equipment or fissile material. Leaders or the public may value what they have more than potential future gains. This is the "endowment effect." Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (2012), p. 18.

relief from the pain of economic sanctions. President Reagan's attempt to disentangle the issues in the mid 1980s failed when Congress overrode his veto of apartheid sanctions legislation.

South Africa also sought deniability when it dismantled its nuclear weapons program. Coercers tacitly colluded to reduce the visibility of Pretoria's concessions.

Persuasive alternative explanations also exist in the case of South African nuclear reversal. Pretoria perceived intense regional security threats until the collapse of the Soviet Union and navigated the end of apartheid and a major domestic political transformation to full democracy while it dismantled its nuclear arsenal.

Chapter 4 examines the case of Libya. Tripoli perceived an intense security threat from the United States and the United Kingdom, who also successfully compelled Libya to give up its nuclear program in 2003. As Libya was a very weak state relative to its coercers, its leadership perceived a short shadow of the future. The United States and the United Kingdom thus struggled primarily with the commitment problem of coercive restraint. Indeed, merely eight years after striking a nonproliferation bargain, American and British air power helped to topple Qaddafi in 2011.

Fewer primary records are available in the Libyan case. The fate of the official government archives after the 2011 civil war is unknown. Nevertheless, American and British participants have reflected on the case since; and interview subjects are more willing to discuss the 2003 deal because the Qaddafi government is gone.

From 1980 to 1986, Libya defied compellence because it perceived a patron in Moscow and did not perceive credible threats of American military force. After the United States demonstrated its ability to conduct air strikes with impunity in 1986, Libya perceived credible threats of punishment yet still defied. Qaddafi feared the West was really after regime change in

Tripoli, and from 1986 to 1998 he was correct. Libyan defiance from 1986 to 1998 is therefore best explained by the coercer's maximalist demands and a lack of bargaining space. Only after the Libya resolved the issue of guilt and compensation for the Lockerbie bombing did the United States scale back its demand for regime change. From 1998 and 2003, therefore, the United States struggled with the problem of coercive assurance, attempting to convince Libya that it no longer sought regime change. Washington did so by freezing Israel and domestic spoilers out of a secret coercive bargaining process and sharing unpublicized intelligence with the Libyans. Due to the discovery of the A.Q. Khan Network, which allowed the United States to learn much about the Libyan program through a third party, Libya is an interesting case of information asymmetry—the target did not know how much the coercers knew about its transgressions. Washington and London shared this information strategically to signal that they were not attempting to build a case for regime change in Tripoli.

Chapters 5 and 6 examine the case of Iran. Research on the case is possible, because of the successful conclusion and subsequent American withdrawal from the Joint Comprehensive Plan of Action (JCPOA). Affirming the adage that “victory has a thousand fathers,” interviewees are widely available and willing to speak. Many are motivated to speak to defend the deal. Moreover, a tranche of Iranian documents stolen by Israeli intelligence in 2018 sheds new light on technical aspects of the Iranian nuclear weapons program. The evidence is that much more important to triangulate, as it is imbued with biases serving the policy agendas of its sources, but it is ample.

Major puzzles in the Iran case include why Tehran came to the table only after the window of a credible Israeli threat closed and why Iran was willing to strike a nonproliferation

bargain so soon after the public demise of Libya's Qaddafi. Iran is also a significant case that recently captured scholarly and public attention.

Iran remains a major adversary of its primary coercer, the United States. Yet in 2015 Iran struck a bargain with the P5+1 to accept enhanced verification and limits on its nuclear program. All the while, another adversary, Israel, was not party to the negotiations and was therefore a potential spoiler.

Coercers struggled with both commitment problems—coercive restraint and snowballing demands. The United States needed to communicate that neither it nor Israel would bomb Iranian nuclear facilities if Tehran signed a deal. Tehran also feared that nuclear-related sanctions might easily be relabeled missile-related or terrorism-related and simply remain in effect. The Obama administration therefore negotiated legislation to bound congressional oversight over sanctions relief. Coercers also aided the closure of the IAEA's file on the "Possible Military Dimensions" of Iran's nuclear program, tacitly colluding to cover up the extent of Tehran's concessions.

Overall, the Iran case provides mixed results for Coercive Assurance Theory. In 2003, Iran made some significant concessions on a clandestine nuclear weaponization program because of the U.S. invasion of Iraq. These concessions are best explained by Threat Credibility Theory and not Coercive Assurance Theory. At the time, Iran conceded what it perceived as enough to avoid an invasion, while maintaining progress toward building a nuclear weapon.

Finally, these three cases complement each other in important ways that bolster the external validity of my findings. First, Libya and Iran are enemies with their coercers while South Africa is merely a non-ally of its coercer. Second, at least one primary coercer in each case is held constant (the United States), which is suitable given the substantive import of the United States as an international coercer and because I can draw policy implications for American

coercive diplomacy. Third, the tools of coercion also vary—sanctions against South Africa versus sanctions and threats of force against Libya and Iran. Fourth, the proliferator nuclear programs vary in their sophistication. Iran had the ability to produce large quantities of fissile material, while South Africa actually succeeded in assembling an arsenal. Libya’s nuclear program was far less sophisticated and struggled to make technical breakthroughs. We would want to know whether a proliferator with less to lose can be compelled into concessions without credible assurance.

I also pass the theoretical lens of Coercive Assurance Theory over the contemporary case of North Korea in chapter 7. The case is ongoing and could be quickly overtaken by events, but this book has many lessons for the Korean nuclear crisis. Other cases commented on in the book include instances of brute force nonproliferation—Syria 2007—or near-brute force nonproliferation—Iraq 1990s—to probe for complementary dynamics.

Measurement

The goal of this study is to estimate the effect of coercive assurance credibility on the outcome of compellence and interpret the causes of such credibility.

“Credibility” must be measured in the eye of the beholder. This study is thus largely about perceptions. In cases of coercion, “credibility” is the target state’s expectation about whether the coercer’s deeds will match its words/signals. A threat is credible, regardless of the true intentions of the coercer, if the target expects the coercer to follow through on it under the specified circumstances. A threat is incredible if the target believes the threat to be empty. Likewise, coercive assurance is credible if the target expects that its concessions will reliably lead to no punishment. Coercive assurance is incredible if a target expects to be punished even if

it concedes. Therefore, each case study traces the process of coercive bargaining, relying whenever possible on primary documents and interviews with policymaker participants. Much of my novel archival evidence comes from newly accessible documents at the International Atomic Energy Agency (IAEA) Archives.

These measurements are best taken at key decision points in a target's internal decision-making about its nuclear program. Targets of compellence are not consumed each and every day by the actions of their coercer, rather they reevaluate their strategies in the face of compellence when there is new information to consider. At a moment when a target's leadership sat down to debate what to do in response to compellence, I endeavor to code their perceptions of both threat and assurance credibility.

The most important decision point in each case is the moment the target decided to concede to compellence. At such a moment, I am interested in whether the target perceived a credible threat, assurance, or both. Nevertheless, in such cases I am also interested in the counterfactual of how that target would have responded to compellence in the absence of credible assurance. I estimate this counterfactual by looking at critical junctures prior to decisions to concede. This approach exploits within-case variation. In other words, the counterfactual case that is "most similar" to a target who chooses to concede is, in fact, itself, at a moment before it chose to concede.

Acquiescence is defined as a target adjusting its behavior to conform to the demands of a coercer. To bury a proliferation program deeper underground is not to concede but to hide a lack of acquiescence.

I also consider that a change in target behavior may be attributable to other factors, having little to do with compellence or theories of threat and assurance credibility. Each chapter,

therefore, considers case-specific alternative explanations as well, such as domestic political, bureaucratic, technical, or system-wide factors.

Finally, in each case, I determine whether threat and assurance credibility co-varied (Threat-Assurance Tradeoff) or were evaluated independently by targets (Threat-Assurance Independence), and what variables caused perceptions of coercive assurance credibility to change.

CHAPTER 3: SOUTH AFRICA

This chapter explains South African positioning and decision-making about its nuclear program during the critical years when it faced compulsion from the United States and international community. From 1975 onward, the United States and others sought to compel South Africa to sign the NPT and submit all its nuclear facilities to comprehensive safeguards. It did not succeed until 1989. During this coercive bargaining timeframe, South Africa defied coercive demands and built a small nuclear arsenal.

I find that South Africa defied compellent demands because it perceived a lack of credible coercive assurance, not because it perceived compellent threats to be insufficiently credible or painful. I also find support for all three of my proposed mechanisms on the causes of credible coercive assurance—Disentangling Demands, Coercive Control, and Reducing Visibility. Coercers' entanglement of nuclear and anti-apartheid demands undermined the efficacy of economic sanctions, while attempts to disentangle the two issues in the Washington were thwarted by the U.S. Congress acting as a spoiler. Only once the end of apartheid appeared imminent were leaders in Pretoria willing to sign the NPT. Prior to accepting inspectors, however, South Africa dismantled and denied the existence of its nuclear weapons, which the IAEA allowed. (Summary in Table 2.)

The chapter proceeds as follows. Section one reviews the theory and alternative explanations, deriving hypotheses to be tested with empirical evidence. Section two reviews the

origins of South Africa’s nuclear program and interest in the bomb. Sections three, four, five, and six describe the nature of international compellent demands directed at Pretoria and show that while South African leaders perceived such coercive threats to be credible, they chose to defy because of a lack credible assurance that they could actually avoid punishment by signing the NPT. I show this by examining three critical junctures in Pretoria’s nuclear decision-making about how to respond to international pressure: in August-September 1977, September 1985, and 1986-1988. Section seven examines South African decision-making in 1989 and after, revealing how the impending end of apartheid and a strategy aimed at reducing the visibility of its concessions finally helped to convince Pretoria to sign the NPT and seek an end to compellent punishments. Tables 1 and 2 below previews these findings. Section eight concludes and considers possible confounders.

Table 1: Coercive Assurance Caused Compellent Success in the South Africa Case

Decision Point Year(s)	Threat	Assurance			Concessions
	Credible	Demand Disentanglement	Coercive Control	Reducing Visibility	
1977	Yes	No	No	No	No
1985	Yes	No	No	No	No
1986-1988	Yes	No	No	No	No
1989-1993	Yes	Yes	Yes	Yes	Yes

Table 2: Evidence for Each of the Mechanisms in the South Africa Case

Mechanism	Direct Effect	Signaling Effect
<i>Disentangling Demands</i>	--	1977 Kalahari Crisis; 1979 IAEA entanglement
<i>Coercive Control (Domestic)</i>	1986 Congress overrides Reagan	--
<i>Reducing Visibility (Domestic and International)</i>	1989 Weapons dismantlement	1991-1993 IAEA deniability

I. Testing Coercive Assurance Theory in the South African Case

South Africa was subject to external pressure over its nuclear program. Its resistance warrants explanation. In this chapter, I conduct theoretical tests in two parts. First, I investigate the causes of South African defiance in the face of compellence. I test Coercive Assurance Theory against Threat Credibility Theory, an alternative theory of compellence. This test establishes that South African leaders perceived the implied assurances of its coercers' threats to be incredible and therefore chose to defy compellent demands. Second, throughout I surface the causes of coercive assurance credibility in the South African case. I investigate all three of my proposed mechanisms—Disentangling Demands, Coercive Control, and Reducing Visibility—and find evidence in their favor. This outline mirrors the twin purposes of the book, which are to (1) show that credible assurance is critical to coercive success and (2) identify manipulable causes of coercive assurance credibility.

Predictions of Coercive Assurance Theory versus Threat Credibility Theory

To remind the reader, all coercive threats at least imply an assurance that targets can avoid punishment by complying. This book explains the importance in statecraft of these contingent pledges not to punish. It also illuminates the causes of coercive assurance credibility. The problem of coercive assurance credibility is at root two commitment problems: (1) *The Coercive Restraint Problem*: Targets of coercion fear that the threatened pain is not in fact contingent on their own behavior. The threatener may punish them regardless of whether they comply. If targets expect punishments to be capriciously applied, defiance runs little or no additional risk and compliance is fruitless. (2) *The Snowballing Demands Problem*: Targets of coercion fear complying because they think they will acquire a reputation for backing down,

which will encourage the coercer or other adversaries to demand additional concessions in the future.

Threat Credibility Theory contends that these commitment problems are not so severe and that targets will give in to compellent demands if threats are sufficiently credible and severe. Threat Credibility Theory predicts in the South African case that policymakers in Pretoria will acquiesce to compellent demands when they perceive threats to be sufficiently credible. That is, if they believe that the punishments are certain to be imposed if they defy. South African behavior should be primarily driven by a contingent fear of punishment. Thus, speech evidence questioning the credibility of compellent threats should accompany South African defiance, and vice versa. Moreover, an increase in the perceived credibility of American threats should accompany any South African decision to terminate its nuclear weapons program.

H1a: South African policymakers will justify not signing the NPT with assessments that American threats are not credible.

H1b: South African policymakers will sign the NPT when American threats become more credible.

Threat Credibility Theory also predicts in the South African case that policymakers in Pretoria will acquiesce to compellent demands when they perceive compellent punishments to be too costly. That is, Pretoria would sign the NPT if the United States communicated threats of punishment sufficiently certain and severe. Speech evidence asserting the low cost of threatened punishments (and their willingness to bear them) should accompany South African defiance.

Moreover, South Africa should sign the NPT when American punishments become too severe relative to the utility they assign to nuclear weapons.

H2a: South African policymakers will justify not signing the NPT with assessments that American punishments are not so severe.

H2b: South African policymakers will sign the NPT when punishments become too severe.

Coercive Assurance Theory, on the other hand, contends that assurance commitment problems make it difficult for a target to comply with compellent demands. Coercive Assurance Theory predicts in the South African case that policymakers in Pretoria will acquiesce to compellent demands when they perceive that threats of compellent punishment will not be carried out if they comply. That is, Pretoria would sign the NPT if the United States communicated threats of punishment sufficiently contingent upon South Africa's signature. Speech evidence asserting the non-contingent nature of threats should accompany South African defiance. Moreover, South Africa should sign the NPT if the United States credibly communicates coercive assurance.

H3a: South African policymakers will justify not signing the NPT with assessments that American punishments will be applied whether or not Pretoria signed.

H3b: If South Africa perceives that American compellent threats are credibly contingent on their signature, Pretoria will sign the NPT.

The results of this chapter bear out the predictions of Coercive Assurance Theory. South Africa perceived American sanctions threats and punishments to be credible and painful. Yet a fear of non-contingent punishment drove the South African leadership to defy compellence from 1977 to 1989. When, in the 1989, leaders in Pretoria perceived credible coercive assurance, South Africa acceded to the NPT and dismantled its nuclear arsenal.

Predictions of Threat-Assurance Tradeoff versus Threat-Assurance Independence

The second theoretical investigation of this case study is to determine the causes of credible coercive assurance in South Africa. Why did Pretoria perceive assurance to be incredible and how did it ever become credible?

Threat-Assurance Tradeoff theory predicts that as threat credibility goes up, assurance credibility should go down, and vice versa. I test this by examining the effects of large variations in the credibility of coercer threats. This suggests the following hypotheses.

H4a: When perceptions of threat credibility spike, assurance credibility will decrease and targets will demand greater assurance.

H4b: Perceptions of greater assurance credibility should be accompanied by decreases in threat credibility.

H4c: Threats increasing in credibility will reach a point of diminishing returns. If a threat is increasing in credibility, a target will be more likely to concede before the threat becomes maximally credible (i.e. threats can be too credible).

Threat-Assurance Independence theory uniquely predicts that perceived increases in threat credibility may be accompanied by perceived increases in assurance credibility.

H5a: Perceptions of threat credibility may remain the same or increase as perceptions of assurance credibility increase.

H5b: Variables may bolster the perception of assurance credibility without affecting the perceived credibility of threats.

Specific to my three proposed mechanisms on the causes of credible assurance—Demand Disentanglement, Coercive Control, and Reducing Visibility—I make the following hypotheses.

H6_{D1}: Targets will not concede if multiple demands are linked to the same punishment(s).

H6_{D2}: Targets will concede after a coercer disentangles multiple demands by making them independently contingent on separable punishments.

H7_{C1}: Targets will fear fragmented coercers

H7_{C2}: Targets will not concede if a veto player could act independently to spoil a coercive bargain

H8_{V1}: Targets will fear making public concessions

H8_{V2}: Targets confronted by coercers with unpublicized, private information about the target will be more likely to concede

The evidence corroborates the hypotheses on Demand Disentanglement, Coercive Control, and Reducing Visibility.

First, I show that the entanglement of apartheid and other sanctions contributed to South Africa's defiance (H6_{D1}). When the United States and other coercers sought to compel South Africa to abandon its nuclear ambitions, they entangled multiple demands together—a demand to sign the NPT and a demand to end the policy of apartheid. In this chapter, I show how coercers failed to disentangle these two demands. This hydra-headed compellence practiced by the United States and other coercers proved self-defeating and ineffective. Only once South African domestic political reforms and the end of apartheid appeared imminent were leaders willing to sign the NPT (H6_{D2}). Nevertheless, overcoming the entanglement of demands in this case was due to domestic political changes within the target state, not a change in coercer strategy. The South African case thus shows evidence of the mechanism working, but for different reasons than derived in the theory chapter.

Second, the hypotheses on Coercive Control (H7_{C1} and H7_{C1}) are confirmed in the South Africa case. When the Reagan administration attempted to disentangle American demands and reduce the severity of U.S. economic pressure, Congress overrode the president's veto and imposed comprehensive sanctions over entangled demands. The administration did not demonstrate coercive control domestically. The IAEA also entangled multiple demands to accept comprehensive nuclear safeguards and end apartheid and did not disentangle them.

Third, I show that when South Africa did finally accede to compellent demands, signing the NPT and opening its nuclear facilities to inspections, the International Atomic Energy Agency and other relevant actors allowed South Africa deniability over its past nuclear activities and consciously chose not to rake South Africa over the proverbial coals for its past nuclear

transgressions. Reducing the visibility of its concessions was important to the South African leadership (H8_{v1}) for domestic political stability, and the international community largely accepted its role in tacitly colluding to grant South Africa such deniability for two years after it signed the NPT (H8_{v2}).

Overall, the results of this chapter bear out the predictions of Independence more so than Tradeoff theory. All three theorized causes of assurance credibility are affirmed, none are falsified. Moreover, Independence theory hypotheses (H5a and H5b) are confirmed—the assurance signals sent in and after 1989 did not undermine the credibility of threats—and one Tradeoff theory hypothesis (H4b) is correspondingly disconfirmed. Nevertheless, South Africa may be a poor test case for the remaining Tradeoff theory hypotheses (H4a and H4c), since it did not fear the use of military force by its coercers. Compellence took the form of sanctions. Thus, South Africa's perception of incredible coercive assurance did not stem from a relative power disadvantage and its coercer did not manipulate military signals to bolster threat credibility. The credibility of American threats therefore do not vary widely in this case.

South Africa did have acute security fears stemming from Soviet Union and its proxies in the region. The removal of that threat at the end of the Cold War opened up the opportunity for Pretoria to give in to compellent demands to sign the NPT without requiring a concurrent increase in defensive capability. As I will show, these security fears alone cannot explain South Africa's decision to dismantle its nuclear arsenal and sign the NPT. But other chapters, which include coercer manipulation of military force signals, will perform cleaner tests of the Tradeoff hypotheses.

Methods and Evidence

This chapter tells the South African nuclear saga in novel way. Many scholars explain Pretoria's demand for nuclear technology but overlook and minimize the interaction between South Africa and the international community.¹ Most acknowledge the American pressure on South Africa without explaining its importance or variation in the efficacy of compellence over time.²

My research relies heavily on primary documents from the South African government and the International Atomic Energy Agency (IAEA) to explain South African behavior. Although it is ostensibly a neutral international institution, the IAEA was a crucial interlocutor for coercive bargaining between the international community and South Africa. To give in to IAEA demands was to give in to American demands. Moreover, while the IAEA strives to maintain an apolitical stance (as well it should), the information revealed through IAEA inspections is anything but apolitical. The political uses of this information and its varying political salience to coercers is of important scholarly significance.³ Finally, I supplement these documents with the recollections and writings of South African policymakers, military leaders, and nuclear scientists as much as possible—Prime Minister John Vorster, Prime Minister and later President P.W. Botha, Minister of Foreign Affairs R.F. “Pik” Botha, President F.W. de

¹ Alexandre Debs and Nuno P. Monteiro, *Nuclear Politics: The Strategic Causes of Proliferation* (Cambridge University Press, 2017), pp. 258-276; Peter Liberman, “The Rise and Fall of the South African Bomb,” *International Security* 26, 2 (Fall 2001); Mitchell Reiss, *Bridled Ambition: Why Countries Constrain their Nuclear Capabilities* (Washington, DC: Woodrow Wilson Center Press, 1995), pp. 7-44.

² The closest to telling this story is Gene Gerzhoy, “Coercive Nonproliferation: Security, Leverage, and Nuclear Reversals,” PhD Dissertation, University of Chicago, 2014. Other scholars have pointed to incredible coercive assurance dynamics in the South African without interrogating them or developing them as theory. See Peter Liberman, “The Rise and Fall of the South African Bomb,” *International Security* 26, 2 (Fall 2001), p. 86; and Richard Betts, “A Diplomatic Bomb for South Africa,” *International Security*, Vol. 4, No. 2 (Autumn 1979), p. 91.

³ IAEA Archives Board of Governors documents especially provide good evidence, because they are protected and not made public until at least two years after production so that representatives may speak more freely. Moreover, since the very mission of the Agency is transparency, any gaps for deniability of past transgression are noticeable.

Klerk, and leading scientists and engineers such as Andre Buys, Nic von Wielligh, and Waldo Stumpf. It is essential to understand their own perceptions of the credibility of coercive threats and assurances. The narrative unfolds chronologically.

II. South Africa's Nuclear Program: Motivation and Beginning

The Early Years

South Africa joined the ranks of capable nuclear states quickly.⁴ Upon discovering abundant natural uranium deposits, South Africa established its Atomic Energy Board (AEB) in 1948. South Africa developed into a major uranium producer after it signed purchasing agreements with the United States and the UK in 1950.⁵ This was a time when the United States and the UK thought uranium was scarce and that they needed to secure their access.

The United States and South Africa subsequently signed a nuclear cooperation agreement in 1957 as part of the Atoms for Peace program.⁶ Under this deal, the United States supplied South Africa with a research reactor, SAFARI-1, safeguarded since 1965. The sharing arrangement did not set any coercive red lines on South African nuclear ambitions. Later, however, South Africa refused to sign the NPT and the American fuel supply proved to be a source of leverage. Nuclear research also began at the Pelindaba Nuclear Research Center in 1961, overseen by the South Africa's Atomic Energy Board (AEB).⁷

⁴ For studies focusing on South Africa's motivations for the bomb, see Alexandre Debs and Nuno P. Monteiro, *Nuclear Politics: The Strategic Causes of Proliferation* (Cambridge University Press, 2017), pp. 258-276; and Peter Liberman, "The Rise and Fall of the South African Bomb," *International Security* 26, 2 (Fall 2001).

⁵ Frank Pabian, "South Africa's Nuclear Weapons Program: Lessons for U.S. Nonproliferation Policy," *Nonproliferation Review* 3, 1 (Fall 1995), p. 2.

⁶ The agreement was renewed in 1967. "Safeguards in Relation to the South African/USA Agreement of Cooperation," GOV/1210, June 9, 1967. IAEA Archives, Vienna, Austria.

⁷ Waldo Stumpf, "South Africa's Nuclear Weapons Program: From Deterrence to Dismantlement," *Arms Control Today*, (December 1995/January 1996), p. 3.

South Africa began a secret effort to develop an indigenous uranium enrichment capacity in the 1960s. The clandestine facility first used uranium hexafluoride (UF₆) in 1964. By 1967, South African scientists at the Pelindaba Nuclear Research Center tested at laboratory scale a vortex-tube method for uranium enrichment.⁸ The process was soon expanded to a pilot enrichment plant (the Y-plant). The first stage of the enrichment cascade was completed by the end of 1974 and the whole cascade was operational by March 1977.⁹ Set up right next to Pelindaba, the Y-plant was built in a location aptly named Valindaba, a compound indigenous word meaning “we don’t talk about this.”¹⁰

For some time, the indigenous enrichment capability was merely motivated by economic factors—a desire to exploit the commercial potential of South Africa’s abundant uranium deposits. Soon, the enrichment capacity became a clear hedge, and then more.

The South African Nuclear Weapons Program

Prime Minister John Vorster made the political decision to explore nuclear weapons technology in 1969 when he established through the AEB a committee to investigate the feasibility of building ‘peaceful nuclear explosives,’ (PNEs) ostensibly for mining applications.¹¹ In March 1971, Carl de Wet, the Minister of Mines, approved the committee’s recommendations to develop PNEs.¹² Then, in 1974, Vorster seamlessly shifted the objectives of this research from

⁸ Waldo Stumpf describes the indigenous enrichment technology as “superficially similar to the German Becker process.” Stumpf, “South Africa’s Nuclear Weapons Program: From Deterrence to Dismantlement” (1995/1996), p. 3; Nic von Wielligh and Lydia von Wielligh-Steyn, *The Bomb: South Africa’s Nuclear Weapons Programme* (Pretoria: Litera Publications, 2015), p. 113.

⁹ Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), p. 126; Stumpf, “South Africa’s Nuclear Weapons Program: From Deterrence to Dismantlement,” (1995/1996), p. 3.

¹⁰ Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), p. 121.

¹¹ “The Agency’s Verification Activities in South Africa, Report by the Director General,” GOV/2684, September 8, 1993, p. 5. IAEA Archives, Vienna, Austria.

¹² Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), p. 122.

PNEs to a nuclear deterrent,¹³ at the same time approving a plan to develop a nuclear test site in the Kalahari desert.¹⁴

I code the beginning of the South African nuclear weapons program as 1974. In his speech announcing the program's dismantlement, F.W. de Klerk dated South Africa's weapons motivations to "as early as" 1974.¹⁵ Philip Bleek codes South African 'exploration' as beginning in 1969.¹⁶ However, Bleek codes pursuit as beginning in 1974 with Vorster's approval of PNE hedging.¹⁷

A Deteriorating Regional Security Situation

What motivated South Africa to pursue nuclear weapons? In the mid-1970s, South Africa faced a deteriorating regional security situation. Mozambique and Angola won independence from Portugal in 1975, and Pretoria watched as white colonists fled. The USSR moved to fill the vacuum left by Portugal and black African nationalism expanded as minority rule ended in Zimbabwe and put pressure on South African-controlled Namibia.

With the clandestine backing of the United States under President Ford, South Africa intervened against rebels (the MPLA) in the Angolan civil war in October 1975. When the secret

¹³ "The Agency's Verification Activities in South Africa, Report by the Director General," GOV/2684, September 8, 1993, p. 5. IAEA Archives, Vienna, Austria.

¹⁴ Frank Pabian, "South Africa's Nuclear Weapons Program: Lessons for U.S. Nonproliferation Policy," *Nonproliferation Review* 3, 1 (Fall 1995), p. 2. Stumpf, "South Africa's Nuclear Weapons Program: From Deterrence to Dismantlement," (1995/1996), p. 4.

¹⁵ F.W. de Klerk, "Speech on the Nonproliferation Treaty to a Joint Session of Parliament," March 24, 1993.

¹⁶ Technically, the Pelindaba Nuclear Research Center was designed to produce weapons-grade uranium in its original designs drawn up in 1969 or 1970. Peter Liberman, "The Rise and Fall of the South African Bomb," *International Security* 26, 2 (Fall 2001), p. 50.

¹⁷ Philipp C. Bleek, "When Did (and Didn't) States Proliferate?" Discussion Paper (Cambridge, MA: Project on Managing the Atom, Belfer Center for Science and International Affairs, Harvard Kennedy School and the James Martin Center for Nonproliferation Studies, Middlebury Institute of International Studies, Monterey, CA, June 2017). Other scholars prefer to date nuclear weapons ambitions to 1977, when "clear evidence of the program's militarization" appears in the historical record. Liberman, "The Rise and Fall of the South African Bomb" (2001), p. 49.

American aid was exposed, however, the United States, at the behest of Congress, withdrew its support.¹⁸ Cuba took advantage and sent troops to Angola to support rebels (Cuban military advisors had already been involved in the conflict). Soon Soviet weapons and logistical support followed.

A lonely South Africa found itself with multiple enemies and few friends.¹⁹ On March 27, 1975, P.W. Botha announced that the defense budget would have to increase by 36%, accounting for a total of 20% of the overall national budget.²⁰

The pieces were in place for South African nuclear weapons demand. In retrospect, F.W. De Klerk justified the South African nuclear weapons program with these security concerns. “The main motivation [for nuclear weapons] was the expansionist policies of the U.S.S.R. in southern Africa,” said De Klerk in a 2017 interview. “There wouldn’t be, in the case of Russian aggression or invasion, assistance from the international community. It was felt that, if we have nuclear weapons, and if we then would disclose in a crisis that we have [them], it would change the political scenario and the U.S.A. and other [Western] countries might step in and assist South Africa.”²¹

During this time, South Africa also began to suffer the opprobrium of the international community.

¹⁸ Anna-Mart Van Wyk, “Apartheid’s Atomic Bomb: Cold War Perspectives,” *South African Historical Journal* 62, 1 (2010), p. 104.

¹⁹ In 1975, the United Kingdom had also cancelled the Simonstown Agreement on bilateral naval protection in the South Atlantic Ocean.

²⁰ Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), p. 131.

²¹ Uri Friedman, “Why One President Gave Up His Country’s Nukes,” *The Atlantic*, September 9, 2017, <<https://www.theatlantic.com/international/archive/2017/09/north-korea-south-africa/539265/>>.

III. Hydra-headed Compellence over Two Issues: Apartheid and the NPT

White minority-ruled South Africa institutionalized the separation of races after the surprise election of the National Party in 1948. Under the guise of ‘equal development,’ the brutal policies of apartheid, meaning “apartness”, required South Africans to register their ethnicities with the government, prohibited intermarriage and socialization, and forcibly removed “black,” “colored,” and “Indian” populations from white areas, among other iniquities. The descendants of European (mostly Dutch) settlers championed the racist policies as a method of preserving their Afrikaner identity.²²

For a long time, the United States did not take action to oppose apartheid. It served American interests that South Africa’s pro-apartheid National Party was fiercely anti-communist. When the government in Pretoria banned the African National Congress (ANC) and the Pan Africanist Congress (PAC) from political participation in 1960 and imprisoned their leaders in 1963, the Kennedy administration vetoed punitive UN resolutions and supported only a voluntary arms embargo against South Africa.²³

Coercers came down harder in the 1970s. International coordination to condemn Pretoria for apartheid began in the United Nations. On October 24, 1970 the United Nation General Assembly (UNGA) passed Resolution 2627, calling apartheid “a crime against the conscience and dignity of mankind;” on October 5, 1973, the UNGA rejected the South African delegation’s credentials; on November 28, 1973, Arab states imposed oil sanctions on South Africa; and on November 30, 1973, the UNGA ratified the International Convention on the Suppression and

²² On the history of apartheid, see David Welsh, *The Rise and Fall of Apartheid* (Charlottesville, VA: University of Virginia Press, 2009).

²³ Anna-Mart Van Wyk, “Apartheid’s Atomic Bomb: Cold War Perspectives,” *South African Historical Journal* 62, 1 (2010), pp. 101-102.

Punishment of the Crime of Apartheid in Res. 3068.²⁴ An October 1974 motion to remove South Africa from the United Nations failed only because it was vetoed by the United States, France, and the UK, who while vetoing finally made clear their opposition to apartheid and expressed their desire that continued membership in the UN would result in changes to the state.²⁵

At this time, too, the world began to be warier of South Africa's nuclear intentions. Pretoria refused to sign the newly in force NPT and continued to make progress on indigenous enrichment technology. What was to stop them from indigenously enriching uranium to weapons-grade (90% or higher)?

The United States began to engage in compellence against South Africa in 1975. There was no mention of nuclear weapons or an end to U.S. nuclear cooperation when the Kennedy administration took the half-measure of supporting a voluntary arms embargo in 1963.²⁶ But in 1975 and 1976, the Ford administration imposed sanctions and discontinued the supply of fuel for the Safari-1 reactor, even refusing to reimburse South Africa its payments for the fuel.²⁷

Compellent demands to end apartheid also intensified in 1976, after a brutal state crackdown on the Soweto riots drew public attention to the regime.²⁸ The Carter administration accelerated American compellent efforts. In a January 1977 meeting with Pik Botha, then South

²⁴ Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), pp. 121-123.

²⁵ Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), pp. 123-124.

²⁶ Martha van Wyk characterized it as a "limited measure to appease the newly independent African nations and anti-apartheid movements worldwide that lobbied for punitive measures." Martha S. van Wyk, "Ally or Critic? The United States' Response to South African Nuclear Development, 1949-1980," *Cold War History* 7, 2 (May 2007), p. 199.

²⁷ In response, South Africa began to make its own fuel at the Y-plant, enriching uranium to 45% for use as fuel in the Safari-1 reactor. Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), p. 107. Pabian, "South Africa's Nuclear Weapons Program: Lessons for U.S. Nonproliferation Policy" (1995), p. 2; Liberman, "The Rise and Fall of the South African Bomb" (2001), p. 69. The Safari-1 reactor ran on HEU fuel. In the 1970s the United States began a program called Reduced Enrichment for Research and Test Reactors (RERTR) and tried to get South Africa to agree to swap out its HEU for 20% enriched fuel, supplied by the United States. Safari-1 did not switch to LEU fuel until 2009. Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), pp. 108-109.

²⁸ Martha van Wyk, "Sunset over Atomic Apartheid: United States-South African Nuclear Relations, 1981-93," *Cold War History*, 10, 1 (February 2010), p. 52.

African ambassador to the United States, U.S. national security advisor Zbigniew Brzezinski warned that “the U.S. will never intervene in the conflict on the side of a white minority government, even if communists were involved.”²⁹ Carter further labelled apartheid “a threat to international peace and security” in a October 25, 1977 speech and subsequently backed mandatory UN arms sanctions.³⁰ The United Nations Security Council (UNSC) voted in favor of this binding Chapter VII arms embargo on November 4, 1977.

South Africa was also voted off of the IAEA board of governors in 1977.³¹ On September 28, 1976, the IAEA General Conference had formally request that the Board of Governors consider the removal of South Africa from its seat on the Board representing the region of Africa. And the IAEA Board of Governors took up the resolution at their June 16, 1977 meeting.³² According to Jo-Ansie van Wyk, a scholar of South African-IAEA relations, the IAEA’s actions were aimed “to persuade the South African government to terminate its nuclear weapons programme.”³³ Nonetheless, the resolution cited “flagrant violations by the apartheid regime [emphasis in original]” of the UN Charter and claiming that “the apartheid regime of South Africa totally lacks any claim to be representative of the legitimate interests and aspirations of the area of Africa [emphasis in original].”³⁴ At the meeting, members, save South Africa itself, universally condemned the practice of apartheid, but some (including the USA)

²⁹ Alex Thomson, “The Diplomacy of Impasse: The Carter Administration and Apartheid South Africa,” *Diplomacy and Statecraft* 21, 1 (2010), p. 114.

³⁰ Anna-Mart Van Wyk, “Apartheid’s Atomic Bomb: Cold War Perspectives,” *South African Historical Journal* 62, 1 (2010), p. 106.

³¹ India, however, was not removed from the IAEA Board of Governors after its 1974 PNE; something that did not escape the South Africans’ notice. Pabian, “South Africa’s Nuclear Weapons Program: Lessons for U.S. Nonproliferation Policy” (1995), p. 5; Liberman, “The Rise and Fall of the South African Bomb” (2001), p. 69.

³² IAEA Board of Governors, “Record of the Five Hundred and First Meeting,” GOV/OR.501, September 19, 1977. IAEA Archives, Vienna, Austria. Note that the date of the meeting and the date on the official records are different.

³³ Jo-Ansie van Wyk, “Atoms, Apartheid, and the Agency: South Africa’s Relations with the IAEA, 1957-1995,” *Cold War History* (2014), p. 11.

³⁴ “Resolution adopted during the 191st plenary meeting on 28 September 1976,” GC(XX)/RES/336, November 4, 1976. IAEA Archives, Vienna, Austria.

sought to maintain South Africa's seat in accordance with the IAEA Statute practice. Article VI of the IAEA Statute originally allotted 13 seats on the Board of Governors to the member states "most advanced in the technology of atomic energy including the production of source materials," and included a provision to ensure representation from every geographic region.³⁵ South Africa was the obvious member to fill the African seat. It had done so since 1957. Nevertheless, the Board voted to remove South Africa and replace it with Egypt, an objectively less advanced nuclear state.³⁶ The compelling move was perceived as baselessly humiliating.³⁷

My theory of coercive assurance predicts that the blending of multiple compelling demands is likely to result in a target's defiance. To examine in depth South African reactions and interpretations of compellence, I look at three critical decision points in the nuclear program, while tracking the changes to compellence over time.

IV. The Kalahari Crisis of 1977

In August 1977, the United States and South Africa came head-to-head in a crisis over the latter's nuclear ambitions. South African leaders reflected on the Kalahari crisis as a "watershed moment" in South Africa's pursuit of nuclear weapons. In terms of testing my theory of coercive assurance, 1977 was a crucial moment at which Pretoria stared down Washington's red lines on nuclear proliferation and carefully considered whether to defy its compelling demands.

³⁵ Jo-Ansie van Wyk, "Nuclear diplomacy as niche diplomacy: South Africa's post-apartheid relations with the International Atomic Energy Agency," *South African Journal of International Affairs*, 19, 2 (2012), p. 186.

³⁶ The final vote tally was 19 in favor, 12 against (including the United States), with 2 abstentions. IAEA Board of Governors, "Record of the Five Hundred and First Meeting," GOV/OR.501, September 19, 1977. IAEA Archives, Vienna, Austria.

³⁷ Pabian, "South Africa's Nuclear Weapons Program: Lessons for U.S. Nonproliferation Policy" (1995), p. 5.

During this episode, South Africa judged compelling threats to be credible. The threatened pain was somewhat costly, but South Africa had not yet suffered the pain of the bulk of international sanctions that would later be placed upon it. Nonetheless, the crucial factor driving South African defiance was a perceived lack of coercive assurance.

The Kalahari Crisis

As part of its pursuit of nuclear weapons technology South Africa dug two test shafts in the Kalahari Desert. The first was completed in November 1976 and the second in 1977. Local farmers referred to them as “the atom shafts,” as “everybody knew there was no water in those parts.”³⁸ Thus the secrecy did not hold long.

In August 1977, a Soviet satellite observed South African drilling equipment in the Kalahari Desert. Moscow shared the intelligence with the Washington, with whom they shared a rare common interest in nonproliferation.³⁹ U.S. intelligence analysts immediately concluded that “the Kalahari facility could have no military purpose other than nuclear testing.”⁴⁰

On August 17, 1977, Vice President of the AEB, Wynand de Villiers, ordered staff to leave the Kalahari test site immediately. Someone had found out what they were doing in the desert. Three days earlier workers at the site had reported seeing a small airplane flying very low

³⁸ Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), p. 136.

³⁹ Nicholas Miller and Or Rabinowitz, “Keeping the Bombs in the Basement: US Nonproliferation Policy Toward Israel, South Africa, and Pakistan,” *International Security* 40, 1 (Summer 2015): 63. On the surprising extent of cooperation between the United States and the USSR to stem nuclear proliferation, see Andrew J. Coe and Jane Vaynman, “Collusion and the Nuclear Nonproliferation Regime,” *Journal of Politics*, 77, 4 (October 2015), pp. 983-997.

⁴⁰ “Draft Letter to B. Cardledge on Conversation with U.S. Deputy Undersecretary of State Joseph Nye on South African Nuclear Intentions,” September 1977, History and Public Policy Program Digital Archive, UK National Archives, FCO45-2131. Obtained and contributed by Anna-Mart van Wyk. <<http://digitalarchive.wilsoncenter.org/document/116626>>.

overhead.⁴¹ The plane had belonged to the U.S. military attaché in Pretoria and was taking pictures, likely to confirm what they had seen in the Soviet satellite images.

Demarches came pouring in, threatening diplomatic rifts and sanctions, including a threat from France to cutoff of fuel supplied for the Koeberg reactor.⁴²

The U.S. ambassador, William Bowdler, issued vague compelling threats to Foreign Minister Pik Botha.⁴³ “In light of the grave implications President Carter has instructed me to make clear that the detonation of a nuclear device...or any other further steps to acquire or develop a nuclear explosive capability would have the most serious consequences for all aspects of our relations and would be considered by us as a serious threat to peace.”⁴⁴ Bowdler repeated the not-so-implicit sanctions threat by reiterating that Botha “should also be aware of the possibility that the issue may arise in the United Nations Security Council on short notice with unforeseeable results.”⁴⁵

U.S. Secretary of State Cyrus Vance also communicated with Pik Botha. Vance’s August 19, 1977 letter confronted the South Africans with evidence, likely provided by the USSR. “We

⁴¹ Jeffrey T. Richelson, *Spying on the Bomb* (New York: W.W. Norton, 2006), p. 279.

⁴² Liberman, “The Rise and Fall of the South African Bomb” (2001), pp. 50, 69-70.

⁴³ Pik Botha’s recollection of the meeting is similar, although he gets the date wrong (April instead of August). He recalled in an interview that, shortly after he became Foreign Minister, the American ambassador came to see him “looking very somber” and placed on his desk “10-12 photographs” of “a drill in an arid region.” Botha claims they were “Soviet satellite pictures, forwarded to the Americans.” Botha went to Vorster with the information and he agreed not to test. Pik Botha Interview with Sue Onslow, Appendix 1, *Institute of Commonwealth Studies*, Pretoria, South Africa, December 13, 2012. <<https://commonwealthorahistories.org/2015/interview-with-rf-pik-botha/>>.

⁴⁴ “Letter, US Ambassador Bowdler to South African Foreign Minister Botha,” August 18, 1977, History and Public Policy Program Digital Archive, South African Ministry of Foreign Affairs Archives, Brand Fourie, Atomic Energy, File 2/5/2/1, Vol. 1, Vol. 2. Obtained and contributed by Anna-Mart van Wyk, Monash South Africa. <<http://digitalarchive.wilsoncenter.org/document/114150>>.

⁴⁵ “Letter, US Ambassador Bowdler to South African Foreign Minister Botha,” August 18, 1977, History and Public Policy Program Digital Archive, South African Ministry of Foreign Affairs Archives, Brand Fourie, Atomic Energy, File 2/5/2/1, Vol. 1, Vol. 2. Obtained and contributed by Anna-Mart van Wyk, Monash South Africa. <<http://digitalarchive.wilsoncenter.org/document/114150>>.

are prepared to show you photographs,” wrote Vance, asking that South Africa “permit a prompt visit by a small U.S. technical team to inspect the location in the Kalahari Desert.”⁴⁶

An anonymous American official reported of the interactions, “we were pretty severe in private.”⁴⁷ Speaking more broadly of foreign relations in the 1970s, Pik Botha recalled, “during the whole protracted period, there was severe pressure on us from Washington.”⁴⁸

In response to this pressure, Vorster backed off, closing the test site. On August 21, he agreed to pledge that “no nuclear explosive test will be taken in South Africa now or in the future.”⁴⁹ Yet South Africa still denied their pursuit of nuclear weapons. In a message to Cyrus Vance, R.F. Botha denied that the nuclear testing purpose of the Kalahari facility, ascribing the accusation to “a Soviet propaganda exercise,” and disingenuously expressed South Africa’s willingness to “enter into discussions with the United States on all aspects of South Africa’s nuclear policy including the question of South Africa’s accession to the Non-Proliferation Treaty.”⁵⁰ Behind the scenes, South Africa had no such intention.

⁴⁶ “Letter, US Secretary of State Cyrus Vance to South African Foreign Minister Botha,” August 19, 1977, History and Public Policy Program Digital Archive, South African Ministry of Foreign Affairs Archives, Brand Fourie, Atomic Energy, File 2/5/2/1, Vol. 1, Vol. 2. Obtained and contributed by Anna-Mart van Wyk, Monash South Africa. <<http://digitalarchive.wilsoncenter.org/document/114153>>.

⁴⁷ Richelson, *Spying on the Bomb* (2006), p. 281.

⁴⁸ Pik Botha Interview with Sue Onslow, Appendix 1, *Institute of Commonwealth Studies*, Pretoria, South Africa, December 13, 2012. <<https://commonwealthorallhistories.org/2015/interview-with-rf-pik-botha/>>.

⁴⁹ Richelson, *Spying on the Bomb* (2006), p. 281.

⁵⁰ “Draft Letter and Aide Memoire from South African Foreign Minister R.F. Botha to US Secretary of State Cyrus Vance,” September 30, 1977, History and Public Policy Program Digital Archive, South African Foreign Affairs Archives. Obtained and contributed by Anna-Mart van Wyk. <<http://digitalarchive.wilsoncenter.org/document/116635>>.

Kalahari Compellence Backfires

The Kalahari episode merely pushed South African nuclear program underground. South Africa interpreted the Kalahari testing fiasco as a “watershed” moment.⁵¹ After 1977, the South African government believed that it had “no alternative but to develop a nuclear deterrent.”⁵² It was unable to rely on any international support. It had to be self-reliant.

Compellent threats from the United States and others were indeed perceived as credible by South Africa. An August 31, 1977 dispatch from the South African embassy in Washington reported back to Pretoria that “the thesis that South Africa poses a threat to world peace is immensely reinforced and will be exploited in the UN;” as such, “the prospect of a chapter VII sanctions resolution is thus brought measurabl[y] nearer.”⁵³ In other words, compellent threats were credible. Moreover, the Carter administration was liable to use this moment to increase pressure on South Africa—the Kalahari episode was “further substantiation of the thesis of the Carter administration that pressure on South Africa is more productive,” and the latest crisis only provided “incentive to step up the pressures.”⁵⁴ Finally, in this environment, South Africa should expect even less harbor from potential friends—“supporters (in Western Europe for example)

⁵¹ “Cable from South African Embassy in the US to the South African Secretary for Foreign Affairs on South Africa and the Bomb,” August 31, 1977, History and Public Policy Program Digital Archive, Obtained and contributed by Anna-Mart van Wyk, Monash South Africa. <<http://digitalarchive.wilsoncenter.org/document/114181>>.

⁵² Pabian, “South Africa’s Nuclear Weapons Program: Lessons for U.S. Nonproliferation Policy” (1995), p. 3.

⁵³ “Cable from South African Embassy in the US to the South African Secretary for Foreign Affairs on South Africa and the Bomb,” August 31, 1977, History and Public Policy Program Digital Archive, Obtained and contributed by Anna-Mart van Wyk, Monash South Africa. <<http://digitalarchive.wilsoncenter.org/document/114181>>.

⁵⁴ “Cable from South African Embassy in the US to the South African Secretary for Foreign Affairs on South Africa and the Bomb,” August 31, 1977, History and Public Policy Program Digital Archive, Obtained and contributed by Anna-Mart van Wyk, Monash South Africa. <<http://digitalarchive.wilsoncenter.org/document/114181>>.

will be able in future to offer less effective resistance to proposals for economic sanctions.”⁵⁵

“South Africa is far more exposed than ever before,” the cable concluded.⁵⁶

But South Africa did not buckle under the pressure. Rather, they did not see abandonment of their nuclear weapons program as an option that would improve their lot. While the Embassy in Washington prescribed no concrete plan, it assessed that acquiescence to international pressure would not yield positive results. “United States policy vis-à-vis black Africa in general and vis-à-vis white ruled Southern Africa in particular,” assessed the Embassy, “has developed a momentum of its own to which it would now be difficult to apply a brake, even in the unlikely event of the Carter administration undergoing a change of heart.”⁵⁷

Andre Buys, later chairman of the Armscor working group on nuclear strategy, described the choice: “We must either terminate the program now, or we must go for nuclear weapons ourselves. If I have to take the punishment, I at least want to be guilty.”⁵⁸ Again, this evidence is consistent with the absence of coercive assurance. Buys also referred to the Kalahari episode as a “watershed moment.”⁵⁹ And a 1977 policy paper by Neil Barnard concluded that “the acquisition of nuclear weapons will not necessarily isolate South Africa any further.”⁶⁰

In sum, the world was “mad already” at South Africa. The two compelling demands of Pretoria—that it sign the NPT and end apartheid—merged in the minds of South Africans. Such

⁵⁵ “Cable from South African Embassy in the US to the South African Secretary for Foreign Affairs on South Africa and the Bomb,” August 31, 1977, History and Public Policy Program Digital Archive, Obtained and contributed by Anna-Mart van Wyk, Monash South Africa. <<http://digitalarchive.wilsoncenter.org/document/114181>>.

⁵⁶ “Cable from South African Embassy in the US to the South African Secretary for Foreign Affairs on South Africa and the Bomb,” August 31, 1977, History and Public Policy Program Digital Archive, Obtained and contributed by Anna-Mart van Wyk, Monash South Africa. <<http://digitalarchive.wilsoncenter.org/document/114181>>.

⁵⁷ “Cable from South African Embassy in the US to the South African Secretary for Foreign Affairs on South Africa and the Bomb,” August 31, 1977, History and Public Policy Program Digital Archive, Obtained and contributed by Anna-Mart van Wyk, Monash South Africa. <<http://digitalarchive.wilsoncenter.org/document/114181>>.

⁵⁸ Interview with Andre Buys, conducted by Mark Bell and Noel Anderson, Pretoria, South Africa, July 1, 2014.

⁵⁹ Interview with Andre Buys, conducted by Mark Bell and Noel Anderson, Pretoria, South Africa, July 1, 2014.

⁶⁰ Neil Barnard, “The Deterrent Strategy and Nuclear Weapons,” 1977. Quoted in Frank Pabian, “South Africa’s Nuclear Weapons Program: Lessons for U.S. Nonproliferation Policy,” *Nonproliferation Review* 3, 1 (Fall 1995): p. 3.

a tangled web of compelling punishments and threats of more pain to come undermined the coercive assurance of either individual demand. According to South African nuclear scientist Von Wielligh, “these events finally persuaded the South Africans that the sanctions against the country were of a political nature and that they had nothing to gain from joining the NPT.”⁶¹ Another lead scientist, Waldo Stumpf, too reports that at the end of the 1970s, “these events convinced the South African government that the various sanctions were clearly politically inspired, and that Pretoria’s accession to the NPT without fundamental political reform at home would not gain South Africa international acceptance.”⁶² Nuclear sanctions and demands to join the NPT lacked all coercive assurance. Capitulation would not credibly make the punishment subside.

In this context, the leaders of the nuclear program decided that they faced a choice between giving up the program (remaining at a threshold status) or continuing to develop weapons in absolute secrecy. When they relayed that question to the Minister of Defense, P.W. Botha, “the answer came back, firmly: nuclear weapons.”⁶³

Compellence Continues, Further Tangling Nuclear Weapons and Apartheid

South Africa’s coercers doubled down. In November 1977, post-Kalahari affair, the UNSC issued its arms embargo. The UNSC Resolution 418 set the red line explicitly at nuclear weapons development, saying, “all states shall refrain from any cooperation with South Africa in the manufacture and development of nuclear weapons.”⁶⁴ According to Von Wielligh, “this

⁶¹ Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), p. 133.

⁶² Stumpf, “South Africa’s Nuclear Weapons Program: From Deterrence to Dismantlement,” (1995/1996), p. 5. See also Waldo Stumpf, Atomic Energy Corporation of South Africa Ltd, <<https://fas.org/nuke/guide/rsa/nuke/stumpf.htm>>.

⁶³ Interview with Andre Buys, conducted by Mark Bell and Noel Anderson, Pretoria, South Africa, July 1, 2014.

⁶⁴ UNSC Resolution 418, 1977. Quoted in Pabian, “South Africa’s Nuclear Weapons Program: Lessons for U.S. Nonproliferation Policy” (1995), p. 7.

offensive resolution brought home even more clearly to the South African government the fact that they were on their own.” Armscor, the state-owned Armaments Corporation, grew to fill this new demand indigenously.⁶⁵

In 1978, the Nuclear Non-Proliferation Act (NNPA) became the Carter Administration’s chief cudgel of compellence against South Africa. The full credible cutoff of any further nuclear cooperation with the United States was made clear with the passage of the NNPA, which outlawed U.S. nuclear assistance to any country that had not signed the NPT and accepted full-scope safeguards. The NNPA did not mention apartheid, but, as Peter Liberman writes, “anti-apartheid domestic sentiment would have made it difficult for a U.S. president to restore cooperation with South Africa even had it joined the NPT.”⁶⁶

Despite contracts to supply the fuel for the Koeberg facility, Carter refused to supply the fuel without South African signature of the NPT and continued the policy of denying reimbursement of the funds already paid for Safari-1 fuel.⁶⁷ South Africa was particularly upset by this means of American pressure, because both Safari-1 and Koeberg were subject to IAEA safeguards.⁶⁸ In their eyes, these were their legitimate facilities, and even they were not free from American interference.

Adding insult to injury, the South African delegation was denied participation in the 1979 IAEA General Conference in India. South Africa’s nuclear program had become a standing item of concern on the IAEA General Conference agenda.

⁶⁵ Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), p. 164.

⁶⁶ Liberman, “The Rise and Fall of the South African Bomb” (2001), p. 69.

⁶⁷ Martha van Wyk, “Sunset over Atomic Apartheid” *United States-South African Nuclear Relations, 1981-93*, *Cold War History*, Vol. 10, No. 1 (February 2010), p. 54.

⁶⁸ Stumpf, “South Africa’s Nuclear Weapons Program: From Deterrence to Dismantlement” (1995/1996), p. 4. On Koeberg safeguards, see “Safeguards in relation to an agreement of cooperation between France and South Africa for the construction of a nuclear power station,” GOV/1805, August 20, 1976. IAEA Archives, Vienna, Austria.

South Africa Builds its Arsenal

Nothing its coercers did pushed South Africa off of its path to the bomb after the Kalahari episode. In July 1977, Minister of Defense P. W. Botha had requested “national strategic guidelines” for the production of nuclear weapons and, post-Kalahari, approved those plans on April 4, 1978. Botha then became Prime Minister in October 1978 and appointed the Witvlei Committee to guide the nuclear program. On July 4, 1979, Botha approved the Committee’s recommendations to building seven nuclear weapons and transferred responsibility to Armscor, which built a new facility dedicated to the production of nuclear weapons—the Kentron Circle facility (aka Advena), 15 kilometers east of Pelindaba.⁶⁹ The AEC remained responsible for supplying the fissile material and by November 1979 the Y-plant had produced enough HEU to arm a nuclear device with a fissile core.⁷⁰ South Africa’s first device, codenamed Melba, was completed by the end of 1979.⁷¹ And its first aircraft-deliverable nuclear weapon, codenamed Cabot, was completed in December 1982.⁷² The rest of the weapons in South Africa’s arsenal—all gun-type bombs with two spherical halves—were produced at the pace of HEU production.⁷³

⁶⁹ “The Agency’s Verification Activities in South Africa, Report by the Director General,” GOV/2684, September 8, 1993, p. 6. IAEA Archives, Vienna, Austria; Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), p. 166; Stumpf, “South Africa’s Nuclear Weapons Program: From Deterrence to Dismantlement” (1995/1996), p. 5; Pabian, “South Africa’s Nuclear Weapons Program: Lessons for U.S. Nonproliferation Policy” (1995), p. 6.

⁷⁰ Liberman, “The Rise and Fall of the South African Bomb” (2001), p. 54; Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), p. 149; and Stumpf, “South Africa’s Nuclear Weapons Program: From Deterrence to Dismantlement” (1995/1996), p. 5.

⁷¹ Olli Heinonen, “Lessons Learned from dismantlement of South Africa’s biological, chemical, and nuclear weapons programs,” *Nonproliferation Review* 23, 1-2 (2016), p. 150. Earlier, in 1977, the AEB had constructed a gun-type nuclear device, but without an HEU core. “The Agency’s Verification Activities in South Africa, Report by the Director General,” GOV/2684, September 8, 1993, p. 5. IAEA Archives, Vienna, Austria.

⁷² Jo-Ansie van Wyk and Anna-Mart van Wyk, “From Nuclear Laager to the Non-Proliferation Club: South Africa and the NPT,” *South African Historical Journal* 67, 1 (2015), p. 40; Olli Heinonen, “Lessons Learned from dismantlement of South Africa’s biological, chemical, and nuclear weapons programs,” *Nonproliferation Review* 23, 1-2 (2016), p. 150.

⁷³ Anna-Mart Van Wyk, “Apartheid’s Atomic Bomb: Cold War Perspectives,” *South African Historical Journal* 62, 1 (2010), p. 112. Waldo Stumpf, “South Africa’s Nuclear Weapons Program: From Deterrence to Dismantlement,” *Arms Control Today*, (December 1995/January 1996), p. 7.

U.S. intelligence, which had long followed the developments of South Africa's indigenous enrichment program, also struggled to collect intelligence after the 1977 Kalahari episode. A 1978 CIA assessment acknowledged South Africa's ability to produce weapons-grade HEU, but noted "we have little doubt about South Africa's ability to produce a device, but we have little evidence that they have yet developed a deployable weapon."⁷⁴ The more sobering conclusion: "we are still far from certain what the South Africans are up to. We do not know precisely what their capabilities are, or how they got there."⁷⁵

American intelligence agencies likewise suspected but could not prove that South Africa had built nuclear weapons in the early 1980s. A March 1983 CIA report wrote, "we have no direct indication of any subsequent activities in the weapons program," since the 1977 Kalahari episode.⁷⁶ But it went on to say, "we believe, however, that South Africa already either possesses nuclear devices or has all the components necessary to assemble such devices on very short notice."⁷⁷ The CIA never did seem to know of the Kentron Circle Facility (aka Advena), which housed the nuclear weapons in vaults.⁷⁸

This ambiguity was central to South Africa's chosen nuclear posture. Pretoria's nuclear strategy was simple and relied only on the ability to detonate a nuclear device, not necessarily to deliver it. South Africa developed a catalytic nuclear posture, planning to rattle their nuclear

⁷⁴ Central Intelligence Agency, "South Africa's Nuclear Options and Decisionmaking Structures," Interagency Intelligence Memorandum, 1978.

⁷⁵ Central Intelligence Agency, "South Africa's Nuclear Options and Decisionmaking Structures," Interagency Intelligence Memorandum, 1978, p. ii.

⁷⁶ Central Intelligence Agency, *New Information on South Africa's Nuclear Program and South African-Israeli Nuclear and Military Cooperation*, March 30, 1983. Secret.

<<http://nsarchive.gwu.edu/NSAEBB/NSAEBB181/sa26.pdf>>. Also discussed in Richelson, *Spying on the Bomb* (2006), p. 375.

⁷⁷ Central Intelligence Agency, *New Information on South Africa's Nuclear Program and South African-Israeli Nuclear and Military Cooperation*, March 30, 1983. Secret.

<<http://nsarchive.gwu.edu/NSAEBB/NSAEBB181/sa26.pdf>>.

⁷⁸ Martha van Wyk, "Sunset over Atomic Apartheid: United States-South African Nuclear Relations, 1981-93" (2010), p. 58.

saber and even test openly to elicit U.S. support in a crisis.⁷⁹ In the words of President P.W. Botha, “Once we set this thing off, the Yanks will come running.”⁸⁰ The nuclear strategy began with opacity. Signing the NPT was not an option.

V. Sanctions Bite and Pretoria Conducts a Critical Appraisal

During this episode, South Africa judged compelling threats to be credible and quite costly. Sanctions were hurting the economy and Pretoria wanted to end the pain. Nonetheless, South Africa remained opposed to signing the NPT because its leaders perceived lack of coercive assurance. They did not believe that signing the NPT would remove the compelling punishment of sanctions.

Reagan Attempts to Change U.S. Strategy, Congress Resists (A Lack of Coercive Control)

In the 1980s, the Reagan administration set out to pursue a more accommodating strategy with South Africa—a policy of “constructive engagement.”⁸¹

When President Reagan met with Minister of Foreign Affairs Pik Botha on May 15, 1981, he communicated for the first time what amounted to coercive assurance. “The President, in welcoming the Minister, made it clear that he was no advocate of what he called ‘one man, one vote once,’” say the meeting notes, “the inference clearly being that he had no illusions about democratic rule in Africa.”⁸² Reagan was in essence taking one demand off the table—fundamental political reform—that was complicating compellence over signing the NPT.

⁷⁹ On “catalytic” nuclear posture, see Vipin Narang, *Nuclear Strategy in the Modern Era* (Princeton University Press, 2014), p. 208.

⁸⁰ Quoted in Narang, *Nuclear Strategy in the Modern Era* (2014), p. 213.

⁸¹ Martha van Wyk, “Sunset over Atomic Apartheid: United States-South African Nuclear Relations, 1981-93” (2010), p. 55.

⁸² “Notes on Meeting between South African Minister of Foreign Affairs R.F. Botha and U.S. President Reagan,” May 15, 1981, History and Public Policy Program Digital Archive, South African Foreign Affairs Archive, File

But Reagan also backed off of any demands for a change in South African nuclear behavior. In the same meeting, Botha expressed South Africa's unwillingness to sign the NPT lest it "terminate the speculation about South Africa's possession of the bomb," which was a "deterrent of major psychological value."⁸³ Reagan was "particularly struck by this last argument which had not occurred to him before" and communicated his desire to break with the "previous administration's policy in this [nuclear] field."⁸⁴

Furthermore, Botha and Reagan struck a deal in the May 1981 meeting. In exchange for Reagan supplying reactor fuel for Koeberg, Botha committed to "not execute an explosive test without first consulting the American Government."⁸⁵ The White House followed through.⁸⁶

As the Reagan administration eased open U.S.-South African relations, however, strong objections emerged from public interest groups and the anti-apartheid faction of the U.S. Congress. These groups made their dissent known and the small window of accommodation began to rapidly close. The Reagan administration struggled to exert coercive control

137/10/02 Vol. 9, Doc. No. 82214/006772. Obtained and contributed by Or Rabinowitz.
<<http://digitalarchive.wilsoncenter.org/document/116764>>.

⁸³ Ibid.

⁸⁴ Ibid. This version of the story is largely confirmed by Pik Botha's recollections. Pik Botha Interview with Sue Onslow, Appendix 1, *Institute of Commonwealth Studies*, Pretoria, South Africa, December 13, 2012.
<<https://commonwealthoralhistories.org/2015/interview-with-rf-pik-botha/>>.

⁸⁵ Pik Botha Interview with Sue Onslow, Appendix 2, *Institute of Commonwealth Studies*, Pretoria, South Africa, December 13, 2012. <<https://commonwealthoralhistories.org/2015/interview-with-rf-pik-botha/>>. On this nuclear testing bargain, see also Nicholas Miller and Or Rabinowitz, "Keeping the Bombs in the Basement: US Nonproliferation Policy Toward Israel, South Africa, and Pakistan," *International Security* 40, 1 (Summer 2015), p. 61; and Or Rabinowitz, *Bargaining on Nuclear Tests: Washington and Its Cold War Deals* (Oxford University Press, 2014).

⁸⁶ American firms, acting legally but skirting U.S. law, brokered the deal to acquire uranium from Switzerland and Belgium and have a French firm enrich it and sell it to Pretoria. The U.S. State Department was infuriated by this deal. Reagan also agreed to the export of some civilian nuclear technology to South Africa in 1982 and maintenance contracts for the Koeberg facility in 1983. Martha van Wyk, "Sunset over Atomic Apartheid: United States-South African Nuclear Relations, 1981-93" (2010), pp. 56-57. Stumpf, "South Africa's Nuclear Weapons Program: From Deterrence to Dismantlement," (1995/1996), p. 4.

domestically. Sanctions legislation was introduced in 1982 and by the end of 1984 comprehensive sanctions “appeared inevitable.”⁸⁷

The window shut completely by 1985, as the U.S. Senate overwhelmingly passed (80 to 12) a sanctions bill on July 11, totally banning nuclear commerce with South Africa.⁸⁸ The House had passed a sanctions bill earlier in June, so a conference committee set to work on writing compromise legislation.⁸⁹ To pre-empt an embarrassing policy defeat, Reagan signed an Executive Order on September 9, 1985 prohibiting the transfer of any materials or technologies that would support South Africa’s nuclear enterprise.⁹⁰ And any plans for further accommodation departed when both houses of Congress passed the Comprehensive Anti-Apartheid Act (CAAA) in 1986, overriding Reagan’s veto.⁹¹ The CAAA came into effect on January 1, 1987.

At this point, the hydra-headed compellent demands of signing the NPT and abandoning apartheid were as entangled as ever. The CAAA, ostensibly aimed at apartheid, outlawed any further nuclear cooperation with South Africa until it signed the NPT.⁹² A lack of coercive control domestically exacerbated the strategic problem. In a 1986 meetings with U.S. Ambassador-at-Large for Nuclear Affairs Richard T. Kennedy, when Pik Botha indicated some

⁸⁷ Martha van Wyk, “Sunset over Atomic Apartheid: United States-South African Nuclear Relations, 1981-93” (2010), pp. 57-60.

⁸⁸ Jonathan Fuerbringer, “Senate Approves Economic Moves Against S. Africa,” *New York Times*, July 12, 1985. <<http://www.nytimes.com/1985/07/12/us/senate-approves-economic-moves-against-s-africa-senate-confirmed-23-nominees-for.html>>.

⁸⁹ Passage of a bill in the Senate was a key roadblock that, once breached, signaled significant legislative impediment a Reagan’s foreign policy vis-à-vis South Africa. For the legislative details, see Brenda M. Branaman, “Sanctions Against South Africa: Activities of the 99th Congress,” *Congressional Research Service*, Report No. 87-200 F, February 13, 1987, <https://digital.library.unt.edu/ark:/67531/metacrs8421/m1/1/high_res_d/87-200F_1987Feb13.pdf>.

⁹⁰ Martha van Wyk, “Sunset over Atomic Apartheid: United States-South African Nuclear Relations, 1981-93” (2010), p. 61.

⁹¹ Pauline H. Baker, “The United States and South Africa: Persuasion and Coercion,” in Richard N. Haass and Meghan L. O’Sullivan (eds.), *Honey and Vinegar: Incentives, Sanctions, and Foreign Policy* (Washington: Brookings Institution Press, 2000), p. 106.

⁹² David Albright and Tom Zamora, “South Africa Flirts with the NPT,” *Bulletin of the Atomic Scientists*, (January/February 1991), p. 27; Pabian, “South Africa’s Nuclear Weapons Program: Lessons for U.S. Nonproliferation Policy” (1995), p. 7.

willingness to bargain over joining the NPT with “serious reservations,” Kennedy rejected any conditional accession and “warned Botha that due to Congressional pressure, relief from broader sanctions would be contingent on South Africa’s progress on internal political reforms.”⁹³ The coercive assurances of American compellent demands were further undermined.

Pretoria Conducts a Critical Appraisal in 1985

By the mid-1980s, sanctions were biting in South Africa. Creditors called in loans and Pretoria resorted to capital controls to fight capital flight.⁹⁴ Overall, between 1975 and 1991, South Africa experienced about 1.6 percent annual GDP growth rate;⁹⁵ compared to a population growth rate of 3 percent and a recent historical experience of 5 percent annual growth.⁹⁶ A report on the effect of sanctions in South Africa found that financial sanctions had cost South Africa \$15-27 billion.⁹⁷ The economy withered.⁹⁸ Inflation was over 15 percent when De Klerk came to power at the end of the 1980s.⁹⁹

In this context, the government held an ad hoc cabinet committee meeting in the State President’s office at 3:00pm on September 3, 1985. The purpose was to discuss South Africa’s

⁹³ Martha van Wyk, “Sunset over Atomic Apartheid: United States-South African Nuclear Reactions, 1981-93” (2010), p. 61.

⁹⁴ Baker, “The United States and South Africa: Persuasion and Coercion,” in Haass and O’Sullivan (eds.), *Honey and Vinegar: Incentives, Sanctions, and Foreign Policy* (2000), p. 111; Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), p. 179.

⁹⁵ Baker, “The United States and South Africa: Persuasion and Coercion,” in Haass and O’Sullivan (eds.), *Honey and Vinegar: Incentives, Sanctions, and Foreign Policy* (2000), p. 109. She cites Hermann Giliomee, “Surrender without Defeat: Afrikaners and the South African ‘Miracle’,” *Daedalus* (Spring 1997), p. 127.

⁹⁶ Baker, “The United States and South Africa: Persuasion and Coercion,” in Haass and O’Sullivan (eds.), *Honey and Vinegar: Incentives, Sanctions, and Foreign Policy* (2000), p. 109.

⁹⁷ Charles M. Becker, et al., *The Impact of Sanctions on South Africa, Part I: The Economy* (Washington: Investor Responsibility Research Center, 1990).

⁹⁸ Pretoria’s limits on capital flows and import substitution policies led the economy to shrink by 20-35 percent. Baker, “The United States and South Africa: Persuasion and Coercion,” in Haass and O’Sullivan (eds.), *Honey and Vinegar: Incentives, Sanctions, and Foreign Policy* (2000), p. 112.

⁹⁹ *Ibid.*, p. 109. She cites Robert Schrire, *Adapt or Die: The End of White Politics in South Africa* (Ford Foundation and Foreign Policy Association, 1991).

response to international compellence. Sanctions were hurting. According to Von Wielligh, “the committee had to reconsider the existing nuclear weapons programme and the additional materials and facilities that would have to be provided in future.”¹⁰⁰ The meeting’s participants were the President, Minister of Defense, Minister of Finance, Minister of Foreign Affairs, Minister of Mineral and Energy Affairs, Director-General of Mineral and Energy Affairs, Chairman of Armscor, and the Chairman of the AEC.¹⁰¹

This was a key decision moment for a target of coercion. The committee was “juggling a number of issues simultaneously and had to strike a balance between funding restrictions, international and American sanctions, the war in Angola, the internal state of emergency, and the scope and purpose of the nuclear weapons programme.”¹⁰²

Pretoria again chose to defy compellence. The ad hoc committee decided to limit the number of nuclear weapons to seven—a trivial change given the modest initial goals of the South African program. Enriched uranium and Lithium-6 production would continue as required for the weapons, but they decided to scrap plans for the production of plutonium.¹⁰³ Missile research would also continue apace. And the catalytic nuclear strategy was reaffirmed. The ad hoc committee also chose to play for time on the question of IAEA inspections for the new semi-commercial enrichment plant (the Z-plant), under construction at the time. At no point was the committee willing to consider signing the NPT.

Not by coincidence, Botha delivered his famous “Rubicon” speech just weeks prior, on August 15, 1985. Widely expected to be an announcement of political reforms, including the

¹⁰⁰ Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), p. 180.

¹⁰¹ “Meeting of the Ad Hoc Cabinet Committee Under the Chairmanship of the Honourable the State President on Tuesday 3 September 1985 at 15h00,” document reproduced in Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), pp. 480-483.

¹⁰² Ibid.

¹⁰³ Ibid.

release of Nelson Mandela, Botha instead recommitted Pretoria to the apartheid status quo to a live audience of 200 million listeners.¹⁰⁴ “We have had to contend with escalating violence within South Africa, and pressure from abroad in the form of measures designed to coerce the government into giving in to various demands,” argued Botha. “We have never given in to outside demands and we are not going to do so now.” He declared, “we are today crossing the Rubicon. There can be no turning back.”¹⁰⁵

The nuclear program was no different. In the words of Waldo Stumpf, “in September 1985 the entire nuclear weapons effort was reviewed once again and President Botha reconfirmed that the program would be limited to seven fission devices.”¹⁰⁶ The program remained as envisioned in 1979. Pretoria would not sign the NPT.

To be sure, South African officials continued to engage in dialogue with the United States and the IAEA during the 1980s about potential accession to the NPT and the acceptance of comprehensive safeguards.¹⁰⁷ The purpose of these meetings to Pretoria seems to have been little more than cosmetic—a modest release valve for international pressure. Nevertheless, these negotiations are an important window into the minds of the South African leadership. South Africa never truly saw the up side of submitting all of its nuclear facilities to IAEA safeguards until the end of apartheid was clear.

¹⁰⁴ Hermann Giliomee, *The Last Afrikaner Leaders: A Supreme Test of Power* (Charlottesville, VA: UVA Press, 2012).

¹⁰⁵ “Address by State President P.W. Botha at the Opening of the National Party Natal Congress Durban,” August 15, 1985.

<<https://www.nelsonmandela.org/omalley/index.php/site/q/031v01538/041v01600/051v01638/061v01639.htm>>.

¹⁰⁶ Stumpf, “South Africa’s Nuclear Weapons Program: From Deterrence to Dismantlement” (1995/1996), p. 6.

¹⁰⁷ Martha van Wyk, “Sunset over Atomic Apartheid: United States-South African Nuclear Relations, 1981-93” (2010), pp. 61-62.

VI. Negotiating over Safeguards with the IAEA

Throughout the 1980s, South Africa and the IAEA negotiated over safeguarding nuclear facilities. Through these communications with Pretoria and the deliberations of the IAEA Board of Governors, scholars can observe the tangled compelling demands of nuclear safeguards and apartheid and overall South African intransigence. During this episode, South Africa judged compelling threats to be credible and costly. Yet South Africa continued to refuse to give in to compulsion and sign the NPT because its leaders perceived a lack of coercive assurance.

The IAEA was a significant interlocutor for coercive bargaining with South Africa over its nuclear program. While the IAEA has little coercive power on its own, it was a venue through which South Africa could communicate its positions and willingness or unwillingness to compromise. To defy the IAEA was to defy coercers. Accepting full scope safeguards required working with the IAEA.

The primary subject of communications and negotiation was over the safeguarding of a planned South African semi-commercial enrichment plant (the Z-plant). In August 1976, Pretoria had informed the IAEA of its intention to build a commercial uranium enrichment plant and submit it for safeguarding. The IAEA responded with proposed text for such a safeguards agreement. In response, South Africa requested a delay until the plant's capacity and design were settled. Years went by until a January 1984 AEC press release included a reference to its willingness to restart Z-plant negotiations.¹⁰⁸ Rounds of talks were held in August 1984, February 1985, and April 1986.

Yet negotiations hit a snag. South Africa insisted on three special exceptions to safeguards: (1) to allow the diversion of fissile material for "military non-explosive purposes,"

¹⁰⁸ "Communication Received from South Africa, Received January 31, 1984," INFCIRC/314, February 1984. IAEA Archives, Vienna, Austria.

(2) that the Agreement would terminate if South African rights to participate in the IAEA were ever curtailed, suspended, or withdrawn (something very much debated at the Agency), and (3) the right to terminate the Agreement if it ever jeopardized the “supreme interests” of South Africa.¹⁰⁹

A series of letters between the IAEA Director General, Hans Blix, and South African representatives relaying messages from Pretoria, illuminate South African thinking. Blix communicated repeatedly that the terms would not be acceptable to the IAEA. South Africa insisted, until it effectively called off the negotiations in a February 25, 1987 letter. In it, Pretoria reiterated its terms and pronounced its unwillingness to “accede to unconstitutional and unreasonable demands by the IAEA.”¹¹⁰

The South African letter went on to complain about a lack of credible coercive assurance complementing the demands being made of Pretoria. Regarding the compelling demands that its sign the NPT, the letter indicated, “The South African Government has also declared that it remains willing to consider accession to the NPT, provided its basic requirements could be met. Under the present international situation where punitive sanctions and boycotts are being imposed on South Africa by the international community, its basic requirements are certainly threatened.” The letter further concluded, “...in view of the prevailing intransigent attitude towards South Africa, ... no useful purpose could be served by further negotiations on the basis of South Africa’s draft agreement. It must be emphasized that the essence of the South African proposal is to confirm the non-production of nuclear explosive devices, and this purpose is now

¹⁰⁹ “South Africa’s Nuclear Capabilities: Annex D,” IAEA, GOV/INF/523, June 2, 1987. IAEA Archives, Vienna, Austria.

¹¹⁰ “South Africa’s Nuclear Capabilities: Annex C,” Letter from the Permanent Mission of South Africa to the IAEA, February 25, 1987, GOV/INF/523. IAEA Archives, Vienna, Austria.

frustrated by the decision which derives from the general attitude to South Africa, which prevails in the policy-making bodies of the IAEA.”

Indeed, South Africa representatives were not wrong in their perception of a general animus toward its government. As these negotiations became a vehicle within the IAEA General Conference and the Board of Governors for discussion of overall South African nuclear ambitions, the records of these meetings reveal a strong tangling of the nuclear and apartheid issues. Throughout the 1980s, the IAEA melded member states’ demands for South Africa to sign the NPT and abandon apartheid. The South African nuclear program was a recurring item on the agenda Board of Governors meetings. In 1981, South Africa was removed from the IAEA’s Committee on Assurance of Supply (the USA abstained in the vote). The resolution blended nuclear and apartheid issues, citing both that South Africa was a “racist regime” and that “the nuclear programme of the racist regime of South Africa constitutes a grave danger to international peace.”¹¹¹

Many ambassadors in Board of Governors meetings, including from major powers, regularly referred to South Africa as a “racist regime” or prefaced their remarks with a reiteration of their country’s abhorrence for apartheid when discussing the nuclear safeguards issue.¹¹² While members demanded that South Africa sign the NPT, in the same breath they condemned Pretoria for its discriminatory domestic politics.¹¹³ For example, it was a problem that “South

¹¹¹ “Prohibition of the Participation of a Delegation of South Africa in CAS Meetings,” GOV/2054, September 13, 1981. IAEA Archives, Vienna, Austria.

¹¹² See “Record of the Six Hundred and Sixteenth Meeting,” IAEA Board of Governors Meeting, February 22, 1984, GOV/OR.616. IAEA Archives, Vienna, Austria; “Record of the Six Hundred and Twenty-Fourth Meeting,” IAEA Board of Governors Meeting, June 8, 1984, GOV/OR.624. IAEA Archives, Vienna, Austria; or “Record of the Six Hundred and Fifty-Eighth Meeting,” IAEA Board of Governors Meeting, September 23, 1986, GOV/OR.658. IAEA Archives, Vienna, Austria.

¹¹³ IAEA Board of Governors, “Record of the Six Hundred and Sixteenth Meeting on February 22, 1984,” GOV/OR.616, May 1984. IAEA Archives, Vienna, Austria.
IAEA Board of Governors, “Record of the Six Hundred and Twenty-Fourth Meeting on June 8, 1984,” GOV/OR.624, September 1984. IAEA Archives, Vienna, Austria.

Africa's nuclear programme was directed towards military ends and that its discriminatory and aggressive policies had aroused much concern," argued the ambassador from Cuba.¹¹⁴ The Chinese ambassador lamented that "the South African regime continued to apply apartheid and to persecute the South African people and was expanding its nuclear capability," demanding that both practices end.¹¹⁵ And the Indian ambassador concluded a lengthy diatribe against South Africa's "racist policies and present rulers" by saying that both "apartheid could not be reformed but had to be abolished ... [and] the progressive building up of South Africa's nuclear capability posed a threat to peace."¹¹⁶ Overall, it became near universal practice, including by the United States, to begin remarks about the South African issue with a statement of opposition to apartheid.¹¹⁷

On occasion, the United States sought to separate the issue of apartheid from debate about South Africa removal from IAEA membership. "[The U.S.] Government had consistently condemned the policy of apartheid," said the U.S. Ambassador Kennedy in the June 1985 Board of Governors meeting, but "that was not the issue at stake."¹¹⁸ Such appeals were drowned out by the prevailing anti-apartheid drumbeats.

These views were even more prevalent in General Conference (GC) discussion. The GC indeed remained committed to compellence. On multiple occasions, the GC passed resolutions

¹¹⁴ IAEA Board of Governors, "Record of the Six Hundred and Sixteenth Meeting on February 22, 1984," GOV/OR.616, May 1984. IAEA Archives, Vienna, Austria.

¹¹⁵ IAEA Board of Governors, "Record of the Six Hundred and Forty-First Meeting on September 19, 1985," GOV/OR.641, February 1986. IAEA Archives, Vienna, Austria.

¹¹⁶ IAEA Board of Governors, "Record of the Six Hundred and Forty-First Meeting on September 19, 1985," GOV/OR.641, February 1986. IAEA Archives, Vienna, Austria.

¹¹⁷ IAEA Board of Governors, "Record of the Six Hundred and Forty-First Meeting on September 19, 1985," GOV/OR.641, February 1986. IAEA Archives, Vienna, Austria.

IAEA Board of Governors, "Record of the Six Hundred and Twenty-Fourth Meeting on June 8, 1984," GOV/OR.624, September 1984. IAEA Archives, Vienna, Austria.

¹¹⁸ IAEA Board of Governors, "Record of the Six Hundred and Thirty-Ninth Meeting on June 13, 1985," GOV/OR.639, September 1985. IAEA Archives, Vienna, Austria.

formally demanding that South Africa “submit all its nuclear installations and facilities to inspection by the Agency.”¹¹⁹ Nevertheless, its assurance was no more credible. The resolution adopted at the October 1986 General Conference plenary meeting, ostensibly to condemn the South African nuclear program, contained multiple references to apartheid. One key sentence articulating the resolution’s purpose reads, “acquisition of nuclear weapon capability by the racist regime constitutes a very grave danger to international peace and security...”¹²⁰ The human rights and nuclear weapons issues were obviously linked.

Cracks Emerge in Pretoria, but Stubborn Impediments Remain

When the last round of safeguards negotiations collapsed in 1987, the IAEA moved to suspend South Africa’s membership. The Board of Governors voted in favor of removal 22 to 12 with one abstention.¹²¹ All that was left was for the General Conference to concur.

Pretoria showed real concern for such a punishment.¹²² A well-timed public announcement from South Africa in September 1987 defused the IAEA suspension efforts: Botha declared that he was prepared to negotiate Pretoria’s signature of the NPT. The following day, Soviet and American delegations cited Pretoria’s announcement as reason not to expel it from the body and the Board deferred its decision.¹²³

¹¹⁹ On October 14, 1983, the GC of the IAEA adopted Resolution 408. “Resolution adopted during the 256th plenary meeting on 14 October 1983, South Africa’s nuclear capabilities,” GC(XXVII)/RES/408, November 9, 1983. IAEA Archives, Vienna, Austria. In September 1984, the GC of the IAEA adopted Resolution 423.

[GC(XXVIII)/RES/423] Cited in Jo-Ansie van Wyk, “Atoms, Apartheid, and the Agency: South Africa’s Relations with the IAEA, 1957-1995,” *Cold War History* (2014), p. 12.

¹²⁰ “South Africa’s Nuclear Capabilities: Resolution adopted during the 292nd plenary meeting,” October 3, 1986, GC(XXX)/RES/468. IAEA Archives, Vienna, Austria.

¹²¹ Jo-Ansie van Wyk, “Atoms, Apartheid, and the Agency: South Africa’s Relations with the IAEA, 1957-1995,” *Cold War History* (2014), p. 12.

¹²² *Ibid.*, p. 14.

¹²³ Martha van Wyk, “Sunset over Atomic Apartheid: United States-South African Nuclear Relations, 1981-93” (2010), p. 62; Jo-Ansie van Wyk, “Atoms, Apartheid, and the Agency: South Africa’s Relations with the IAEA, 1957-1995” (2014), p. 13.

Of course, throughout the whole period of safeguards negotiations, the true goal of South Africa's compellers was to get it to sign the NPT, not merely to accept safeguards at its new semi-commercial uranium enrichment facility. As the Soviet representative to the IAEA articulated in a June 8, 1984 Board of Governors meeting, "agreement by the South African authorities to resume discussions on the safeguarding of a semi-commercial enrichment plant was entirely insufficient to convince the international community of their peaceful intentions. It was only by South Africa's acceding to the NPT," that the IAEA's concerns could be satisfied.¹²⁴ Yet Botha and other South African leaders did not perceive the assurance necessary to make such a concession. The announcement that Pretoria was prepared to discuss signing the NPT was more likely a ploy to buy time and not an indication of the leadership's acquiescence to compellence.

Negotiations to join the NPT were hung up on two issues in the late 1980s. First, Pik Botha did not perceive that the IAEA actually wanted South Africa as a member, saying in August 1988 that he remained unconvinced that the NPT "would be applied to [South Africa] in a non-discriminatory manner" if Pretoria joined.¹²⁵ Second, those whose voices mattered most in Pretoria knew that South Africa still had a small nuclear arsenal hidden away. Signing the NPT presented South Africa with a problem of having to accept IAEA inspectors at all of its nuclear facilities, where naturally they would find that South Africa had produced nuclear weapons. That is, unless South Africa dismantled its weapons before inspections began.

In the late 1980s, South African obstinacy was showing signs of cracking internally. The South African Department of Foreign Affairs (DFA) produced a memo on September 1, 1988,

¹²⁴ "Record of the Six Hundred and Twenty-Fourth Meeting," IAEA Board of Governors Meeting, June 8, 1984, GOV/OR.624. IAEA Archives, Vienna, Austria.

¹²⁵ "Pretoria Says It Can Build A-Arms," *Reuters*, August 13, 1988, <<http://www.nytimes.com/1988/08/14/world/pretoria-says-it-can-build-a-arms.html>>.

dissenting against AEC and Armscor positions on South African catalytic nuclear strategy of calculated ambiguity, and recommending the signature of the NPT. In addition to several other arguments, DFA wrote that "...foreign boycotts and sanctions and increasing political and physical isolation are evidence of the inappropriateness of reliance on a nuclear deterrent to secure our future. The authors questioned the benefits of possessing a nuclear arsenal. The deterrence strategy has in fact led to increased pressure on SA and greater international condemnation of our nuclear policy."¹²⁶ But DFA could not muster a winning coalition to wage this internal fight until months later. Others in Pretoria disagreed and remained committed to the nuclear program and stuck by their weapons until late 1989.

By this point, Pretoria seemed eager for a way out of isolation, yet continued to hedge. Coming out of the September 1985 decision to maintain the nuclear weapons program, more research was required to miniaturize implosion warheads for missile delivery. South Africa funded the construction of two new facilities to conduct this research in 1988 and 1989.¹²⁷ South Africa also built an additional warhead as late as 1989, suggesting at least an intent to hedge and not give in to compellent demands until late 1989.

Incredible coercive assurance was the only remaining impediment. In the end it took a new South African leadership, one that truly saw the writing on the wall and intended to bring about the end of apartheid, to finally accede to the NPT. Speaking of the end of the 1980s, Stumpf recalled that "as the progress of domestic political reform became better understood abroad, accession to the NPT assumed distinct advantages for South Africa internationally and

¹²⁶ "Report, South African Department of Foreign Affairs, 'A Balanced Approach to the NPT: Armscor/AEC Concerns Viewed from a DFA Standpoint'," September 1, 1988, History and Public Policy Program Digital Archive, South African Foreign Affairs Archives, NPT-IAEA Agreement/Negotiations on full-scope safeguards. Obtained and contributed by Anna-Mart van Wyk, Monash South Africa.
<<http://digitalarchive.wilsoncenter.org/document/114185>>.

¹²⁷ Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), p. 189.

especially on the African continent.”¹²⁸ That new leadership took the form of F.W. De Klerk, who came into power intent on complying with both compelling demands—apartheid and signing the NPT—as well as developing a crucial plan to dismantle the nuclear arsenal in secret and cover up the extent of South Africa’s nuclear sins.

VII. Assurance at Last: Explaining the 1989 Decision to Dismantle the Arsenal

De Klerk and the Decision to Concede

Upon suffering a stroke, President P.W. Botha resigned as the leader of his party on February 2, 1989. F.W. de Klerk was elected new party leader, but Botha remained the President until August 14.¹²⁹ After a new general election on September 6, 1989, F.W. de Klerk assumed the Presidency on September 20. De Klerk managed to navigate these contentious internal party politics because of his reputation as a conservative committed to maintaining Afrikaner rule.¹³⁰ But he was about to break the mold.

From the moment he began his presidency, De Klerk sought to end South Africa’s international isolation by both ending apartheid and signing the NPT. There is no question that the two issues—political reform and signing the NPT—were related in his mind. Neither alone could bring economic relief. Waldo Stumpf recalls that “F.W. de Klerk’s opening remarks to a few ministers and officials whom he convened in September 1989, shortly after he assumed office as the new state president, were: ‘In my term of office I am going to lead this country back to a position of an internationally respected member of the world community and this means two things: We are going to turn the political system round to a fully democratic system by

¹²⁸ Stumpf, “South Africa’s Nuclear Weapons Program: From Deterrence to Dismantlement” (1995/1996), p. 6.

¹²⁹ Purkitt and Burgess, *South Africa’s Weapons of Mass Destruction* (Bloomington: Indiana University Press, 2005), pp. 123-124.

¹³⁰ *Ibid.*, p. 124.

unbanning the ANC and releasing Nelson Mandela, and secondly we are going to dismantle our nuclear arsenal and accede to the NPT.’ From this broad vision his instructions to me were to ‘garner the maximum amount of international credibility from our accession to the NPT.’”¹³¹

De Klerk perceived a golden opportunity to end the isolation of South Africa. At a December 3-5, 1989 cabinet retreat, responding to an economic briefing detailing how “sanctions were biting, oil was in short supply and the repayment of foreign debt was dragging the economy down,” De Klerk responded: “We can hold out for another ten or fifteen years, but there will be sanctions, sabotage and terror. Do we want that? We must avoid negotiating at a point where we have to yield under pressure. We must use this golden opportunity.”¹³² De Klerk indeed knew that he was already under pressure, but sought to avoid additional punishment and a complete loss of leverage. De Klerk and his cabinet thus set out to acquiesce on both the nuclear and apartheid issues. The only question was how to do so in a manner that assured they would not be punished in spite of their concessions.

Double Acquiescence and Sanctions Relief (Overcoming Entangled Demands)

The first step was to acquiesce to both demands at the same time, overcoming the dubious hydra-headed compellence which had frustrated the coercive assurance perceived by earlier leaders unwilling to budge on domestic reform. De Klerk correctly concluded that both needed to be addressed to see any sanctions relief.

¹³¹ Waldo Stumpf, “Forward,” in Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), pp. iii-iv.

¹³² Giliomee, *The Last Afrikaner Leaders* (2012), pp. 302-303. Other South African policymakers agreed that the economic sanctions situation was dire but not critical. “From a financial point of view, South African did not have to negotiate in 1990, but conditions were tightening,” judged Derek Keys, minister of finance from 1992 to 1994. These views are consistent with framework of compellence—it is not only the current pain but the threat of more punishment to come that generates coercive leverage. Giliomee, *The Last Afrikaner Leaders* (2012), p. 317.

Soon after his election, De Klerk formed a committee to make recommendations about joining the NPT. According to an attendee of the first committee meeting, Waldo Stumpf, De Klerk said, “the nuclear devices would be a liability in South Africa gaining international acceptance in the process...There was no debate about the decision but rather how it should be implemented.”¹³³ At an ad hoc cabinet meeting in November 1989, De Klerk accepted the committee’s recommendations and instructed the AEC and Armscor to terminate nuclear material production and dismantle the existing nuclear weapons.¹³⁴

Not much later, De Klerk made a speech on February 2, 1990 announcing the steps to end apartheid: the release of Nelson Mandela, unbanning political parties, and his intention to negotiate a new democratic constitution.¹³⁵ The same month, South Africa secretly began to implement the nuclear dismantlement plan approved by De Klerk in November 1989.¹³⁶ I code South Africa as conceding to compellent demands over its nuclear program in November 1989. Finally, they had correctly perceived that coercive assurance was credible. Defiance ended.

Sanctions relief follow, although not until the full extent of Pretoria’s acquiesce was credibly communicated. In the wake of De Klerk’s February 1990 speech announcing his intention to usher in a South African political system “in which every inhabitant will enjoy equal rights,” sanctions were not immediately lifted.¹³⁷ In September 1990, De Klerk was invited to meet with President George H.W. Bush at the White House. The meeting was cordial. De Klerk complained that CAAA sanctions remained in place, but Bush noted that South Africa had to

¹³³ Liberman, “Rise and Fall of the South African Bomb” (2001), pp. 73-74.

¹³⁴ Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), p. 216.

¹³⁵ Giliomee, *The Last Afrikaner Leaders* (2012), p. 309.

¹³⁶ The Y-plant ceased production on February 1, 1990. However, the formal order from De Klerk to shut down the Y-plant was not received until February 26, 1990, so Stumpf cites that date as the official closing date. Stumpf, “South Africa’s Nuclear Weapons Program: From Deterrence to Dismantlement” (1995/1996), p. 6. See also Purkitt and Burgess, *South Africa’s Weapons of Mass Destruction* (2005), pp. 125-126.

¹³⁷ Quoted in Purkitt and Burgess, *South Africa’s Weapons of Mass Destruction* (2005), p. 124.

meet all five of the prerequisites for CAAA sanction relief to take effect—(1) release of all political prisoners (including Nelson Mandela), (2) end of the state of emergency, (3) unbanning of political parties, (4) repeal of the Group Areas Act and the Population Registration Act, and (5) the beginning of negotiations on true democratic governance. Conditions 1, 2, and 4 had not yet been fully met. De Klerk returned home and met the rest of the conditions by June 1991.¹³⁸ Pik Botha then signed the NPT on behalf of South Africa on July 8, 1991 and his signature was ratified on July 10. That same day, on July 10, 1991, President Bush signed an executive order lifting the CAAA sanctions. The United States was surprised by the rapid turnaround in South African policy.¹³⁹

Additional relief followed. The apartheid era ended on April 27, 1994 when Nelson Mandela won the presidency in the nation's first fully democratic elections. South Africa subsequently participated in the September 1994 IAEA General Conference, rejoined the Committee on Assurance of Supply, and resumed its seat on the IAEA Board of Governors in September 1995.¹⁴⁰

“Coming Clean” (Reducing the Visibility of Concessions)

Pretoria's second step, critical to the success of compellence, was to acquiesce in such a way that saved faced by reducing the visibility of the extent of its concessions. To do so, South Africa dismantled and destroyed evidence of its nuclear weapons program. Delaying accession to the NPT until July 1991 and the signing of a safeguards agreement with the IAEA until

¹³⁸ Alex Thomson, *U.S. Foreign Policy Towards Apartheid South Africa, 1948-1994* (Palgrave Macmillan, 2008), p. 161.

¹³⁹ A January 20, 1989 CIA estimate entitled “South Africa in the 1990s” had concluded that Pretoria “has weathered more than four years of unprecedented domestic and international pressure,” with no changes imminent. Giliomee, *The Last Afrikaner Leaders* (2012), p. 269.

¹⁴⁰ “Participation of South Africa in CAS Meetings, Resolution Adopted by the Board on September 14, 1994,” GOV/2763, September 14, 1994. IAEA Archives, Vienna, Austria; and Reiss, *Bridled Ambition*, p. 19.

September 16, 1991 bought South Africa time to achieve this objective. This way Pretoria could sign the NPT without ever admitting that it had constructed nuclear weapons. The weapons dismantlement process was “essentially completed” by the end of June 1991 and the last of the HEU from the weapons was returned to the AEC by September 1991.¹⁴¹ Only much later, on March 24, 1993, did De Klerk announced that South Africa had dismantled an arsenal of six nuclear weapons, acknowledging the extent of its concessions.

In contemplating giving in to coercive pressure and signing the NPT, South Africa planned and executed an explicit strategy of deniability. A November 17, 1989 letter from Richard Carter (of the Department of Foreign Affairs) to Herbert Beukes (Deputy Director-General of Foreign Affairs), summarizing an AEC meeting to discuss possible accession to the NPT, makes this plan plain. It highlighted that “decontamination is a major problem.”¹⁴² Inspectors allowed into the Y-plant were certain to detect traces of weapons-grade uranium. “Even a major, 3 year decontamination program will be unlikely to completely eradicate all traces of highly enriched (95%) product. ... IAEA inspectors using sensitive equipment will be able to detect the prior existence of 95% enriched product.”¹⁴³ South Africa’s cover would be blown. Rather, AEC suggested a cover up rooted in plausible deniability. It suggested that the uranium metal in nuclear weapon cores be “reduced to highly enriched [UF6] gas,” and South Africa could “‘come clean’ and admit that it has enriched uranium to weapons grade, but that it has not made weapons.”¹⁴⁴ While “some records would have to be destroyed,” the process could be completed in 12-18 months.¹⁴⁵ “If we came clean on the 95% enriched product,” the memo

¹⁴¹ Stumpf, “South Africa’s Nuclear Weapons Program: From Deterrence to Dismantlement” (1995/1996), p. 6.

¹⁴² “Letter, Richard Carter to Herbert Beukes,” November 17, 1989, History and Public Policy Program Digital Archive, South African Foreign Affairs Archives, A-M. Obtained and contributed by Anna-Mart van Wyk, Monash South Africa. <<http://digitalarchive.wilsoncenter.org/document/116003>>.

¹⁴³ Ibid.

¹⁴⁴ Ibid.

¹⁴⁵ Ibid.

further explained the deniability, “we would have to do very little arguing over safeguards. The ‘secret’ would be out. Manufacture of weapons however need never be admitted.”¹⁴⁶ De Klerk accepted this strategy in November 1989. It was part and parcel of the decision to sign the NPT.

The secret dismantlement program was to be called “Project Mantel” and it was paired with Operation Masada, the systematic destruction of documents pertaining to its nuclear weapons program. According to Olli Heinonen, Deputy Director-General for Safeguards at the IAEA, South Africa’s active destruction of “hardware, design information, facilities, and over 12,000 documents, diskettes, and hard drives” continued until March 1993.¹⁴⁷

Only after its dismantlement program was completed, South Africa concluded a Comprehensive Safeguards Agreement with the IAEA.¹⁴⁸ South Africa then submitted its “Initial Report” to the IAEA on October 31, 1991, accounting for every gram of uranium in South Africa in physical and chemical form. The Initial Report claimed a stockpile of over 2,700 tons of uranium,¹⁴⁹ 880 pounds of highly enriched uranium,¹⁵⁰ and 350kg of 90 percent enriched uranium.¹⁵¹ The first IAEA inspectors arrived in November to verify.

¹⁴⁶ Ibid.

¹⁴⁷ Olli Heinonen, “Lessons Learned from dismantlement of South Africa’s biological, chemical, and nuclear weapons programs,” *Nonproliferation Review* 23, 1-2 (2016), p. 148. De Klerk did appoint an independent auditor, Wynand Mouton, to record the destruction of the nuclear arsenal and ensure that no material was diverted. Reiss, *Bridled Ambition*, p. 18. But while it kept records to verify the dismantlement of its arsenal, Pretoria did not keep records on the dismantlement of its “pre-production experimental devices” nor its original demonstration device. Jo-Ansie van Wyk, “Nuclear diplomacy as niche diplomacy: South Africa’s post-apartheid relations with the International Atomic Energy Agency,” *South African Journal of International Affairs*, 19, 2 (2012), p. 184.

¹⁴⁸ According to Reiss, not all uranium metal in the nuclear cores had been melted down and reshaped by the time South Africa signed the NPT, but the task was complete before Pretoria sign the comprehensive safeguards agreement. Reiss, *Bridled Ambition*, p. 19.

¹⁴⁹ Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), p. 233.

¹⁵⁰ Richelson, *Spying on the Bomb*, (2006), p. 376.

¹⁵¹ The Initial Report also claimed a total of 1,500kg of highly enriched uranium had been produced at the Y-plant. Purkitt and Burgess, *South Africa’s Weapons of Mass Destruction* (2005), p. 127.

The IAEA Tacitly Cooperates

South Africa created a special department of the AEC to oversee compliance and communication with the IAEA, ironically named the Nuclear Nonproliferation department.¹⁵² Their IAEA interlocutors were a special team of senior safeguards officials, who met with the South African AEC officials on three occasions between December 1991 and August 1992. Dmitri Perricos led the CCI team, which audited the South African fissile material accounting records and followed up with onsite inspections at a selection of the most critical facilities and a random check of materials accounting records. The IAEA conducted 22 inspections missions between October 1991 and September 1993.¹⁵³

Throughout this process, South Africa was mostly open about its nuclear activities. Indeed, the IAEA praised its transparency.¹⁵⁴ For example, when the IAEA considered South Africa's initial disclosures insufficient, South Africa agreed to provide even more records. Nonetheless, South Africa was allowed some leeway in confessing its nuclear sins.

On a few scores, during the critical 1991-1993 window, the IAEA tacitly cooperated in South Africa's attempt to plausibly deny that it had ever built a nuclear arsenal.

Upon delivery of its Initial Report to the IAEA, Pretoria was admitting that it had produced weapons grade uranium. However, the report made no mention of nuclear weapons, the conversion of UF₆ HEU into uranium metal, nor the existence of facilities to do so.¹⁵⁵

¹⁵² Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), p. 232.

¹⁵³ Jo-Ansie van Wyk, "Nuclear diplomacy as niche diplomacy: South Africa's post-apartheid relations with the International Atomic Energy Agency," *South African Journal of International Affairs*, 19, 2 (2012), p. 183.

¹⁵⁴ "Safeguards: Reports on the Implementation of Safeguards Agreements: Agreement between the Agency and South Africa for the Application of Safeguards in Connection with the Treaty on the Non-proliferation of Nuclear Weapons," IAEA, GOV/2609, September 3, 1992. IAEA Archives, Vienna, Austria.

¹⁵⁵ Olli Heinonen, "Chapter 8: Verifying the Dismantlement of South Africa's Nuclear Weapons Program," <<https://www.belfercenter.org/sites/default/files/legacy/files/Verifying%20the%20Dismantlement%20-%20Heinonen%20Chapter%208.pdf>>.

The whole thing was a game in implausible deniability. The explicit “main objective” of the dismantlement effort, as described in the February 1990 official AEC document outlining the Mantel project, was “to dismantle the present 5 [sic¹⁵⁶] nuclear weapons devices together with half-completed devices, components and material in an orderly and controlled manner, melt down the highly enriched uranium they contain and store it safely and perform the necessary cleaning operations *to attach credibility to the statement that the RSA did manufacture highly enriched uranium but did not undertake the final step of manufacturing nuclear weapons*” [emphasis added].¹⁵⁷ Under orders of President de Klerk, the AEC was thus not to admit the production of nuclear weapons.¹⁵⁸

South Africans largely obeyed but relied on some assistance from the IAEA. A few days prior to delivering the Initial Report to the IAEA, for example, South African scientist Von Wielligh had dinner in Vienna with an IAEA counterpart, Juha Rautjärvi. Toward the end of the meal, Von Wielligh offered, “To prepare you for any possible misinformation ... I want to tell you that the report will show that we do possess weapons-grade uranium—and in large quantities at that. Unfortunately that is all I can say at this stage.” His IAEA dinner partner “lost his voice, raised his eyebrows, and then did the diplomatic thing and made no response at all.” The pair “drove back to the IAEA’s headquarters in silence.”¹⁵⁹

Similar experiences followed. At the first official meeting between the South African AEC and the IAEA inspections team, Von Wielligh writes that, “The Initial Report remained lying on the table like the corpse with a dagger in its back but all eyes were averted and nobody

¹⁵⁶ South Africa at the time had six nuclear weapons, plus a seventh under construction; not five.

¹⁵⁷ “Phasing out of the RSA’s Nuclear Weapons Capability,” AEC, February 15, 1990, document reproduced in Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), pp. 506-511.

¹⁵⁸ Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), p. 234.

¹⁵⁹ *Ibid.*, p. 235.

asked the obvious question. It was stated on the first page that South Africa had declared a few hundred kilograms of weapons-grade uranium, but the IAEA team asked no questions and the AEC team volunteered no information.”¹⁶⁰

Later, during an inspection mission in early 1992, Perricos produced a map and pointed to a remote location. His AEC hosts knew why he was asking, but they did not let on and simply agreed to take him to the Kalahari desert site.¹⁶¹ They contacted the South African military to lead the visit, providing them advance warning of the IAEA’s interest in the site once intended for nuclear testing. At the inspection, the IAEA found the site as the South African military had left it in 1988, a shed with a concrete slab in the middle. Perricos well knew the slab plugged a hole hundreds of meters deep, but he merely asked the staff sergeant what the slab was for. “It is a ramp, sir ... for fixing trucks,” he replied.¹⁶² Perricos reportedly smiled wryly and departed with only environmental samples. The official inspections report noted only that “the team was told that the building was used by the Air Force for storage and as a workshop” and that the environmental samples produced “no evidence that the location has been used or is being used for the testing of nuclear explosives.”¹⁶³

Indeed, the IAEA’s reports followed similar logics. The 1992 IAEA Board of Governors Report made no mention of any possible weapons program. IAEA inspectors had met five times with AEC officials.¹⁶⁴ The purpose of South African weapons-grade uranium appears not to have

¹⁶⁰ Ibid., p. 241. Von Wielligh claims that “Waldo Stumpf said years later that he did have permission from F.W. de Klerk to disclose what the highly enriched uranium had been used for in the past in response to a direct question. But nobody on the IAEA team asked this specific question and so Stumpf kept the information to himself.”

¹⁶¹ Ibid., p. 247.

¹⁶² Ibid., p. 248.

¹⁶³ “Safeguards: Reports on the Implementation of Safeguards Agreements: Agreement between the Agency and South Africa for the Application of Safeguards in Connection with the Treaty on the Non-proliferation of Nuclear Weapons,” IAEA, GOV/2609, September 3, 1992, paragraph 27. IAEA Archives, Vienna, Austria.

¹⁶⁴ Twice in Vienna and three times in South Africa between December 1991 and August 1992. “Report on the Completeness of the Inventory of South Africa’s Nuclear Installations and Material,” GOV/2609 Attachment, September 3, 1992. IAEA Archives, Vienna, Austria.

come up at any of them. And of its visit to the once-secret Building 5000 at the Pelindaba, where nuclear weaponization work had been conducted, the IAEA reported that “the building was stated to have been used as a general purpose critical facility by the AEC’s Reactor Development Group which was disbanded several years ago.” Indeed, the Building 5000 was “unoccupied and appeared to have been out of use for many years.”¹⁶⁵ Later the report acknowledged the “transparency” of their South African hosts.¹⁶⁶

Instead, the IAEA’s primary task was to conduct a “nuclear material accountancy” to “ensure that no significant quantity was missing from the declared inventories.”¹⁶⁷ Any material unaccounted for would need to be characterized. Did it remain in the enrichment equipment (called “holdup” material)? Was it mixed in with other material in nuclear waste drums? Or was it secretly hidden away for a future contingency?

This is where the IAEA focused its efforts. The 1992 IAEA report did find “apparent discrepancies” in the reported U-235 balances of South Africa’s Pilot Enrichment Plant (Y-plant) and its Semi-Commercial Enrichment Plant (Z-plant).¹⁶⁸ Substantial work went into matching uranium input and output at each declared facility,¹⁶⁹ estimating ranges of enriched product produced, and checking against declared amounts.

¹⁶⁵ “Report on the Completeness of the Inventory of South Africa’s Nuclear Installations and Material,” GOV/2609 Attachment, September 3, 1992, p. 9. IAEA Archives, Vienna, Austria.

¹⁶⁶ “Safeguards: Reports on the Implementation of Safeguards Agreements: Agreement between the Agency and South Africa for the Application of Safeguards in Connection with the Treaty on the Non-proliferation of Nuclear Weapons,” IAEA, GOV/2609, September 3, 1992, paragraph 24. IAEA Archives, Vienna, Austria.

¹⁶⁷ Heinonen, “Lessons Learned from dismantlement of South Africa’s biological, chemical, and nuclear weapons programs” (2016), p. 152.

¹⁶⁸ “Safeguards: Reports on the Implementation of Safeguards Agreements: Agreement between the Agency and South Africa for the Application of Safeguards in Connection with the Treaty on the Non-proliferation of Nuclear Weapons,” IAEA, GOV/2609, September 3, 1992, paragraphs 15 and 17. IAEA Archives, Vienna, Austria. The Y-plant was dismantled before accession to the NPT. The Z-plant was decommissioned in 1995.

¹⁶⁹ South Africa had three facilities already under IAEA safeguards in 1991: Koeberg (two reactors), the Safari-1 research reactor, and a hot cell facility at Pelindaba. In signing the NPT and accepting full safeguards, South Africa opened up the following facilities: the pilot enrichment facility at Valindaba (the Y-plant), the Kentron Circle/Advena Facility (15 km east of Pelindaba), the Building 5000 complex at Pelindaba, a semi-commercial enrichment plant (the Z-plant), a uranium conversion facility, an HEU fuel fabrication facility, an LEU fuel

In the end, inspectors attributed these discrepancies to uncertainty of measurements used in the material accounting system, since “no formal measurement control programme had existed for the depleted uranium product which was a major component of the U-235 balance.”¹⁷⁰ That is, the missing U235 was likely in waste drums, whose U235 contents had been estimated with average ratios instead of cumbersome measured individually.

But was there a “significant quantity” of U235 in the waste drums? It was not until 2010 that the IAEA could confirm that there was no missing significant quantity in South Africa—so-called reaching its “broader conclusion” that “all nuclear material remained in peaceful activities.” It took a decades-long, painstaking process of opening, measuring, and categorizing the material in every single waste drum to prove this negative.¹⁷¹

These gaps in the record illustrate a strategic logic. As Von Wielligh describes it, it was “up to the IAEA team to decide whether they could live with the ‘missing U235’”¹⁷² South Africa was coming clean and dismantling its nuclear arsenal. The IAEA had enough information and access to determine that South Africa’s nuclear facilities had been used to produce nuclear weapons material, but that they were no longer being used for that purpose. Raking South Africa over the coals, say for manufacturing weapons or preparing a test site, was unnecessary and counterproductive. They kept their eyes forward. Indeed, in September 1992, the IAEA concluded that even though it was difficult to verify all of South Africa’s past nuclear activities,

fabrication facility, decontamination and waste storage facilities at Pelindaba, and two spent fuel and radioactive waste disposal facilities. Heinonen, “Lessons Learned from dismantlement of South Africa’s biological, chemical, and nuclear weapons programs” (2016), p. 149.

¹⁷⁰ “Report on the Completeness of the Inventory of South Africa’s Nuclear Installations and Material,” GOV/2609 Attachment, September 3, 1992, p. 5-6. IAEA Archives, Vienna, Austria.

¹⁷¹ Heinonen, “Lessons Learned from dismantlement of South Africa’s biological, chemical, and nuclear weapons programs” (2016), p. 153. Heinonen, “Chapter 8: Verifying the Dismantlement of South Africa’s Nuclear Weapons Program,” <<https://www.belfercenter.org/sites/default/files/legacy/files/Verifying%20the%20Dismantlement%20-%20Heinonen%20Chapter%208.pdf>>.

¹⁷² Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), p. 245.

it had “found no evidence that the inventory of nuclear material included in the Initial Report was incomplete.”¹⁷³

At the September 12, 1991 meeting of the Board of Governors, immediately following the 1992 inspection report, members praise Pretoria’s accession to the NPT and conclusion of a Comprehensive Safeguards Agreement. Some were also quick to praise South African candor. “Having accepted full-scope safeguards...” said Ambassador Loosch of Germany, “there should be no need to have a specific South African item on the agenda of either the Board or the General Conference in future.”¹⁷⁴ At the meeting a representative from South Africa, Ambassador De Villiers, was also given special dispensation to speak to the Board. Pretoria “maintained a policy of transparency and cooperation,” said De Villiers. “As it had done in its past, South Africa would continue to honor its international agreements. It did not possess any nuclear weapons or other nuclear explosive devices or undeclared nuclear materials, nor did it operate any clandestine nuclear facility.”¹⁷⁵ Villiers further ascribed all material discrepancies to “the lack of accurate measurements of waste and tails from the enrichment plants.”¹⁷⁶ All technically true statements, but not transparent. Still, the French Ambassador responded that “his delegation hoped that in similar cases, all States concerned would provide such comprehensive information and demonstrate such spontaneous cooperation” as South Africa had.¹⁷⁷

After the inspections mission was complete, Perricos and two IAEA colleagues explained their thinking:

¹⁷³ “Report on the Completeness of the Inventory of South Africa’s Nuclear Installations and Material,” GOV/2609 Attachment, September 3, 1992, p. 10. IAEA Archives, Vienna, Austria.

¹⁷⁴ IAEA Board of Governors, “Record of the Seven Hundred and Sixty-Second Meeting,” GOV/OR.762, September 12, 1991, p. 8. IAEA Archives, Vienna, Austria.

¹⁷⁵ IAEA Board of Governors, “Record of the Seven Hundred and Eighty-Eighth Meeting,” GOV/OR.788, September 16, 1992, p. 35-36. IAEA Archives, Vienna, Austria.

¹⁷⁶ *Ibid.*, p. 36.

¹⁷⁷ *Ibid.*, p. 38.

The inventory of HEU declared by South Africa in its initial report was substantial. The IAEA recognized that this material could have been taken to indicate that a significant component of the HEU inventory had been recovered from an abandoned nuclear weapons programme or, less likely, had been accumulated to supply a planned nuclear weapons programme which had been abandoned prior to its implementation. South Africa had no obligation to declare what had been the past purpose of this material. Equally, the primary task of the IAEA was to ascertain that all nuclear material had been declared and placed under safeguards; priority was given to this task during 1992.¹⁷⁸

The IAEA was not daft. On the contrary, they were being quite intelligent. What mattered was the future, not the past. Pretoria needed some deniability. They could have it for now.

Actually Coming Clean

Finally, in a time and place of his choosing, De Klerk admitted that South Africa had built and dismantled nuclear weapons.¹⁷⁹ The venue was a March 24, 1993 speech to a joint session of Parliament, but he was really speaking to the whole world.¹⁸⁰ He explained that South Africa “did, indeed, develop a limited nuclear deterrent capability,” but dismantled it because it

¹⁷⁸ Adolf von Baeckmann, Garry Dillon, and Demetrius Perricos, “Nuclear Verification in South Africa,” *IAEA Bulletin* 1 (1995), p. 46.

¹⁷⁹ Stumpf reports that he recommended revealing the full nuclear dismantlement in 1992 only to be rebuffed by De Klerk, who said the timing was not right. When Stumpf made a second request at transparency in January 1993, De Klerk agreed. Reiss, *Bridled Ambition*, p. 23.

¹⁸⁰ “De Klerk Discloses Nuclear Capability to Parliament,” Johannesburg Radio South Africa Network in English, FBIS-AFR-93-056, March 25, 1993.

was “an obstacle to the development of South Africa’s international relations.”¹⁸¹ De Klerk emphasized that as it had joined the NPT as a non-nuclear weapons state, South Africa had technically not broken any rules. “We were not, in terms of the NPT itself, obliged to tell them,” De Klerk asserted in a post-speech press conference.¹⁸²

After South Africa came fully clean about its nuclear weapons program, the IAEA mission, now supplemented with additional weaponization experts, expanded to confirming the arsenal’s dismantlement and establishing measures to detect its reconstruction.¹⁸³ South Africa was now indeed cooperative and transparent. The IAEA was not barred from accessing any facility it wanted to inspect. Three IAEA inspectors visited the Kentron Circle/Advena facility on March 25, 1993. And inspectors witnessed the ‘rendering useless’ of the Kalahari test shafts between July 26 and 30, 1993.¹⁸⁴ Most importantly, the IAEA audited the records of material transfers between the AEC and ARMSCOR and concluded that “HEU originally supplied to ARMSCOR/Circle had been returned to the AEC and was subject to Agency [IAEA] safeguards at the time of entry into force of the safeguards agreement.”¹⁸⁵ Thus, there was no hidden material between 1991 and 1993. It was all declared.

The IAEA officially confirmed the dismantlement of South Africa’s nuclear weapons on August 14, 1994.

¹⁸¹ “Speech by South African President F.W. De Klerk to a Joint Session of Parliament on Accession to the Nonproliferation Treaty,” March 24, 1993, History and Policy Program Digital Archive, Archives.un.org. Contributed by Jo-Ansie van Wyk. <<http://digitalarchive.wilsoncenter.org/document/116789>>.

¹⁸² “De Klerk Holds News Conference on Speech,” Johannesburg SABC TV 1 Network in English, FBIS-AFR-93-056, March 25, 1993. Stumpf asserts the same privilege in Waldo Stumpf, “South Africa’s Nuclear Weapons Program: From Deterrence to Dismantlement,” *Arms Control Today*, (December 1995/January 1996), p. 7.

¹⁸³ Heinonen, “Chapter 8: Verifying the Dismantlement of South Africa’s Nuclear Weapons Program,” <<https://www.belfercenter.org/sites/default/files/legacy/files/Verifying%20the%20Dismantlement%20-%20Heinonen%20Chapter%208.pdf>>.

¹⁸⁴ The shafts were destroyed by “back-filling with sand and casting in place of reinforced concrete plugs at various levels.” See “The Agency’s Verification Activities in South Africa, Report by the Director General,” GOV/2684, September 8, 1993, p. 10. IAEA Archives, Vienna, Austria.

¹⁸⁵ “The Agency’s Verification Activities in South Africa, Report by the Director General,” GOV/2684, September 8, 1993, p. 9. IAEA Archives, Vienna, Austria.

Why did South Africa seek plausible deniability?

In seeking to publicly deny the extent of its concessions, South Africa was behaving as any other target of compulsion who chooses to acquiesce. Pretoria's situation in the late 1980s and early 1990s was precarious and De Klerk knew it. Deniability provided some cover. The four years elapsed between giving the order to eliminate its nuclear weapons and truly coming clean about its nuclear weapons were of great value to South Africa's ruling party.

First, De Klerk's coalition faced daunting domestic political opposition. Once De Klerk announced his intention to lead South Africa into negotiations with the ANC, the Conservative Party rallied Afrikaner voters and accused De Klerk of treason and betrayal of his white brethren. The opposition proved effective, as the Conservatives drubbed De Klerk's National Party in local elections.¹⁸⁶ In a masterful gamble, De Klerk reclaimed legitimacy to lead by winning a 1992 national referendum on his policy of reform. Historian Hermann Giliomee credited the victory to De Klerk's skillful manipulation of the referendum question to ask for vague support of a reform process with an unspecified outcome.¹⁸⁷ Either way, De Klerk knew that his domestic support was tenuous. Keeping his domestic opposition in the dark on his other concession—dismantling a nuclear arsenal—was a political necessity.¹⁸⁸ Only after negotiations with the ANC had advanced sufficiently to overcome this opposition was De Klerk willing to acknowledge his acquiescence. Disclosing the concession too soon would have jeopardized the domestic reform

¹⁸⁶ Giliomee, *The Last Afrikaner Leaders* (2012), p. 342.

¹⁸⁷ *Ibid.*, p. 343.

¹⁸⁸ During his surprise March 1993 speech to Parliament, he interrupted his remarks to respond to jeers from the Conservative Party benches. "From their tone and interjections," said De Klerk hoping to strike political points, "I deduce that they would like South Africa to still have an atom bomb at its disposal." "De Klerk Discloses Nuclear Capability to Parliament," Johannesburg Radio South Africa Network in English, FBIS-AFR-93-056, March 25, 1993.

process to end apartheid, which if unsuccessful would keep sanctions in place—the punishments would have continued.

De Klerk complained about his domestic constraints in his August 1990 letter to President Bush. In private, he fully acknowledged that he was the target of international coercion, writing, “My situation is further complicated by linking foreign demands for change to punitive measures rather than incentives of encouragement.”¹⁸⁹ Then De Klerk proposed that reduced visibility of concessions could be useful to him. “It is important for our domestic political programme,” wrote De Klerk, “that any appearance of being responsive to foreign agendas be avoided.”¹⁹⁰ De Klerk received the deniability he wanted.

Second, South Africa also sought coercive assurance through deniability because its leaders observed the international community’s recent treatment of another proliferator—Iraq—and did not like what they saw. “The heads of the AEC and Armscor were not sure whether the UN cowboys, who had unceremoniously blown up Saddam Hussein’s facilities and physically destroyed all the enrichment equipment, might not arrive in South Africa with similar intentions,” writes Von Weilligh.¹⁹¹ Another scientist, Waldo Stumpf, concurred, writing that the South African government had been afraid of coming clean earlier after witnessing “the confrontational verification process then unfolding between Iraq and the IAEA,” which “convinced South Africa that it could easily have been branded as a second nuclear outlaw nation...”¹⁹²

¹⁸⁹ “Letter from South African President De Klerk to President Bush,” August 31, 1990. History and Public Policy Program Digital Archive, Bush Presidential Library. Obtained and contributed by Anna-Mart van Wyk, Monash South Africa. <<http://digitalarchive.wilsoncenter.org/document/114187>.

¹⁹⁰ Ibid.

¹⁹¹ Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), p. 255.

¹⁹² Stumpf, “South Africa’s Nuclear Weapons Program: From Deterrence to Dismantlement,” (1995/1996), p. 7. A similar Stumpf quote is reported in David Albright, “South Africa and the Affordable Bomb,” *Bulletin of the Atomic Scientists*, (July/August 1994), p. 38. Mitchell Reiss also notes these perceptions in Reiss, *Bridled Ambition*, p. 23.

Of course, it helped that South Africa’s nuclear weapons program had been highly secret and therefore more readily deniable. The whole effort was of the utmost secrecy. Employees were not permitted to socialize after work to tell their families what they worked on.¹⁹³ No more than ten people were fully read into it, nor was it ever discussed at official Cabinet or State Security Council meetings.¹⁹⁴ De Klerk sought to turn this secrecy into deniability before acquiescing to compellence.

VIII. Conclusion

South Africa and Coercive Assurance

The South African case is best explained by Coercive Assurance Theory. It was the fear of non-contingent punishment that drove the South African leadership’s defiance of western compellence from 1975 to 1989. When, in the 1989, complementary coercive assurance became credible in the eyes of leaders in Pretoria, South Africa acceded to the NPT and dismantled its nuclear arsenal. Table 3 below shows visually how the predictions of Coercive Assurance Theory match the empirical results better than alternatives.

	Threat Credibility Theory (“compellence will succeed if...”)	Coercive Assurance Theory (“compellence will succeed if...”)	South Africa Results (“compellence succeeded when...”)
Threats Perceived as Credible and Painful	✓	✓	✓
Pain Perceived as Contingent	✗	✓	✓

¹⁹³ Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), pp. 166-167.

¹⁹⁴ Richelson, *Spying on the Bomb* (2006), p. 373.

South African leaders explicitly perceived external pressure through such a lens. As South Africans themselves perceive it, “Over the years there was sustained international pressure on South Africa to sign the NPT.”¹⁹⁵ Pretoria’s defiance was not due to a lack of threat credibility (disconfirming hypothesis H1a) nor a lack of threat severity (disconfirming hypothesis H2a). Rather, Pretoria perceived that sanctions were imposed, escalating, and, in the 1980s, hurting. Neither was an increase in threat credibility or severity associated with South Africa’s decision to finally concede in 1989 (disconfirming hypotheses H1b and H2b). Sanctions had bitten much earlier. Instead, South African behavior and speech evidence corroborates the hypotheses derived from Coercive Assurance Theory. South African policymakers justified not signing the NPT with assessments that American punishments would be applied whether or not Pretoria signed (H3a). And Pretoria only decided to abandon its nuclear weapons program and sign the NPT once it perceived in 1989 that doing so would in fact yield relief from economic sanctions.

What variables informed South Africa’s perceptions of the credibility of coercive assurance? First, Pretoria knew that its pariah status was also tied to its domestic apartheid policies. Owing to its practice of apartheid, South Africa worried that economic sanctions would not be lifted even if it gave up its nuclear ambitions (H6_{D1}). The IAEA also entangled multiple demands to accept comprehensive nuclear safeguards and end apartheid. When sanctions and other threats are tied to multiple issues, demands and punishments are entangled, and coercive assurance is undermined. Compliance with one demand will not escape punishment, since the other demand(s) remain. Disentangling demands are important to successful compellence. Leaders in Pretoria perceived this all too well, especially at three key decision points—1977,

¹⁹⁵ Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), pp. 213-214.

1985, and 1986-1988—when they considered complying with compelling demands but chose to defy instead. Only once South African domestic political reforms and the end of apartheid appeared imminent were leaders willing to sign the NPT (H6_{D2}). Nonetheless, it is important to note that overcoming the entanglement of demands in this case was due to domestic political changes within the target state, not a change in coercer strategy. The South African case thus shows evidence of the mechanism working, but for different reasons than derived in the theory chapter.

Second, Pretoria's perceptions of its coercers over time affirm the hypotheses on Coercive Control (H7_{C1} and H7_{C1}). When the Reagan administration attempted to disentangle American demands and reduce the severity of U.S. economic pressure in the mid 1980s, Congress overrode the president's veto and imposed comprehensive sanctions. The administration did not demonstrate coercive control domestically and Reagan could not be bargained with. A similar dynamic played out within the IAEA, where limited attempts failed to disentangle calls to sign the NPT and accepted comprehensive safeguards from member state opposition to apartheid. The case further shows how the mechanisms work in conjunction, as a lack of coercive control can exacerbate the problem of entangled demands.

Third, the South African case reveals how targets of compulsion seek deniability in their concessions. Reducing the visibility of its concessions was important to the South African leadership (H8_{V1}) for domestic political purposes. Pretoria further appreciated that its coercers' willingness to collude in the cover up signaled their intent not to seek a pretext for aggression. Compellers can strategically abet this desire by tacitly cooperating to reduce the visibility of the target's concessions. In the South African case, for a critical period of political uncertainty from 1991-1993, some in the international community, especially the IAEA, played such a role

(H8v2). Overall, plausible deniability appears have been the operative filter through which nonproliferation verification information took on political significance. In fact, it is a process that has to do with the mission of nonproliferation institutions themselves. Whether intentionally or not, the NPT is well designed to allow for plausible deniability of past nuclear activities, as member states are required to declare present and future nuclear activities at the time of accession, not to reveal past activities.¹⁹⁶ Similarly, the IAEA, tasked not with investigation per se but with verifying the correctness and completeness of member state declarations, is set up for plausible deniability. This is not a fault of the organization. Indeed, the IAEA achieved its mission in South Africa admirably. Rather, I simply argue that the amount of clarity required by other states in the international system is a variable determined by the politics of coercive bargaining.¹⁹⁷ Effective coercers only require enough to verify the lack of a nuclear weapons program, not so much that the potential proliferator chooses to defy. South Africa was allowed sufficient deniability. To this day South Africa can claim that it “voluntarily” dismantled its nuclear arsenal—a narrative that affords Pretoria diplomatic clout.¹⁹⁸

¹⁹⁶ Conveniently, South Africans were able to claim that their destruction of records related to the production of nuclear weapons were destroyed for nonproliferation reasons “in accordance with the spirit of the NPT.” Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), p. 260.

¹⁹⁷ Some nonproliferation inspectors and verification experts recognize this nature of the evidence. Heinonen, “Chapter 8: Verifying the Dismantlement of South Africa’s Nuclear Weapons Program,” <<https://www.belfercenter.org/sites/default/files/legacy/files/Verifying%20the%20Dismantlement%20-%20Heinonen%20Chapter%208.pdf>>. In a September 1992 report to the IAEA General Conference, Hans Blix noted similarly that “there is inherent difficulty in verifying the completeness of an original inventory in a country in which a substantial nuclear program has been going on for a long time.” “Report on the Completeness of the Inventory of South Africa’s Nuclear Installations and Material,” GOV/2609 Attachment, September 3, 1992, p. 8. IAEA Archives, Vienna, Austria. See also James Acton, “Lessons from the RSA,” *Arms Control Wonk*, May 21, 2008, <<http://www.armscontrolwonk.com/archive/601891/lessons-from-the-rsa/>>.

¹⁹⁸ For uses of the term “voluntary” dismantlement and denials of giving in to international pressure, see “Speech by South African President F.W. De Klerk to a Joint Session of Parliament on Accession to the Nonproliferation Treaty,” March 24, 1993, History and Policy Program Digital Archive, Archives.un.org. Contributed by Jo-Ansie van Wyk. <<http://digitalarchive.wilsoncenter.org/document/116789>>; F.W. de Klerk, “South Africa, the nation that gave up its nukes,” *Los Angeles Times*, December 22, 2013, <<http://www.latimes.com/opinion/op-ed/la-oe-deklerk-south-africa-nukes-20131222-story.html>>; Stumpf, “South Africa’s Nuclear Weapons Program: From Deterrence to Dismantlement” (1995/1996), p. 3. On post-apartheid South Africa’s role in the nuclear nonproliferation regime, see Jo-Ansie van Wyk, “Nuclear diplomacy as niche diplomacy: South Africa’s post-apartheid relations with the International Atomic Energy Agency,” *South African Journal of International Affairs*, 19, 2 (2012). Note that this

South Africa today retains enough weapons-grade uranium for up to six nuclear devices.¹⁹⁹ Yet Pretoria is not in danger of proliferating. It does not want to. The bargain holds.

Overall, the South Africa case bears out the predictions of Threat-Assurance Independence more so than Threat-Assurance Tradeoff theory. All three theorized causes of assurance credibility are affirmed, none are falsified. Moreover, Independence theory hypotheses (H5a and H5b) are confirmed—the assurance signals sent in and after 1989 did not undermine the credibility of threats—and one Tradeoff theory hypothesis (H4b) is correspondingly disconfirmed. Nevertheless, South Africa may be a poor test case for the remaining Tradeoff theory hypotheses (H4a and H4c), since it did not fear the use of military force by its coercers. Compellence took the form of sanctions. Thus, South Africa’s perception of incredible coercive assurance did not stem from a relative power disadvantage and its coercer did not manipulate military signals to bolster threat credibility. The credibility of American threats therefore did not vary widely. Other chapters, which include coercer manipulation of military force signals, will perform cleaner tests of the Tradeoff hypotheses.

Of course, the intensity of Pretoria’s security fears as a driver of its demand for nuclear weapons certainly cannot be discounted as a key variable. Pretoria did face acute security threats from the Soviet Union and its regional proxies. South Africa’s fortunes in Angola soured with the loss of CIA backing in 1975 and the sudden arrival of Cuban forces. The regional security situation remained fraught throughout the 1980s. In late 1987, Cuba sent an additional 15,000 troops to the continent. South Africa responded by mobilizing the majority of its 140,000

language is also reminiscent of the Libyan claims of “voluntary” dismantlement of their nuclear program in 2003 after even more intense coercive bargaining.

¹⁹⁹ To this day, South Africa has not publicly disclosed its inventory of HEU or separated plutonium. Heinonen, “Lessons Learned from dismantlement of South Africa’s biological, chemical, and nuclear weapons programs” (2016), p. 151.

reserves.²⁰⁰ The tense stalemate concluded with the negotiation of an August 1988 ceasefire that was solidified in the Brazzaville Protocol (a.k.a. the New York Accords), signed on December 22, 1988.²⁰¹ The subsequent collapse of the Soviet Union was a significant boon to South Africa's security and opened up the opportunity for Pretoria to give in to compelling demands to sign the NPT. Nonetheless, these security dynamics alone cannot explain South Africa's decision to dismantle its nuclear arsenal. While security threats are associated with increased demand for nuclear weapons, target states with more intense security fears should be harder to credibly assure, the removal of threats does not necessarily predict nuclear reversal.²⁰² Rather, disarmament required additional pressure to alter the status quo: compellence.

Summary of Evidence for the Mechanisms

This section restates the key evidence in the South Africa case and specifies how each supports a theorized mechanism. It also evaluates the strength of the evidence (Strong, Fair, Weak). Stronger evidence is well-sourced and is challenged by fewer potential confounding explanations. I walk through the below chart from top to bottom.

²⁰⁰ Anna-Mart Van Wyk, "Apartheid's Atomic Bomb: Cold War Perspectives," *South African Historical Journal* 62, 1 (2010), p. 114.

²⁰¹ During this moment of tenuous peace, South Africa began again to make nuclear noise. Pik Botha admitted for the first time in August 1988 that South Africa had the ability to make nuclear weapons, although he did not say whether it had produced them already. And in September and October, South Africa constructed a shed or hangar over one of its nuclear test shafts in the Kalahari Desert, which they dubbed their "ace-in-the-hole" strategy. It remains debated how serious Pretoria was about this nuclear saber rattling. Von Wielligh recalls that in a 1988 meeting Armscor argued in favor of a nuclear test, only to be overruled by President P.W. Botha. Gerzhoy claims the nuclear signaling was motivated by an actual fear of defeat in Angola. Frank Pabian assesses that reopening the test site was an 'insurance policy' to be used in the event that the peace process failed. Yet Richelson argues that the 1988 test site activities were merely the result of P.W. Botha requesting an estimate of how long it would take to prepare the site for a hypothetical test, which required an Armscor inspection of the shafts. (The answer was between one and two weeks.) See Jo-Ansie van Wyk, "Atoms, Apartheid, and the Agency: South Africa's Relations with the IAEA, 1957-1995" (2014), p. 14; Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), p. 192; Gerzhoy dissertation, pp. 188-189; Frank Pabian, "South Africa's Nuclear Weapons Program: Lessons for U.S. Nonproliferation Policy," *Nonproliferation Review* 3, 1 (Fall 1995): p. 8-9; Jeffrey T. Richelson, *Spying on the Bomb*, (New York: W.W. Norton, 2006), p. 371-372.

²⁰² Liberman makes a similar argument in Liberman, "The Rise and Fall of the South African Bomb" (2001), p. 72; and Gerzhoy dissertation, p. 200.

South Africa Mechanisms	Direct Effect	Signaling Effect
<i>Disentangling Demands</i>	--	1977 Kalahari Crisis; 1979 IAEA entanglement (Fair evidence)
<i>Coercive Control (Domestic)</i>	1986 Congress overrides Reagan (Strong evidence)	--
<i>Reducing Visibility (Domestic and International)</i>	1989 Weapons dismantlement (Fair evidence)	1991-1993 IAEA deniability (Fair evidence)

First, declassified South African embassy cables and participant reflections on the Kalahari Crisis of 1977 provide good evidence that the demand to abandon apartheid affected Pretoria's willingness to concede to pressure on nuclear matters. Similarly, IAEA Board of Governors meeting records indicate the clear entanglement of apartheid with demands for comprehensive inspections within the Agency's handling of South African matters, culminating in its barring of South Africa from the 1979 General Conference. Together, this evidence shows how coercers sent, and Pretoria received, signals regarding the intentions of the West to meet limited concessions with still further punishment. These actions had a signaling effect and not a direct effect, however, as South Africa's coercers were capable of disentangling their demands if they so chose; they simply chose not to. I consider this "fair" evidence in favor of the disentangling demands signaling mechanism, because while it shows that the signal was clearly sent and received, at the time the punishment of economic sanctions was not yet severe, which is an alternative explanation for the failure of coercion.

Second, when President Reagan attempted to disentangle American demands of South Africa by being more accommodating of apartheid, Congress spoiled his role as primary coercer and overrode a presidential veto to impose comprehensive sanctions. Reagan no longer had control over the lifting of sanctions. This episode had the direct effect of wresting coercive

control away from Reagan and forcing demands to remain entangled. This is strong evidence in favor of the coercive control mechanism. Pretoria watched these domestic machinations closely and declassified American meeting notes show that Botha had earlier shown signs of trying to work with the more accommodating Reagan; but as control slipped away from the White House, Botha accordingly hardened his posture and refused to sign the NPT or end apartheid. This evidence is also strong because memoirs show that sanctions were so severe at this time that Pretoria scheduled secret meetings to discuss making changes to the nuclear program because of the pressure of sanctions; yet the program remained as envisioned. If pain alone was the operative factor, they would have conceded prior to 1989. They did not; because Washington did not disentangle its demands.

Third, Pretoria's decision to dismantle and cover up its nuclear weapons in 1989 while acceding to the NPT is evidence in favor of the reducing visibility mechanism. De Klerk explicitly spelled out in a letter to George HW Bush his desire not to be perceived as conceding to foreign coercion. The cover-up had the direct effect of reducing the amount of information available to foreign or domestic third parties about the concession. It effectively mitigated De Klerk's reputational costs. Even declassified American intelligence documents show that the CIA was in the dark on secret aspects of the South African weapons program. De Klerk sought to avoid these reputational costs chiefly in order to hold together his Conservative Party support while he navigated negotiations to end apartheid—no Conservative support meant no end of apartheid, which meant sanctions would remain.²⁰³ This is “fair” evidence in favor of the mechanism. South Africa's quest for deniability is spelled out explicitly in newly declassified

²⁰³ An alternative reasoning for this deniability as spelled out by Waldo Stumpf was that South Africa thought coming clean would put its facilities at the whim of the ‘counterproliferation cowboys’ who had been simultaneously running rampant over Iraq.

government documents. Yet I cannot fully dismiss alternative reasons why Pretorian leaders may have sought such deniability, such as preserving the personal reputations of engineers and scientists who had been involved in the illicit weaponization effort.

The corresponding coercer behavior of greatest note was the IAEA inspectors' tacit collusion with South Africa's quest for deniability. IAEA officials and South African AEC officials' recollections of these initial meetings and inspections reveal efforts to focus on verifying fissile material accounting while allow the South Africans to deny their weapons program. As hypothesized, these actions sent a signal to South Africa that its coercers did not seek a pretext for further pressure or aggression. This evidence is "fair." It comes from participant memoirs and recollections on both sides of the inspections, and because the IAEA's mission of transparency casts deniability in stark relief. Yet I cannot rule out the possibility that the IAEA had other motives for allowing deniability, such as an unwillingness to admit that it had failed to impede an illicit weapons program.

Finally, F.W. De Klerk's decision-making in 1989 to concede on both signing the NPT and negotiating the end of apartheid is not listed on the chart, as I do not consider it to provide evidence in favor of any mechanism. Even though De Klerk's discussions with his advisors do show that the two demands impeded each other in his mind, he decided to concede to both without the coercer disentangling its demands. This could either be construed as evidence against the disentangling demands mechanism (the coercer took no action) or evidence in favor of disentangling demands (the coerce only conceded to the nuclear demands once the demise of apartheid appeared inevitable). Nonetheless, the concessions are too overdetermined to claim any evidence for or against Coercive Assurance Theory mechanisms. De Klerk saw the writing on the wall that apartheid must end soon, his racist government may have wished to avoid handing

over nuclear weapons to a popularly elected black government, and South Africa's security environment was changing for the better at the end of the Cold War.

Possible Confounders

I address three potential alternative explanations for South African behavior. First, scholars point to the racist fear of ANC "nuclear inheritance" as a cause of South African disarmament.²⁰⁴ This was indeed an argument made by American officials to the South African leadership. The U.S. government was concerned about nuclear weapons "in the hands of a government that maintained friendly relations with Libya's Gaddafi and Cuba's Castro."²⁰⁵ While De Klerk and South African leaders were sympathetic to this argument, it does not appear to have been as significant a driver of their behavior as the simple desire to steer South Africa out of international isolation. De Klerk, for example, did not show much concern for handing over HEU to the ANC. He agreed to wait until the first free and open elections were held before deciding what to do with the South African HEU stockpile.²⁰⁶ While American officials pushed for De Klerk to sell the HEU to the U.S. as soon as possible, De Klerk's government resisted.²⁰⁷ De Klerk himself has denied that he was motivated to keep weapons out of the hands of an ANC government.²⁰⁸ Moreover, Waldo Stumpf also recalled that "potential nuclear proliferation risks by the ANC were not raised by Mr. de Klerk as a specific concern in his meetings with him."²⁰⁹

²⁰⁴ For example, Robert Einhorn writes that, "South Africa decided to dismantle the nuclear weapons it had built and join the NPT as a non-nuclear weapon state, not because it received security assurances but because the external security threat motivating its nuclear weapons program had dissipated and President de Klerk was reluctant to put South Africa's nuclear weapons in the hands of the black-majority government that would soon take power." Robert Einhorn, "Ukraine, Security Assurances, and Nonproliferation," *The Washington Quarterly* (Spring 2015).

²⁰⁵ Purkitt and Burgess, *South Africa's Weapons of Mass Destruction* (2005), p. 130.

²⁰⁶ *Ibid.*, p. 128.

²⁰⁷ *Ibid.*

²⁰⁸ Uri Friedman, "Why One President Gave Up His Country's Nukes," *The Atlantic*, September 9, 2017, <<https://www.theatlantic.com/international/archive/2017/09/north-korea-south-africa/539265/>>.

²⁰⁹ Research by G.R. Heald, cited in Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), p. 276.

And in an interview with Von Wielligh, Stumpf reported that he “never got the impression that De Klerk was afraid that the ANC would act irresponsibly with nuclear bombs.”²¹⁰ One historical account claims that De Klerk actually briefed Nelson Mandela on South Africa’s nuclear capabilities prior to the power transition.²¹¹ Although historians doubt the veracity of that claim.²¹²

Of course, racism should be considered an additional cause of South African nuclear disarmament in 1989. But it does not negate the strong findings in favor of Coercive Assurance Theory throughout the South Africa case (1975-1989).

Second, it is possible that De Klerk’s personal aversion to nuclear weapons contributed to the decision to dismantle the program. De Klerk has since called nuclear weapons “morally indefensible to use,” and reflecting on his presidency, he has said of South African nuclear weapons, “it was unspeakable to think that we could destroy a city in one of our neighboring countries in any way whatsoever. From the beginning, in my personal opinion, I regarded it as a rope around our neck.”²¹³ However, such a theory does not square with other statements by De Klerk about seeking to end South African isolation. Nor is it the case that De Klerk alone came to the conclusion that South Africa should disarm. Pik Botha, for example, reported that at the time of the August 15, 1989 transition following P.W. Botha’s resignation, he went to De Klerk first to tell him that South Africa had two priorities: “Mandela’s release and the dismantling of nuclear weapons.” De Klerk reportedly agreed, saying “Pik, you do not have to convince me.

²¹⁰ Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), p. 276.

²¹¹ Hamann, *Days of the Generals*, p. 169.

²¹² Anna-Mart Van Wyk, “Apartheid’s Atomic Bomb: Cold War Perspectives,” *South African Historical Journal* 62, 1 (2010), p. 116.

²¹³ Uri Friedman, “Why One President Gave Up His Country’s Nukes,” *The Atlantic*, September 9, 2017, <<https://www.theatlantic.com/international/archive/2017/09/north-korea-south-africa/539265/>>.

Those are my priorities also.”²¹⁴ The timing of the decision to coincide with credible coercive assurance is still a better explanation for South Africa’s nuclear dismantlement.

Third, bureaucratic politics may provide an alternative explanation for Pretoria’s nuclear reversal. The bureaucratic or technical-scientific coalitions that supported the nuclear program disintegrated in the late 1980s. Purkitt and Burgess, for example, argue that the South African military wanted more room in the defense budget for conventional systems.²¹⁵ This explanation, however, is unconvincing. As Liberman shows, at the point of disarmament in the late 1980s, spending on nuclear weapons was largely a sunk cost. Moreover, “both the minister of defense and the defense force chief thought that de Klerk gave up the weapons too hastily...”²¹⁶ In the assessment of one anonymous South African official, “If he [De Klerk] had waited, he never would have gotten cabinet approval, since opposition to giving up the program in the defense community was great.”²¹⁷ Neither did the scientific-technical bureaucracy want to abandon the nuclear weapons program. As Von Wielligh describes their (and his own sentiment) upon hearing President de Klerk’s announcement of the end of the South African nuclear saga, “An era marked by outstanding scientific and technical achievements was dismissively brought to an end in a brief and awkward speech, in which no real appreciation of the historical meaning of that occasion was apparent ... The project that had irreversibly shaped the careers of those present had come to an abrupt end ... One of the employees, wearing an expression of defeat and holding a glass of whisky, compared the situation to that of Louis XVI of France. One moment

²¹⁴ Pik Botha Interview with Sue Onslow, *Institute of Commonwealth Studies*, Pretoria, South Africa, December 13, 2012. <http://sas-space.sas.ac.uk/5806/1/Pik_Botha_Transcript.pdf>.

²¹⁵ Purkitt and Burgess, *South Africa’s Weapons of Mass Destruction* (2005). Purkitt and Burgess’ story is more compelling on South African decision-making to suspend their space launch vehicle program in the 1990s. This missile program was indeed too expensive for the armed forces to sustain.

²¹⁶ Peter Liberman response to Helen E. Purkitt and Stephen F. Burgess, “Correspondence: South Africa’s Nuclear Decisions,” *International Security*, Vol. 27, No. 1 (Summer 2002), p. 192. Liberman cites his original article, p. 77-78.

²¹⁷ Quoted in Reiss, *Bridled Ambition*, p. 22.

he was reigning monarch and a fraction of a second later he had lost his head on the guillotine, a victim of drastically changed circumstances.”²¹⁸ In sum, De Klerk and his supporters who sought to end a policy of defiance of international coercion needed to overcome such internal opposition. Bureaucratic politics are thus an unconvincing explanation for South African acquiescence to compellence but may further help to explain why Pretoria sought to reduce the visibility of its concessions for domestic audiences.

Finally, we should keep in mind some variables that might reduce the external validity of the South African case. First, regime type may matter. During its nuclear years, South Africa was governed by a small circle of “securocrats” who were hyper sensitive to the minority ruling class’s internal and external security threats.²¹⁹ Second, this case of compellence is fairly ‘soft’. That is, the compellent threats themselves involved no military tools. The United States and other compellers were not threatening to invade or preventively strike South Africa if it did not sign the NPT. Such ‘harder’ threats should be more difficult to complement with credible assurance. The following chapters on Libya and Iran explore these confounders to compare similarities and differences between cases.

²¹⁸ Von Wielligh and von Wielligh-Steyn, *The Bomb* (2015), p. 221.

²¹⁹ Martha van Wyk, “Sunset over Atomic Apartheid: United States-South African Nuclear Relations, 1981-93” (2010), p. 52.

CHAPTER 4: LIBYA

This chapter explains Libya's decision-making about its nuclear program during the years when it faced compulsion from the United States and the United Kingdom. Libya is a hard case for Coercive Assurance Theory, because it was coerced by the very state whose threats had motivated its clandestine nuclear program. From 1980 onward, the United States and others sought to compel Tripoli to abide by its NPT commitments. They did not succeed until 2003. During this coercive bargaining timeframe, Libya defied coercive demands and made consistent efforts to build a weapon.

I find that from 1998 to 2003 Libya defied compellent demands over its WMD program because it perceived a lack of credible coercive assurance, not because it perceived compellent threats to be insufficiently credible or painful. I also find support for all three mechanisms on the causes of credible coercive assurance—Disentangling Demands, Exerting Coercive Control, and Reducing Visibility—leading to Libya's ultimate concession. The 1998 disentanglement of UN and U.S. sanctions to apply to different demands—Lockerbie and WMD, respectively—allowed Libya to concede one issue at a time. The secrecy of talks in 2003 kept spoilers, such as hawkish advisors and Israeli leaders, out of the bargaining process. And Tripoli perceived American restraint in publicizing intelligence on the Libyan WMD program as evidence that Washington did not seek regime change. (Summary in Table 2.)

I show that coercive assurance is a better explanation for Libya's acquiescence in 2003 than the chief alternative explanation: that Qaddafi had no real nuclear program and traded away nuclear "junk" for carrots. The available evidence of Libyan perceptions shows few signs of such trivial thinking. Qaddafi thought the program was real, valuable, and advancing. He held genuine ambitions to possess the bomb. Although it made halting technical progress, Libya continued to throw money at its nuclear program, eventually turning to the black market for assistance. The evidence is much more compelling that Qaddafi was coerced; and critically, assured.

Prior to 1998, however, coercive assurance is not a sufficient explanation for Libyan defiance. At the time, the United States' main goal in its relations with Libya the destruction of the Qaddafi regime. From 1986 to 1998, therefore, Libya defied coercion because of its *correct* perception of U.S. intent. As discussed in chapter two, a coercer may undermine its own coercive strategy by making maximalist demands of a target.¹ This is a problem of demand magnitude. Target defiance is not due to a lack of coercive assurance but to a lack of bargaining space. It is an alternative explanation to Coercive Assurance Theory. The United States therefore had to change its policy (goals), not its diplomacy (strategy). Only after the United States dropped its goal of regime change did it experience a coercive assurance problem, in which Washington had to signal that it no longer sought regime change.

Section one reviews the theory and alternative explanations, deriving hypotheses to be tested with empirical evidence. Section two reviews the origins of Libya's nuclear program and interest in the bomb. Sections three describes the nature of international compellent demands directed at Tripoli and shows that while Libya's leadership perceived such coercive threats to be credible after 1986, they chose to defy because of perception that the United States sought

¹ This explanation for coercion failure is associated with scholars like Phil Haun. See Phil Haun, *Coercion, Survival, and War: Why Weak States Resist the United States* (Stanford University Press, 2015).

nothing less than regime change. Section four examines Libya’s decision-making in the late 1990s and early 2000s, zooming in especially on the critical bargaining over WMD in 2003. The evidence reveals how scaling back its demands still resulted in American failure to compel nuclear concessions from the Libyans because leaders in Tripoli perceived a lack credible assurance that they could actually avoid punishment. In 2003, finally, an American and British coercive strategy aimed at signaling coercive assurance convinced Tripoli to give up its nuclear ambitions and seek an end to compellent punishments. Section five concludes and reviews evidence on the causes of credible assurance in this case and their implications for the relationship between threat and assurance credibility. Tables 1 and 2 below previews these findings.

Table 1: Coercive Assurance Was Necessary for Compellent Success in the Libya Case

Decision Point Year(s)	Threat	Assurance			Concessions
	Credible	Disentangled Demands	Coercive Control	Reducing Visibility	
1980	No	No	No	No	No
1986	Yes	No	No	No	No
1995	Yes	No	No	No	No
1998	Yes	Yes	No	No	No
September 2001	Yes	Yes	No	No	No
March 2003	Yes	Yes	No	No	No
December 2003	Yes	Yes	Yes	Yes	Yes

Table 2: Evidence for Each of the Mechanisms in the Libya Case

Mechanism	Direct Effect	Signaling Effect
<i>Disentangling Demands</i>	--	1998 Lockerbie settlement
<i>Coercive Control (Domestic and International)</i>	2003 UK as partner	2003 Secret negotiations; Domestic hawks and Israel frozen out
<i>Reducing Visibility (Domestic and International)</i>	--	2003 BBC China seizure; AQ Khan intel shared

I. Testing Coercive Assurance Theory in the Libyan Case

Libya was subject to external pressure over its nuclear program. Its resistance warrants explanation. In this chapter, as before, I conduct theoretical tests in two parts. First, I investigate the causes of Libyan defiance in the face of compellence. I test Coercive Assurance Theory against Threat Credibility Theory. This test establishes that Libyan leaders perceived the implied assurances of its coercers' threats to be non-credible and therefore chose to defy compellent demands from 1998 to 2003. Next, I investigate the causes of coercive assurance credibility when it finally arrived in the Libyan case. All three of the assurance mechanisms—disentangling demands, coercive control, and reducing visibility—are at work in this case. This outline mirrors the twin purposes of the book, which are to (1) show that credible assurance is critical to coercive success and (2) identify manipulable causes of coercive assurance credibility.

Predictions of Coercive Assurance Theory versus Threat Credibility Theory

To remind the reader, all coercive threats at least imply an assurance that targets can avoid punishment by complying. This book explains the importance in statecraft of these contingent pledges not to punish. It also illuminates the causes of coercive assurance credibility.

The problem of coercive assurance credibility is at root two commitment problems: (1) The Coercive Restraint Problem: Targets of coercion fear that the threatened pain is not in fact contingent on their own behavior. The threatener may punish them regardless of whether they comply. If targets expect punishments to be capriciously applied, defiance runs little or no additional risk and compliance is fruitless. (2) The Snowballing Demands Problem: Targets of coercion fear complying because they think they will acquire a reputation for backing down, which will encourage the coercer or other adversaries to demand additional concessions in the future.

Threat Credibility Theory contends that these commitment problems are not so stark and that targets will give in to compellent demands if threats are sufficiently credible and severe. Threat Credibility Theory predicts in the Libyan case that Tripoli will acquiesce to compellent demands when they perceive threats to be sufficiently credible. That is, if they believe that the punishments are certain to be imposed if they defy. Libyan behavior should be primarily driven by a fear of punishment. Thus, speech evidence questioning the credibility of compellent threats should accompany Libyan defiance, and vice versa. Moreover, an increase in the perceived credibility of American threats should accompany any Libyan decision to terminate its nuclear weapons program.

H1a: Libyan policymakers will justify cheating on the NPT with assessments that American threats are not credible.

H1b: Libyan policymakers will terminate their nuclear weapons program at a time when American threats become more credible.

Threat Credibility Theory also predicts in the Libyan case that decision-makers in Tripoli will acquiesce to compellent demands when they perceive compellent punishments to be too costly. That is, Tripoli would terminate its nuclear weapons program if the United States communicated threats of punishment sufficiently certain and severe. Speech evidence asserting the low cost of threatened punishments (and their willingness to bear them) should accompany Libyan defiance. Moreover, Libya should terminate its nuclear weapons program when American punishments become too severe.

H2a: Libyan policymakers will justify cheating on the NPT with assessments that American punishments are not so severe.

H2b: Libyan policymakers will terminate their nuclear weapons program once they perceive punishments as too severe.

Coercive Assurance Theory, on the other hand, contends that assurance commitment problems make it difficult for a target to comply with compellent demands. Coercive Assurance Theory predicts in the Libyan case that decision-makers in Tripoli will acquiesce to compellent demands when they perceive that threats of compellent punishment will not be carried out if they comply. That is, Tripoli would terminate its nuclear weapons program if the United States communicated threats of punishment sufficiently contingent upon Libya's behavior. Speech evidence asserting the non-contingent nature of threats should accompany Libyan defiance. Moreover, Libya should terminate its nuclear weapons program if the United States and Britain credibly communicate coercive assurance.

H3a: Libyan policymakers will justify cheating on the NPT with assessments that American punishments will be applied whether or not Libya built the bomb.

H3b: If Libya perceives that American and British compellent threats are credibly contingent on their behavior, Tripoli will terminate its nuclear weapons program.

These two competing theories differ in their predictions about the sticking point of coercive bargaining.

The results of this chapter bear out the predictions of Coercive Assurance Theory. Libya perceived American threats of sanctions and force to be credible and painful; yet a fear of non-contingent punishment drove the Libyan leadership to defy compellence from 1998 to 2003. Moreover, upticks in the perceived credibility of American military threats, such as after the invasion of Iraq in March 2003, heightened the Libyan appetite for assurance rather than triggering concessions. When, in December 2003, leaders in Tripoli perceived adequate credible coercive assurance, Libya abandoned its nuclear program.

The chapter also provides evidence in favor of an alternative explanation for coercion failure: that Libya's coercers were asking for too much. Between 1986 and 1998, Libya's defiance was due to its accurate perception of its coercer's maximalist demands for regime change. Under such conditions, coercion failure is not due to a commitment problem but to the magnitude of demands. Even earlier, from 1980 to 1986, Libya defied American compellence for yet another reason: it did not perceive American threats to be credible.

Predictions of Threat-Assurance Tradeoffs versus Threat-Assurance Independence

The second theoretical investigation of this case study is to determine the causes of credible coercive assurance in Libya. Why did Libya perceive assurance to be incredible and how did it ever become credible? Are there lessons for how compellers can manipulate the credibility of their coercive assurances?

Threat-Assurance Tradeoff theory predicts that as threat credibility goes up, assurance credibility should go down, and vice versa. I test this by examining the effect of spikes in the credibility of coercer threats—in this case, large movements of military forces or demonstrative uses of force. This suggests the following hypotheses.

H4a: When perceptions of threat credibility spike, assurance credibility will decrease and targets will demand greater assurance.

H4b: Perceptions of greater assurance credibility should be accompanied by decreases in threat credibility.

H4c: Threats increasing in credibility will reach a point of diminishing returns. If a threat is increasing in credibility, a target will be more likely to concede before the threat becomes maximally credible (i.e. threats can be too credible).

Threat-Assurance Independence theory uniquely predicts that perceived increases in threat credibility may be accompanied by perceived increases in assurance credibility.

H5a: Perceptions of threat credibility may remain the same or increase as perceptions of assurance credibility increase.

H5b: Variables may bolster the perception of assurance credibility without affecting the perceived credibility of threats.

Specific to my proposed mechanisms on the causes of credible assurance, I make the following hypotheses.

H6_{D1}: Targets will not concede if multiple demands are linked to the same punishment(s).

H6_{D2}: Targets will concede after a coercer disentangles multiple demands by making them independently contingent on separable punishments.

H7_{C1}: Targets will fear fragmented coercers

H7_{C2}: Targets will not concede if a rogue veto player could act independently to spoil a coercive bargain

H8_{V1}: Targets will fear making public concessions

H8_{V2}: Targets confronted by coercers with unpublicized, private information about the target will be more likely to concede

The results of this chapter bear out the predictions of Independence more so than Tradeoff theory. Nonetheless, there is some evidence in favor of one Tradeoff hypothesis (H4a), as spikes in the credibility of American military threats were associated with greater Libyan demands for assurance.

The evidence also corroborates the hypotheses on Demand Disentanglement and Reducing Visibility. First, I show that the disentanglement of UN and U.S. sanctions to apply to different demands—Lockerbie and WMD, respectively—contributed to Libya's decision to

concede one issue at a time. (This separate resolution of the Lockerbie issue was also the moment when Washington scaled back its demands of Libya, from regime change to WMD nonproliferation.) Second, I also show that the United States deftly used secret information to signal credible coercive assurance. Washington communicated through sharing sensitive intelligence with Libya that it did not seek regime change. American restraint in publicizing Libyan transgressions, which could have been but were not used to make the case for regime change, was noticed and appreciated in Tripoli. And when Libya did finally accede to compelling demands, shipping out and destroying sensitive nuclear materials and equipment and opening its facilities to inspections, the International Atomic Energy Agency and other relevant actors allowed Libya a modicum of deniability over its past nuclear intentions and consciously chose not to rake Libya over the coals. Instead, they eventually welcomed, and turned a blind eye to the hypocrisy of, Libya as a champion for the nuclear nonproliferation regime. Reducing the visibility of its acquiescence was important to the Libyan leadership, and the international community largely accepted its role in tacitly colluding to grant Libya such deniability.

Finally, the hypotheses on Coercive Control are partially confirmed. The United States and the United Kingdom did actively keep spoilers out of the secret bargaining process, but it is unclear whether Libya perceived those signals. I argue that Libya would have been hesitant to concede to American and British demands if Israel could have acted as a spoiler. Moreover, Libya's interlocutors' willingness to keep spoilers isolated from the secret talks conveyed information about their intent to strike a bargain short of regime change. Nevertheless, the counterfactual is hazy, as the United States deftly kept both Israel and domestic hawks in the dark on Libyan negotiations.

Methods and Evidence

This chapter tells a new history of the Libyan case. Some scholars explain Libya's demand for nuclear technology but minimize the interaction between Libya and the international community.² Most acknowledge the American pressure on Libya without explaining variation in the efficacy of compellence over time.³

My research relies as much as possible on Libyan perspectives on Western coercion. Statements from Qaddafi himself are most salient evidence, supplemented by the statements of his son ("widely regarded as a representative of his father and potential heir"⁴), Seif al Islam Qaddafi and officials such as Musa Kusa or Abdul Rahman Shalgham. For similar reasons, I place particular emphasis on Malfrid Braut-Hegghammer's accounts of the Libyan nuclear program—she is the scholar who had the best access to Libyan officials prior to the toppling of the Qaddafi regime and her interviews inform her accounts of the Libyan program. These perceptions are also often filtered through interlocutors. For example, I use primary documents from the International Atomic Energy Agency (IAEA), which became involved in the Libya nuclear issue after the secret nuclear program had been revealed publicly in 2003.⁵ I supplement these documents with secondary accounts. I do not rely on American documents as none are yet available to scholars. More importantly, U.S. records are unlikely to provide ample details on the case since the matter was handled with such secrecy in the U.S. government. "...There were never any formal orders issued to any of the participants," writes William Tobey, a member of George W. Bush's National Security Council staff, "no national security decision directives, no

² Malfrid Braut-Hegghammer, *Unclear Physics* (Cornell University Press, 2016).

³ The closest to telling this story is Gene Gerzhoy, "Coercive Nonproliferation: Security, Leverage, and Nuclear Reversals," PhD Dissertation, University of Chicago, 2014.

⁴ Wyn Q. Bowen, "Libya and Nuclear Proliferation: Stepping Back from the Brink," *Adelphi Paper* 380 (May 2006), p. 62.

⁵ Given that much bargaining with Libya occurred in the shadows, prior to December 2003, the IAEA documentary record is not useful for earlier assessments of threat and assurance credibility, but it is useful for analysis post-2003.

Presidential Finding, no State Department cable with negotiating instructions.”⁶ Moreover, the fate of the Libyan government records after the 2011 civil war and military intervention is unknown.⁷ The narrative unfolds chronologically.

II. Libya’s Nuclear Program: Motivation and Beginning

Muammar Qaddafi came to power in a 1969 coup. The following year, he began the Libyan nuclear weapons program. Initially, the program was motivated by pan-Arab nationalist prestige and a desire for regional status as a leader of the Arab world, as well as the hope of achieving “strategic parity” to nullify the Israeli nuclear deterrent and open a window for further Arab conventional aggression against Israel.⁸ Libya was not threatened by Israel per se, only in the sense that it identified with the anti-Israel Arab cause and supported pro-Palestinian groups. In 2004, Qaddafi recalled, “in 1969 and early 1970s we did not reflect on where or against whom we could use the nuclear bomb. Such issues were not considered. All that was important was to build the bomb.”⁹

In the early 1970s, Qaddafi irritated the West by nationalizing foreign assets, including oil fields.¹⁰ A resulting surplus of oil revenue (aided by a surge in oil prices and OPEC organization) allowed Qaddafi to finance his nuclear ambitions. The initial strategy was two-

⁶ William Tobey, “Intelligence and Policy Community Cooperation in the Libya WMD Disarmament Case,” Occasional Paper 1802, Nonproliferation Policy Education Center, June 2018, p. 10.

⁷ Braut-Hegghammer, *Unclear Physics* (2016), p. 5.

⁸ Qaddafi often invoked Israeli nuclear weapons as a justification for a countervailing “Arab bomb.” Wyn Q. Bowen, “Libya and Nuclear Proliferation: Stepping Back from the Brink,” *Adelphi Paper* 380 (May 2006), p. 21. Braut-Hegghammer called it a “desire for regional status,” especially considering the Israeli nuclear arsenal. Braut-Hegghammer, *Unclear Physics* (2016), pp. 138-140.

⁹ Braut-Hegghammer, *Unclear Physics* (2016), p. 139. Qaddafi often spoke about his desire for an “Arab bomb” while publicly claiming Libya’s nuclear ambitions were entirely peaceful. Bowen, “Libya and Nuclear Proliferation: Stepping Back from the Brink” (2006), pp. 18-20.

¹⁰ William Tobey, “A Message from Tripoli: How Libya Gave Up Its WMD, Part 1,” *Bulletin of the Atomic Scientists*, December 3, 2014.

fold: attempts to directly purchase a nuclear warhead and financing foreign nuclear programs. Libyan representatives approached China (1970¹¹), Pakistan (1977), and India (1978) about buying a bomb outright. None agreed. Qaddafi also sought to fund an Egyptian nuclear weapons program. His discussions with Nasser were ongoing when Nasser died, and Sadat killed the prospects of such cooperation when he came to power in Egypt. Libya did, however, contribute funds to the Pakistani nuclear program. Beginning in about 1973 until about 1979, Libya contributed between \$100-500 million to the Pakistani nuclear program in exchange for “full access” to the Pakistani program.¹² Instead of “full access” Libya seems to have only received scientific training for some personnel.¹³

The strategy was supplemented with attempts to cover a clandestine nuclear weapons effort with a civilian nuclear power program. Libya asked the IAEA for early-stage nuclear assistance in the early 1970s (e.g. uranium exploration and mining, research, exploring a nuclear energy program).¹⁴ Between 1978 and 1981, Libya also imported 2,263 metric tons of yellowcake uranium ore from French mines in Niger (much more than required for any “existing or foreseeable needs”), declaring only 1,000 tons to the IAEA.¹⁵

Libya shopped around for a reactor supplier in the 1970s, ultimately finding the Soviet Union to be the most receptive. On the heels of signing a major conventional arms deal with the

¹¹ Braut-Hegghammer says there is no evidence that Jalloud (Libyan representative sent to China in 1970) asked explicitly to buy a nuclear weapon at this time. Braut-Hegghammer, *Unclear Physics* (2016), p. 141. Other sources claim Libya offered to buy a nuclear weapon. Joseph Cirincione with Jon Wolfstahl and Miriam Rajkumar, *Deadly Arsenals: Tracking Weapons of Mass Destruction* (Washington, DC: Carnegie Endowment for International Peace, 2002), p. 307.

¹² Gerzhoy, 127. Braut-Hegghammer puts the figure at \$133 million and 450 tons of yellowcake uranium. Braut-Hegghammer, *Unclear Physics* (2016), p. 159.

¹³ This Libya-Pakistan arrangement is worthy of future research. The details of the episode are murky.

¹⁴ Braut-Hegghammer, *Unclear Physics* (2016), p. 141.

¹⁵ Libya Country Profile, Nuclear Threat Initiative (NTI), <<https://www.nti.org/learn/countries/libya/>>; Braut-Hegghammer, *Unclear Physics* (2016), p. 158.

USSR in 1974,¹⁶ a sign of an expanding security relationship, Libya purchased a Soviet 10-megawatt IRT-1 research reactor and the fuel in 1975. It became operational at Tajoura in November 1983.¹⁷ Further reactor deals ultimately fell through. Libya was turned down by the United States in 1975, France cancelled a prospective deal in 1976, and China turned them down in 1978.¹⁸ Libya then sent a delegation led by Jalloud to Moscow to request a heavy water reactor, a heavy water plant, and a spent fuel reprocessing facility. “According to one senior Soviet official,” Braut-Hegghammer writes, “it was obvious to both parties that this was intended to be a military program.”¹⁹

When a Soviet state firm, Atomenergoexport, agreed to build a reactor the Soviet Ministry of Foreign Affairs stepped in to squash proliferation risks. Under pressure from the Soviet Union, applied as a condition to its supplying of the IRT-1 research reactor, Libya ratified the NPT in 1975.²⁰ Safeguards came into force in July 1980.

At the end of the 1970s, Libya’s nuclear weapons program was still flailing, spending a lot of money in many strategic directions. An IAEA expert assistance mission to Libya, meant to help the Libyans develop their peaceful nuclear science and technology, noted how the Libyan civil program was lavishly funded but lacked the scientific experts to follow through. The report noted the “very ambitious plans for the development of nuclear sciences in Libya” but a “severe shortage of trained personnel.”²¹ The vast scope of the investments had been made “without a

¹⁶ Libya acquired Soviet fighters and bombers, tanks, and missiles. Bowen, “Libya and Nuclear Proliferation: Stepping Back from the Brink” (2006), p. 15.

¹⁷ Braut-Hegghammer, *Unclear Physics* (2016), p. 163.

¹⁸ *Ibid.*, p. 161.

¹⁹ *Ibid.*

²⁰ Libya had already signed the NPT in 1968 under the government of King Idris.

²¹ “Travel Report: Programming Mission to Libya, 1-8 November 1981,” Interoffice Memorandum, November 9, 1981, p. 2-3. IAEA Archives, Vienna, Austria.

clear idea of the type of investigation to be performed and the results to be expected...” as “equipment is installed, but is idling because of the shortage of personnel.”²²

In sum, its investments clearly indicated Libya’s weaponization ambitions, but scientists in the nuclear program struggled to make progress toward the bomb.

III. Compellence from the West

In this context, Libyan relations with the West soured in the late 1970s, and the 1980s saw a series of tit-for-tat escalations with the United States. Tensions erupted with American airstrikes on Libya in 1986 and the Lockerbie bombing in 1988. The nuclear weapons program continued uninterrupted throughout. To test theory, this section assesses the evolution of coercive pressure against Libya in this period and how it was perceived by the regime. Until 1986, Tripoli did not perceive American threats to use military force (such as air strikes) to be credible. Thereafter, the goal of American coercion was the end of the Qaddafi regime—a demand too extreme to succeed whether or not it was paired with credible threats or assurances.

Incredible Threats Begin in 1980, Libya Defies

The 1980-1986 period is no real mystery for theories of coercion—Libya simply did not perceive compelling threats over its nuclear program to either exist or to be credible.

The United States initially tried to get along with the Libyan regime under Qaddafi. Libya was a source of crude oil for the American market and the U.S. provided access to technology and other goods. The United States even shared CIA estimates with Qaddafi about

²² “Travel Report: Programming Mission to Libya, 1-8 November 1981,” Interoffice Memorandum, November 9, 1981, p. 3-4. IAEA Archives, Vienna, Austria.

internal threats.²³ But within a few years of his taking power, Qaddafi's anti-Israel policy and support for international terrorism had caused a rift. In 1977 the Carter administration foiled a Libyan plot to assassinate the U.S. Ambassador in Egypt over his role in the Camp David peace talks.²⁴ Jimmy Carter imposed partial sanctions ("trade restrictions") and labelled Libya a state sponsor of terrorism, the first such list, in 1979. He also closed the U.S. embassy in Tripoli in 1980 (the building was burned in a protest in 1979).²⁵ Sanctions, however, were not linked explicitly to nuclear issues.²⁶

I code 1980 as the beginning of Libya's perception of a red line on nuclear weapons development, when nuclear safeguards came into force. IAEA inspectors monitored Libya's nuclear facilities to ensure they were used for peaceful purposes only. Nonetheless, there is some evidence to suggest that Libya did not perceive any credible threat of punishment in the early 1980s.

To begin with, Tripoli believed that it could obtain fissile material for nuclear weapons from nuclear reactors purchased from the Soviet Union. This would have been a poor proliferation strategy, as any diversion of nuclear material from a safeguarded facility was liable to be caught. But that fact "apparently escaped the senior regime officials until the mid-1980s."²⁷

More importantly, Qaddafi placed faith in the backing of the Soviet Union. The USSR had indeed been a friend to Libya. In 1981, Tripoli and Moscow made a "broad agreement

²³ Gerzhoy, p. 128.

²⁴ Ibid.

²⁵ Tobey, "A Message from Tripoli: How Libya Gave Up Its WMD, Part 1," 2014.

²⁶ Reynold and Wan attribute the lack of official nuclear proliferation justification for sanctions to deep secrecy. They write, "Libya's efforts to acquire WMD officially provided an additional justification for sanctions only toward the end of the 1990s." Celia L. Reynolds and Wilfred T. Wan, "Empirical trends in sanctions and positive inducements," in Etel Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (Cambridge University Press, 2012), p. 65.

²⁷ Braut-Hegghammer, *Unclear Physics* (2016), p.179. She cites U.S. Directorate of Intelligence, *Libyan Nuclear Program*, p. 1-2.

including contracts for conventional arms, technology transfers—including nuclear technology—and a promise of Soviet support if Libya were subjected to foreign aggression.”²⁸ Thus, Libya had less to fear from Western compellence.

Libyan leaders accordingly plowed ahead with the nuclear program. Beginning in the 1980s, Libya tried to get serious about the gas centrifuge path to uranium enrichment. Throughout the 1980s, Libya sought gas centrifuge technology, a modular uranium conversion facility, two mass spectrometers (to help build centrifuges), and engaged in uranium conversion experiments. From 1981-1983, Libya sought assistance from Romania in constructing a heavy-water nuclear reactor. Romania was tempted by the money, but the deal never closed.²⁹ In January 1984 they sought assistance from A. Q. Khan for the first time, but declined this first offer because they did not have the capability to scale up their efforts.³⁰ In 1984 they conducted plutonium separation experiments at the IRT-1 research reactor using imported natural uranium (violating safeguards). Libya sought to purchase a “hot cell” facility for plutonium reprocessing from Argentina; U.S. pressure killed this deal. Libya also sought a uranium conversion facility with help from a Belgian firm between 1981 and 1984; U.S. pressure killed this deal as well. But in 1984, Libya and Japan³¹ signed a deal for the supply of a modular uranium conversion facility. Components arrived in 1986 without instructions for assembly. (Suffering from a lack of expertise, the facility remained unassembled until 1998. Some of the equipment was supposedly used in “cold tests” (without uranium) in 2002.³²) Finally, in 1985 Libya sent some of its

²⁸ Braut-Hegghammer, *Unclear Physics* (2016), p. 171. She cites Bowen, p. 15.

²⁹ Braut-Hegghammer, *Unclear Physics* (2016), p. 185.

³⁰ *Ibid.*, p. 187.

³¹ Japan is identified as the supplier in Braut-Hegghammer, but Japan was not identified as the supplier in the IAEA report on Libya’s program.

³² Braut-Hegghammer, *Unclear Physics* (2016), p. 189.

imported yellowcake uranium to “an undisclosed nuclear weapons state” where it was processed into UF₆ and other compounds and sent back to Libya in the same year.³³

Simultaneously, Libyan and American forces engaged in a series of provocations and punishments as the Reagan administration began to direct more of its attention to the Mediterranean menace. In September 1980, Libyan jets fired at U.S. reconnaissance aircraft over the Gulf of Sirte (aka the Gulf of Sidra), asserting their extended claim of territorial waters. In August 1981, Libyan jets again fired on U.S. aircraft in the Gulf of Sirte, and U.S. F-14s shot down two Libyan jets in response, killing one Libyan pilot. And in March 1986, Libya fired six missiles at U.S. aircraft in the Gulf of Sirte. In response, the U.S. sank one Libyan vessel and destroyed a coastal SA-5 missile site.

While the issue at stake in these early 1980s military clashes was ostensibly freedom of navigation in international waters, a litany of disputes drove Washington’s ire with Tripoli. After coming to power, Qaddafi had nationalized the oil industry and kicked out American businesses, become cozy with Moscow, promoted anti-American riots (one of which set fire to the U.S. embassy), and championed the cause of Palestinian liberation.

In parallel to its military posture, the United States imposed economic pressure. It instituted an embargo on Libyan crude oil in 1982 and extended it in 1985 to include refined petroleum products. Libyan citizens were banned from studying nuclear science in the United States; and, in January 1986, the Reagan administration froze all Libyan assets in the U.S. and imposed additional unilateral sanctions. What had been a piecemeal effort at economic coercion

³³ Ibid. NTI Libya Country Profile suggests this country was either China or the USSR.

coalesced as comprehensive sanctions with Reagan's January 1986 executive order.³⁴ (The sanctions later expanded in 1992 and 1996.³⁵)

This time, Libya's response came in the form of terrorism. On April 5, 1986, Libyan-backed terrorists bombed a Berlin nightclub frequented by U.S. military personnel. Three people died, including two Americans, and 200 were injured, including 79 Americans.

Credible Threats Begin in 1986, Libya Continues to Defy

Libyan perception of Western military threats changed in 1986. On April 15, the United States conducted air strikes on terrorist camps and military facilities in Libya, including a home where Qaddafi could have been. The strikes injured Qaddafi's son.

Deep American air strikes revealed to Libya that it could not rely on the USSR for protection. This was in addition to the already underway souring of Soviet-Libyan relations behind the scenes, including the demise of prospective reactor purchasing deals.

American threats to use military force (from occasional punishing air strikes to full-blown invasion) were now more credible. Threat Credibility Theory predicts that we should see a greater willingness to make concessions. But Qaddafi still defied. The nuclear program and clandestine research at Tajoura continued apace and went further underground.³⁶ Just after the raids, components for a uranium conversion facility began to arrive clandestinely in 1986 and Libya stored them in hidden facilities around Tripoli.³⁷

³⁴ Bowen, "Libya and Nuclear Proliferation: Stepping Back from the Brink" (2006), p. 16.

³⁵ NTI Libya Country Profile.

³⁶ Although I focus on nuclear technology, constraining Libya's chemical and biological weapons ambitions was also part of American coercive strategy. Reagan publicly said Libya was manufacturing CW at a facility in Rabta in December 1987. HW Bush threatened military action against Libyan CW facilities in 1991. And in 1996 Secretary of Defense William Perry threatened military strikes against a Libyan CW facility under construction.

³⁷ The whereabouts and histories of these components were discovered by IAEA inspectors in 2004. Bowen, "Libya and Nuclear Proliferation: Stepping Back from the Brink" (2006), p. 22. As additional evidence that the nuclear program did not slow down, it has been reported that in the 1980s a "foreign expert," reportedly a former employer

Libya's continued defiance of Western compellence no longer stemmed from incredible threats but from the magnitude of its coercer's demands. Targeting Qaddafi outright in 1986 signaled that the Reagan administration was in pursuit of regime change rather than coercion to change Qaddafi's behavior. A demand to commit suicide allows for no bargaining space. U.S. intelligence assessments from the time corroborate this perception of American intentions. A 1984 CIA assessment doubted that Qaddafi could be compelled and concluded that "no course of action short of stimulating Qaddafi's fall will bring any significant and enduring change in Libyan policies."³⁸

Additionally, Libya's motivation for its nuclear program shifted after 1986 in a way that suggested a fear of regime change. The Libyan nuclear program became motivated by a desire to deter American aggression. After the 1986 strikes, Qaddafi said: "the Arabs must possess the atomic bomb to defend themselves." He further explicated this thinking in 1990, saying: "if we possessed a deterrent—missiles that could reach New York... [US] and others [would] no longer think about attack. ... We should have a nuclear bomb."³⁹ And Braut-Hegghammer writes that "the new focus on national security following the American air strikes in 1986 strengthened the Libyan regime's commitment to its nuclear project," citing an interview with a senior Libyan official.⁴⁰

of a German firm, worked at the Tajoura facility on a project to produce gas centrifuges. According to Libyan disclosures to the IAEA, this "foreign expert" departed in 1992. Between 1984 and 1990, Libya experimented with uranium "targets" at Tajoura, ultimately extracting small amounts of plutonium from two of them. See NTI Libya Country Profile. See also Bowen, "Libya and Nuclear Proliferation: Stepping Back from the Brink" (2006), pp. 32-33.

³⁸ Quoted in Zimmerman chapter of George and Simons, *The Limits of Coercive Diplomacy*, p. 203. Braut-Hegghammer also claims that Reagan altered U.S. policy on Libya to be one of regime change. Braut-Hegghammer, *Unclear Physics* (2016), p. 170.

³⁹ Gerzhoy, p. 133.

⁴⁰ Malfrid Braut-Hegghammer, "Libya's Nuclear Turnaround," *The RUSI Journal*, 151, 6 (2006), p. 53. She cites an interview with a "formerly central figure in the Revolutionary Committee system," Tripoli, 15 June 2005.

Across the board, Qaddafi was not cowed by direct American punishments. He continued to pursue nuclear weapons, claim extended sovereignty in the Mediterranean Sea, and support terrorism against the West. He planned and executed the Lockerbie airplane bombing on December 21, 1988 and a Niger airplane bombing on September 19, 1989, which killed 259 and 171 people, respectively.

Lockerbie Introduces Even More Impediments to Coercion in 1988

The Lockerbie bombing cast a pall over all U.S.-Libya relations for a decade and became an impediment to coercion by causing the United States to cling to its goal of regime change in Tripoli. So long as justice for the Lockerbie bombing remained an American demand, regime change remained the American goal.

Of the 259 people killed in the Lockerbie bombing, 189 were American citizens—many young students returning home for Christmas vacation. The American public rallied behind the Lockerbie victims, empowering a lobby of grieving families. Washington's position could not soften.

When the U.S. and the UK indicted two Libyan intelligence agents in November 1991 for plotting the Lockerbie bombing, they made five demands of Libya: 1. Surrender suspects for trial, 2. Accept responsibility for the suspects' actions, 3. Disclose everything it knows about the Lockerbie bombing, allowing access to witnesses, 4. Compensate victims' families, 5. Cease all support for terrorism. The UN Security Council imposed multilateral sanctions in 1992 having given giving Libya three months to comply with British, French, and American demands. Sanctions further tightened in November 1993.

Evidence suggests that Tripoli's perception of maximal demands prevented this additional pressure from contributing to a bargain between Libya and its coercers. Lockerbie had introduced a powerful new lobby in American domestic politics who sought justice. After the January 1992 UNSC vote to impose sanctions,⁴¹ for instance, the Bush administration rebuffed a Libyan outreach for dialogue due to pressure from Lockerbie victims' families.⁴² Sanctions could not be lifted or weakened unless the Lockerbie issue was fully resolved and compensation paid. Reynolds and Wan further attribute congressional passage of the Iran-Libya Sanctions Act (ILSA) in 1996 directly to the "increasing domestic pressure from the Lockerbie victims' families."⁴³

Having killed nearly 200 U.S. civilians, Qaddafi had little reason to expect any mercy from Washington. Lockerbie had to be settled before the demand for regime change could be scaled back and bargaining space could reemerge.

Libya "Reinvigorates" its Nuclear Program in the 1990s

At the end of the 1980s and in the early 1990s, Libya began to amend its proliferation strategy. The economy was stagnant in the 1990s.⁴⁴ Qaddafi experienced an unsuccessful

⁴¹ UNSC Resolutions 748 (1992) and 831 (1993) were the only multilateral sanctions against Libya. The measures imposed an arms embargo, air embargo, travel restrictions, oil-sector restrictions, freezing financial assets. Nuclear weapons technologies would have fallen under the arms embargo in Res. 748, but neither resolution banned peaceful nuclear cooperation. These UN sanctions were lifted in February 2003 with Resolution 1506. Reynolds and Wan, "Empirical trends in sanctions and positive inducements," in Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (2012), p. 65.

⁴² In 1992, Libya through backchannels (Rogers and Hart) offered a compromise to allow the two indicted Lockerbie bombing suspects to be tried in a neutral country. Jentleson and Whytock attribute the Bush administration's decision not to engage to pressure from Lockerbie victims' families. Bruce W. Jentleson and Christopher A. Whytock, "Who 'Won' Libya? The Force-Diplomacy Debate and Its Implications for Theory and Policy," *International Security* 30, 3 (Winter 2005/2006), pp. 47-86. Documents justifying the HW Bush administration decision not to negotiate are unavailable yet.

⁴³ The legislation sanctioned any foreign firm with significant (\$40 million, then later \$20 million) investments in Libya or Iran's oil sectors. ILSA was renewed in 2001. Reynolds and Wan, "Empirical trends in sanctions and positive inducements," in Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (2012), p. 64.

⁴⁴ *Ibid.*, p. 64.

military coup attempt in 1993. Sanctions were hurting and Tripoli wanted relief, but it did not want to go all in for rapprochement with the West and give up their nuclear program. Qaddafi gave his advisors leeway to probe the possibility of opening up the country economically. He understood WMD to be an impediment to such liberalization and he appeared willing to negotiate it away. Yet he also feared non-contingent punishments. Qaddafi therefore pursued a dual track approach: probe for the possibility of rapprochement with the West but build nuclear weapons in case of failure. The regime seemed to be thinking that it had to pursue nuclear weapons unless they could find an “exit strategy.”⁴⁵

In 1989, the Libyan nuclear program was reorganized under the leadership of Matuq M. Matuq, a non-scientist regime insider whom Qaddafi trusted. Matuq embraced the black market for nuclear procurement, continuing to focus on the gas centrifuge uranium enrichment path to the bomb.⁴⁶ Taking note of the 1981 Israeli strike on the Iraqi Osirak reactor, Libya sought to keep its black-market activities secret and keep enrichment sites secret and mobile.

Matuq reconnected with A. Q. Khan. He purchased P-1 centrifuges in early 1991. Soon Libya had a disagreement with Pakistan and refused to pay because the P-1 centrifuges were outdated.⁴⁷ It was also difficult to ship things to Libya after the March 1992 sanctions that targeted air cargo and travel.

⁴⁵ Braut-Hegghammer, *Unclear Physics* (2016), p. 196.

⁴⁶ A. Q. Khan supposedly sold the rest of the P-1 centrifuges to Iran in 1993. In addition to its black-market connection to A. Q. Khan, Libya also connected with South Africa. When the South African nuclear weapons program was dismantled at the end of the 1980s, some South African companies engaged in illicit trade with Libya. One company built a UF₆ feeding system in Libya and was exposed when the A. Q. Khan Network was undone in 2003. Olli Heinonen, “Chapter 8: Verifying the Dismantlement of South Africa’s Nuclear Weapons Program,” <<https://www.belfercenter.org/sites/default/files/legacy/files/Verifying%20the%20Dismantlement%20-%20Heinonen%20Chapter%208.pdf>>.

⁴⁷ Braut-Hegghammer, *Unclear Physics* (2016), p. 203.

In 1995 Libya decided to “reinvigorate its nuclear activities” and turned again to A. Q. Khan.⁴⁸ This was really just scaling up of black market procurement efforts that had begun in 1989, according to Braut-Hegghammer. In 1997, Libya ordered 20 complete L-1 (P-1) gas centrifuges and most of the components for another 200 centrifuges from A. Q. Khan. By 1998, Libya had assembled its uranium conversion facility. In late 1999 or early 2000 Libya acquired two new mass spectrometers and in September 2000 acquired two L-2 (P-2) advanced centrifuges.

Why did Libya double down on its nuclear program just as it was coming under greater pressure from its coercers? The evidence suggests that it was because of the magnitude of American demands.

Libya was quite clearly stung by its experience dealing with the intransigent Bush administration in 1992. The imposition of UN sanctions convinced Libyan officials that their coercers would never relent. “It is now known that Libya attempted to offer giving up the nuclear weapons programme to the US before United Nations (UN) sanctions were imposed in 1992. However, the cool reception these attempts were met with suggested that no rewards would be given for abandoning the nuclear proliferation efforts,” writes Braut-Hegghammer, citing an interview with a senior official in the Libyan General People’s Congress.⁴⁹ And another senior official learned the following lesson: “After Libya was accused of the Lockerbie attack in 1992, officials began to fear that the West would attempt to overthrow the regime. Libya would not benefit from giving up its nuclear weapons project in this context, and potentially had a lot to

⁴⁸ This “reinvigoration” language comes from the February 2004 IAEA Report. Malfrid Braut-Hegghammer pushes back against this narrative, arguing that the new strategic effort was fairly consistent from the 1989 reorganization onward.

⁴⁹ Braut-Hegghammer, “Libya’s Nuclear Turnaround” (2006), p. 53. She cites an interview with a “senior official in the Libyan General People’s Congress,” Tripoli, 16 June 2005.

lose in light of the entrenched conflict with the West,” Braut-Hegghammer writes, citing an interview with a formerly central figure in the Revolutionary Committee system.⁵⁰ This was an accurate reading of American intentions—Washington would not take yes for an answer with Qaddafi in power.

IV. Direct Coercive Bargaining Between the US, UK, and Libya 1998-2003

In this section, I review decisionmaking in Tripoli throughout the late 1990s and early 2000s when Libya began to speak directly with its coercers. When, in 1998, the United States and Libya resolved the issue of Lockerbie guilt and compensation, Washington scaled back its demand for regime change in Libya. This reduction in the magnitude of its demands opened the possibility of a coercive bargain over the nonproliferation issue. Nevertheless, Libya continued to defy. Once the coercer’s policy/goal changed, it encountered a coercive assurance problem. The available record reveals that while Libya sought to remove the punishment of painful sanctions, insufficient coercive assurance that Qaddafi would not be punished anyway impeded bargaining. Coercive Assurance Theory is affirmed.

Moreover, the record shows that each of the three mechanisms of signaling credible assurance—disentangled demands, coercive control, and reducing visibility—were manipulated by the United States before Libya agreed to concede its nuclear ambitions. I walk through each of the mechanisms in turn, how each was manipulated by coercers and perceived by the Libyan leadership. The analysis focuses especially heavily on 2003, when secret talks over the nuclear issue were deepest and led to a breakthrough.

⁵⁰ Braut-Hegghammer, “Libya’s Nuclear Turnaround” (2006), p. 53. She cites an interview with a “formerly central figure in the Revolutionary Committee system,” Tripoli, 15 June 2005.

Disentangling Two Issues: Lockerbie and WMD

By the late 1990s, two major issues impeded sanctions relief and better relations with the West: Lockerbie and WMD proliferation. Libyan support for terrorism had subsided in the 1990s, but the issue was still very much on the table in the form of Lockerbie guilt and compensation.⁵¹

Libya's coercers effectively disentangled the issues, in contrast to the South African case discussed in the prior chapter, by tying Lockerbie concessions to UN sanctions relief and WMD concessions to American sanctions relief. As predicted, when coerced over multiple entangled issues, targets like Libya lack the necessary coercive assurance to concede on any individual issue. The demands had to be disentangled by being tied to separate punishments.

Just as important, the resolution of the Lockerbie issue allowed the United States to scale back its demands of Libya. Regime change was no longer the necessary end goal of coercion. Washington was free to pursue a coercive bargain with Qaddafi still in power. Crucially, while the United States eliminated its *demand* for regime change, it maintained its *threat* of regime change if Libya did not comply with other demands. Convincing Libya that it had in fact abandoned its goal of regime change was now the impediment to coercion.

That the United States struck a deal on Lockerbie guilt and compensation due to fact that its multilateral sanctions regime showed signs of fracturing did not help to signal truly scaled back demands.⁵² Giving up a demand by necessity does not induce much confidence of a change

⁵¹ Suskind reports that the Clinton administration handled Libya discussions with "utmost secrecy," because "families of the Lockerbie victims had long since organized into a fierce, somewhat unruly advocacy group, lobbying for arrests, sanctions, and anything else that would amount to a facsimile of justice. Notice of a dialogue with the monsters from Tripoli would have summoned a righteous explosion..." And the Bush administration understood the same barriers: "It needed to be one step completed, before the next could begin," said a senior State Department official involved in talks with Libya. Quoted in Suskind, "The Tyrant Who Came in from the Cold," *Washington Monthly* 38, 10 (October 2006), pp. 19-23.

⁵² Multilateral sanctions began to unravel in 1998, when U.S. faced pressure to accept Libya's Lockerbie compromise offer from Russia, China, Arab League, and the Organization of African Unity.

in malign intentions. Nevertheless, the United States was indeed free to set its sights lower than regime change and would spend the next few years trying to signal as much.

Disentangled demands also had the benefit of removing an impediment to coercive assurance. The U.S. and UK offered through the UNSC in August 1998 that UN sanctions would be lifted if Libya surrendered its two Lockerbie suspects for trial in the Hague. But U.S. sanctions would remain tied to the WMD program.⁵³ Libya complied in April 1999, handing over the two suspects, and UN sanctions were suspended.⁵⁴

Secret US-UK-Libya talks then began in May 1999,⁵⁵ where Qaddafi was certainly feeling out the possibility of a deal to give up his nuclear program, but he remained skeptical. During direct talks with their American and British counterparts, according Braut-Hegghammer, Libyan officials “had to balance their efforts to strike a deal... against the risk that Gaddafi could pull back from their proposed agreement.”⁵⁶ Qaddafi was not yet committed to concessions, even though he felt the pain of economic sanctions and understood that “his wholesale rejection of global markets had exacerbated Libya’s poor economic conditions...”⁵⁷

⁵³ Multiple sources show that UN and US sanctions were decoupled and applied over separate issues, Lockerbie and WMD, respectively. Bowen, “Libya and Nuclear Proliferation: Stepping Back from the Brink” (2006), pp. 59-61; Flynt L. Leverett, “Why Libya Gave Up the Bomb,” Brookings, January 23, 2004, <<https://www.brookings.edu/opinions/why-libya-gave-up-on-the-bomb/>>.

⁵⁴ The Lockerbie trials of the indicted Libyans had concluded in January 2001 (al-Megrahi was convicted, and Fhimah was acquitted).

⁵⁵ U.S. Assistant Secretary of State Martin Indyk claimed that the Libyans officially put the chemical weapons program on the table (with Qaddafi’s permission) at this first meeting in Geneva. The U.S. agreed but countered that the negotiations should address Lockerbie before tackling WMD issues. The U.S. also had Libya agree to stop lobbying for sanctions relief if the negotiations were to continue. Braut-Hegghammer, *Unclear Physics* (2016), p. 211.

⁵⁶ Ibid.

⁵⁷ Reynolds and Wan, “Empirical trends in sanctions and positive inducements,” in Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (2012), p. 66.

Suspended Talks and September 11th

Direct talks continued in fits and starts. Negotiations were suspended by the U.S. for fear of leaks during the 2000 presidential election, and then the September 11th terrorist attacks reoriented U.S. foreign policy. This episode is important to examine, as it refocused American policy on the threats of terrorism and weapons of mass destruction. In this context, compelling threats to Libya over these issues would have theoretically increased in their credibility. Did they? And how did Qaddafi respond?

Critically, after 9/11, Qaddafi did perceive a spike in the credibility of American threats, yet he expanded his nuclear program—evidence against Threat Credibility Theory. Bush administration officials assessed that, “Qaddafi understood what Saddam didn’t: that 9/11 changed everything.”⁵⁸ Qaddafi supposedly asked “every Arab leader on his rolodex” to help him convince Washington that Libya was opposed to terrorism. He also offered to help the United States with counterterrorism intelligence.⁵⁹

But the nuclear program continued and grew. Qaddafi did not perceive credible enough assurance to dispose of his insurance policy in the face of compellence. In late 2001 or early 2002, Matuq paid A. Q. Khan \$100-200 million for a “turnkey” gas centrifuge plant with 10,000 P-2 centrifuges. The plant was supposed to be completed by June 2003.⁶⁰ The Khan offer included blueprints for a Chinese warhead design, UF6 feed material, and installation and training. Libya did receive the designs, technology, and “several cylinders” of UF6 in 2001 (shipped on a Pakistani airplane).⁶¹ Libya further imported through A. Q. Khan approximately 16

⁵⁸ William H. Tobey interview with the author. March 14, 2018. Cambridge, MA.

⁵⁹ Suskind, “The Tyrant Who Came in from the Cold” (2006), pp. 19-23.

⁶⁰ Braut-Hegghammer, *Unclear Physics* (2016), p. 204.

⁶¹ The *New York Times* reported that the UF6 originated in North Korea. David Sanger and William Broad, “Evidence is Cited Linking Koreans to Libya Uranium,” *New York Times*, May 23, 2004.

kilograms of other uranium compounds in 2002. By then, Libya had “an operational nine-centrifuge cascade” and a “partially completed installation of two additional cascades (one with nineteen centrifuges and another with sixty-four).”⁶² Between May and December 2002, Libya conducted two successful tests of its centrifuges, but not with UF6 inside.

Meanwhile, after 9/11, the George W. Bush administration had picked up secret talks again with the Libyans in October 2001. The talks bore fruit on counterterrorism cooperation, as Tripoli had already abandoned its support for terrorism.⁶³ They also reached an agreement on compensation for Lockerbie victims’ families.⁶⁴ Then Tony Blair wrote to Qaddafi in October 2002 about opening negotiations on Libya’s WMD program.⁶⁵ He waited for a reply.

Bargaining over WMD in 2003: Overcoming Impediments to Coercive Assurance

Qaddafi’ son broke the silence in early 2003 by reaching out to MI6. Tripoli was, he said, interested in “clearing the air” on weapons of mass destruction.⁶⁶ Blair convinced President Bush at a March Camp David meeting on Iraq to be willing to negotiate with Libya on WMD. As Lockerbie and terrorism concerns subsided as major impediments to rapprochement, the U.S., UK, and Libya were poised for a breakthrough in relations.

⁶² Nathan E. Busch and Joseph F. Pilat, *The Politics of Weapons Inspections: Assessing WMD Monitoring and Verification Regimes* (Stanford University Press, 2017), p. 117.

⁶³ Libya kicked out the ANO in 1999 and cooperated with regional partners (Egypt, Jordan, and Yemen) on counterterrorism. Post-9/11, Tripoli provided intelligence to Washington on al Qaeda threats. Bowen, “Libya and Nuclear Proliferation: Stepping Back from the Brink” (2006), p. 57.

⁶⁴ In May 2002, they agreed to an amount of up to \$10 million per family. Payments were made over the next few years as litigation continued. Providing additional evidence in favor of Reducing Visibility as a mechanism of coercive assurance, Saif arranged for the Qaddafi International Foundation for Charity Associations to pay the restitution, which “the regime itself claimed did not come from the government.” Bowen, “Libya and Nuclear Proliferation: Stepping Back from the Brink” (2006), p. 62. Libya’s letter accepting responsibility for the bombing was submitted to the UNSC in August 2003.

⁶⁵ Braut-Hegghammer, *Unclear Physics* (2016), p. 212.

⁶⁶ Tobey, “A Message from Tripoli: How Libya Gave Up Its WMD, Part 1,” 2014.

Its coercers were credibly and severely threatening Libya. Decades of sanctions prevented Libya from expanding its oil production and left existing oil infrastructure rusting.⁶⁷ As a result the industry stagnated. Libya produced half as much oil in 2003 as it had at its peak in the 1970s.⁶⁸ Economic punishment was indeed painful. Inflation reached 50 percent in 1994. In 2003, unemployment was at 25%. But the effect of sanctions had peaked in the 1990s. Multilateral sanctions had already begun to unravel in 1998.

Negotiations began in March 2003 (before the U.S. invasion of Iraq⁶⁹); the first trilateral meeting was held in April 2003. Yet Qaddafi began to be scared that negotiations were a trap. Seif al Islam recalled to *Time* magazine that Qaddafi “suspected an ambush” by the West—“getting him to give up his only deterrent but withholding diplomatic rehabilitation.”⁷⁰ According to Braut-Hegghammer, it was the Libyan military that needed to be convinced that negotiations were “not aimed at disarming Libya but focused only on WMD.”⁷¹ Braut-Hegghammer further reports that “as talks intensified in early 2003 the Libyan leader feared that it could be a trap, and that there was a hidden agenda at play aiming for the overthrow of his regime.”⁷² Libya’s coercers had just invaded another “rogue” state, Iraq, under the banner of counterproliferation. Graffiti in Tripoli read: “Today, Saddam. Tomorrow, Qaddafi.”⁷³ The West certainly got the Brother Leader’s attention. But, speaking with his Foreign Minister Shalgham,

⁶⁷ Bowen, “Libya and Nuclear Proliferation: Stepping Back from the Brink” (2006), p. 54.

⁶⁸ *Ibid.*, p. 54.

⁶⁹ Braut-Hegghammer, citing an interview with the British Ambassador to Libya, Anthony Leydan, similarly points out that “with regards to persuading Libya to end its nuclear programme, the important decisions appear to have been made before the invasion of Iraq in March 2003.” Braut-Hegghammer, “Libya’s Nuclear Turnaround” (2006), p. 53.

⁷⁰ Scott MacLeod, “Behind Gaddafi’s Diplomatic Turnaround,” *Time*, May 18, 2006.

⁷¹ Braut-Hegghammer, *Unclear Physics* (2016), p. 213. She cites an interview with Seif al-Islam Gadhafi, Qaddafi’s son.

⁷² Braut-Hegghammer, *Unclear Physics* (2016), p. 213. She cites an interview with Seif al-Islam Gadhafi, Qaddafi’s son.

⁷³ Alison Pargeter, *Libya: The Rise and Fall of Qaddafi*, (Yale University Press, 2012), p. 188.

Qaddafi said in response, “They will laugh at us and document that we have WMD. They implicated Saddam Hussein and they want to implicate us too.”⁷⁴

It was rather coercive assurance that proved to be the difficult impediment throughout direct bargaining. Over the course of 2003, the United States and the United Kingdom came around slowly to offering more coercive assurance.⁷⁵ The table below lists the meetings that took place. The following sections review these efforts to communicate coercive assurance, which fall into the hypothesized categories of Exerting Coercive Control and Reducing Visibility (the third category of disentangling the Lockerbie demands had happened earlier).

Date	Location	Participants	Notes
Mid-April 2003	Geneva, Switzerland	Kappes, Allen—Kusa, unknown Libyan diplomat	First meeting; near-miss with Israelis; disappointing
Late-May 2003	Europe	Kappes, Allen—Kusa, Saif	Not much progress
August 2003	Europe	Kappes, Allen—Kusa, Saif	Not much progress; invitation to meet Qaddafi directly
Early September 2003	Tripoli, Libya	Kappes, Allen—Qaddafi	First meeting with Qaddafi
October 7, 2003	Tripoli, Libya	Allen—unknown Libyans	Sharing BBC China intercept
October 19-29, 2003	Libya	Technical experts	“technical visit” #1
November 20, 2003	The Bay Tree Hotel, Cotswolds, UK	Kappes, Allen—unknown Libyans	Sharing A.Q. Khan recording; Letter from President Bush
December 1-12, 2003	Libya	Technical experts	“technical visit” #2

⁷⁴ Ibid., p. 187. As Corera puts it, “The Libyans were nervous about revealing what they had procured (even though it was far from operational), because they feared that their opponents could simply walk away from secret negotiations and use the information as a pretext to attack.” Gordon Corera, “Behind Closed Doors,” *The Independent*, August 25, 2011.

⁷⁵ In an early secret meeting, Bush administration officials did not seem to grasp the need for coercive assurance. “The Libyans asked for non-aggression pacts and other security guarantees,” Corera writes. But the U.S. and UK responded that Libya had to give up its WMD “before anything would be guaranteed.” Later, however, Western leaders provided sufficient assurance in multiple ways. Corera, “Behind Closed Doors,” 2011.

December 16, 2003	Travelers Club, London	Joseph, Ehrman, Kappes, Allen, Landsman—Kusa, al-Obeidi, Azwai, three other unknown Libyans	Discussing content of the statement
December 18, 2003	Phone call	Blair—Qaddafi	

Exerting Coercive Control: Bargaining with the Right Coercer

As theorized, targets of coercion as a practical matter need to know that they are bargaining with the right coercer(s) and that either domestic or international spoilers with independent abilities to inflict pain are not likely to punish them even if they comply. Isolating spoilers from the bargaining process also has the benefit of signaling the sincerity of coercer’s willingness to strike a coercive bargain short of regime change. If regime change were the goal, spoilers would be more useful to include.

The Libyans first expressed their fears of bargaining with the wrong coercers in 2003 when they observed that secret communication channels did not reflect a unified willingness to strike a deal within its coercers’ governments. When the Libyans “insisted that they meet with someone who was not an undercover intelligence officer and of sufficient authority to show that the UK government as a whole was committed,”⁷⁶ the British arranged for a senior diplomat to deliver Qaddafi a pledge of good faith. Tony Blair sent a letter with “a high-ranking subordinate” to Tripoli and promised a “positive response” from the Washington and London if Libya disarmed. The Libyans appreciated the gesture.

Later on in negotiations, the United States sent a similar signal. When Libyan concessions seemed within reach in December 2003, the highest-ranking American delegation

⁷⁶ Gordon Corera, *Shopping for Bombs: Nuclear Proliferation, Global Insecurity, and the Rise and Fall of the A.Q. Khan Network* (Oxford University Press, 2006), pp. 184-185.

yet, travelled to meet the Libyans. Kappes and Bob Joseph circumvented official travel procedures to secretly travel to London and work with their Libyan partners on language for Libya's concession statement. According to Tobey, Joseph's attendance was meant to "signal to the Libyans that President Bush himself endorsed the effort."⁷⁷

Secrecy, too, helped to keep the right actors in the know and the uncompromising (least assuring) spoilers at bay. President Bush gave the Libyan negotiation portfolio to CIA Director George Tenet to ensure secrecy. Not even Donald Rumsfeld or Colin Powell were to be told about it.⁷⁸ Tenet delegated to Stephen Kappes, the deputy director of operations at the Agency.⁷⁹ As this choice was explained by a Bush administration official, William Tobey, "It is easier to keep the secret domestically if the CIA is in charge. The State Department is not good at deep secrecy."⁸⁰

One Bush administration official known, including to the Libyans, for his uncompromising attitude was then-Under Secretary of State for Arms Control and International Security Affairs John Bolton. Bolton had wanted to name Libya in the "axis of evil," but UK Foreign Secretary Jack Straw and David Manning convinced Condoleezza Rice and Colin Powell to keep Libya out. Bolton also pushed for greater sway over Libyan relations but was kept out of the loop on purpose. Senior British officials reportedly pressed for Bolton's sidelining.⁸¹ The White House "uncharacteristically, sidelined the administration's neoconservative wing" from the Libya portfolio, according to Flynt Leverett, a member of the

⁷⁷ William Tobey, "A Message from Tripoli: How Libya Gave Up Its WMD, Part 2," *Bulletin of the Atomic Scientists*, December 3, 2014.

⁷⁸ Suskind, "The Tyrant Who Came in from the Cold," (2006), pp. 19-23. Tenet says he finally briefed Colin Powell, Richard Armitage, and Bill Burns on the Libya negotiations sometime after Kappes' September meeting with Qaddafi. George Tenet, *At the Center of the Storm: My Years at CIA*, (Harper Collins, 2007), p. 293.

⁷⁹ Tobey, "A Message from Tripoli: How Libya Gave Up Its WMD, Part 1," 2014.

⁸⁰ William H. Tobey interview with the author. March 14, 2018. Cambridge, MA.

⁸¹ Bowen, "Libya and Nuclear Proliferation: Stepping Back from the Brink" (2006), p. 65.

Bush administration's National Security Council.⁸² Bolton knew nothing of the Libya deal until after the December 19, 2003 Libyan agreement was announced.⁸³

A similar dynamic played out internationally to keep the Israelis from learning about secret US-UK-Libyan talks and acting as a spoiler. Israeli participation, insistence on humiliating terms, or worse, air strikes, had the potential to doom coercive bargaining. An Israeli military strike would have been difficult but possible. A 1985 air strike against a PLO headquarters near Tunis, Tunisia had demonstrated the long reach of the Israeli air force in North Africa. Over a decade earlier, in September 1973, Ariel Sharon had bragged in the Knesset that Israel could hit "any target in the Arab world including Libya."⁸⁴

Tobey recounts an awkward encounter in the Geneva hotel just prior to the first trilateral meeting in April 2003. As Kappes and his British counterpart sat waiting for the Libyans to arrive, former Israeli Prime Minister Ehud Barack entered the breakfast room. "While Kappes watched the Israelis apprehensively, his British colleague raced to head off the Libyans and direct them to another room on the hotel's top floor," writes Tobey.⁸⁵

But critically, Israel was in the dark about the Libyan nuclear program. Israeli intelligence completely missed the smuggling network of A. Q. Khan until the U.S. shared intelligence to the effect, and not until 2002. Still, the United States insulated one of its closest allies from what it learned about Libya's activities specifically. After Libya disarmed, the scope of Libya's activities "took Israeli intelligence completely by surprise."⁸⁶

⁸² Flynt L. Leverett, "Why Libya Gave Up the Bomb," Brookings, January 23, 2004, <<https://www.brookings.edu/opinions/why-libya-gave-up-on-the-bomb/>>.

⁸³ Jentleson and Whytock, "Who 'Won' Libya? The Force-Diplomacy Debate and Its Implications for Theory and Policy" (2005/2006), p. 76.

⁸⁴ Bowen, "Libya and Nuclear Proliferation: Stepping Back from the Brink" (2006), p. 20.

⁸⁵ Tobey, "A Message from Tripoli: How Libya Gave Up Its WMD, Part 1," 2014.

⁸⁶ Dan Raviv and Yossi Melman, *Spies Against Armageddon*, 2nd edition (Levant Books, 2014).

Indeed, after the fact, Israeli leaders angrily demanded of Washington an explanation for why Tel Aviv had been left out of the loop. An Israeli Knesset (parliamentary) committee report condemned its intelligence community for its ignorance but also the United States for its actions.

Israel was surprised to discover that Libya, under Muammar Qaddafi, has been intensively engaged in the development of a military nuclear capability ... The intelligence services of the USA (and of Britain) did not share with their colleagues in Israel in real time their recent and significant exposures of the Libyan nuclear program, and even concealed from the State of Israel the steps taken vis-a-vis the Libyan regime in the apparently successful attempt to bring about the liquidation of its nuclear industry.⁸⁷

The United States (and Britain) declined to let Israel—even a select group of elite officials—in on its information.⁸⁸ Washington prioritized coercive assurance vis-a-vis Libya. This isolation of the bargaining process mattered both for its practical elimination of potential spoilers and for the signal it sent about the coercers' serious intent to strike a deal without regime change.

⁸⁷ "The Committee of Enquiry into the Intelligence System in Light of the War in Iraq," March 2004, http://www.knesset.gov.il/committees/eng/docs/intelligence_complete.pdf (hereafter "Knesset report"). Quoted in Cullen Nutt and Reid Pauly, "The Strategic Logic of Concealing the Sins of the Guilty," working paper. Also quoted in Cullen Nutt, "Proof of the Bomb: The Influence of Previous Failure on Intelligence Judgments of Nuclear Programs," *Security Studies* (forthcoming).

⁸⁸ Some accounts report that the United States shared some vague intelligence with Israel early on in their uncovering of the A. Q. Khan network in 2002. We know about this because of complaints that a September 2002 public statement by Ariel Sharon about potential Libyan proliferation caused consternation in Washington. Regardless of what or if anything was shared, all accounts report that the US did not share anything else with Israel after the Sharon comments. The United States kept Israel in the dark for the duration of the coercive bargaining over WMD that began in 2003. See: "Libya Denies Sharon Charge It Is Developing Nuclear Weapons," *Haaretz*, September 5, 2002; Ze'ev Schiff, "Libya Intelligence Failure Needs Answers," *Haaretz*, March 31, 2004; Melman, "Spy Vs Spy"; Amos Harel, "Senior Officer: Sharon's Slip of the Tongue Made US Hide Libya Talks," *Haaretz*, April 1, 2004; "Israel: Army Officer Says No Apparent Change in Hamas, Hezbollah Policy," *BBC Monitoring Middle East*, March 31, 2004.

Reducing Visibility

Deep secrecy also afforded the United States the opportunity to obfuscate about Libyan behavior in public and convince Qaddafi that he could save face. As hypothesized, targets of coercion are more likely to concede if they perceive that they can plausibly deny the extent of their concessions and avoid getting a reputation for backing down to compellence. Forbearance also has the signaling benefit of communicating that the coercer is not out to build the case for invasion.

Prior to the negotiations beginning, Libya's foreign minister had publicly denied having a nuclear weapons program in January 2003, calling such concerns "CIA propaganda."⁸⁹ The same denials occurred at Kappes and his British colleague's first meeting with Qaddafi in Tripoli. To show that security from Western aggression was on his mind, Qaddafi picked as the location for the meeting the very office where American bombers had targeted him in 1986.⁹⁰ After a 15-minute diatribe about the West, Qaddafi expressed a desire to "clean the file."⁹¹ When Kappes asked about Libya's WMD program, however, Qaddafi "angrily denied having such weapons." According to Tobey, "Kappes quickly sensed the game: Qaddafi wanted to claim credit for giving up illicit programs he would not admit to having."⁹²

The U.S. and UK governments were remarkably quiet about coercive bargaining with Libya. When, in January 2003, the CIA and British counterparts briefed George W. Bush and Tony Blair on the activities of Khan and Libya, it had been roughly a year since U.S. and British intelligence identified Libya as a Khan customer. Until that point, the CIA publicly reported to

⁸⁹ Tobey, "A Message from Tripoli: How Libya Gave Up Its WMD, Part 1," 2014.

⁹⁰ William Tobey, "Intelligence and Policy Community Cooperation in the Libya WMD Disarmament Case," Occasional Paper 1802, Nonproliferation Policy Education Center, June 2018, p. 3.

⁹¹ Ibid.

⁹² Tobey, "A Message from Tripoli: How Libya Gave Up Its WMD, Part 1," 2014.

Congress rumblings of nuclear activity in Libya but nothing more.⁹³ In the crucial year of 2003, U.S. leaders and intelligence agencies made no public mention of its discoveries about Libya's cooperation with the Khan network. In its semiannual report to Congress in June 2003, the CIA wrote only cryptically: Libya "continued to develop its nuclear infrastructure" during the previous six-month period. Critically, though, the CIA referenced only innocuous developments, namely cooperation between Libya and Russia at a known nuclear research center and "various technical exchanges through which [Libya] could have tried to obtain dual-use equipment."⁹⁴ The CIA said nothing publicly about A. Q. Khan and Libya, despite the extensive intelligence they had amassed on that link. Neither did U.S. officials mention the matter or hint at ongoing dialogue. Only after the fact, the CIA tacitly admitted that it had withheld certain information from the public about Libyan activities. In January 2004, after Libya made its concessions, the CIA issued an update on Libya that revealed the hidden bargaining.⁹⁵ The CIA report also references A. Q. Khan for the first time.⁹⁶

Six months into secret talks, U.S. negotiators were dealt an ace. In October 2003, acting on an intelligence tip and in conjunction with the Proliferation Security Initiative, the CIA and MI6 intercepted in the Italian port of Taranto a shipment of Malaysian-manufactured centrifuge

⁹³ In light of newly available clandestine intelligence, the CIA in late 2001 revised its assessment of the Libyan program. Reporting from Congress indicates that a still-classified 1999 National Intelligence Estimate (NIE) had set 2015 as the earliest threshold by which Libya might be capable of building a bomb. See *Report of the Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction* (Washington, D.C.: U.S. Government Printing Office, 2005), p. 260 (hereafter "WMD Report"). In December 2001, the CIA warned in a secret (i.e. non-public) assessment that Libya could "produce enough weapons grade uranium for a nuclear warhead as early as 2007." With the help of their moles inside the Khan network, the CIA and MI6 had gained critical insight into Khan's activities in Dubai and Malaysia in 2001 and 2002, where the Pakistani was arranging for the production of equipment to be delivered to Tripoli. Until early 2003, the CIA did not provide U.S. leaders with the kind of high-confidence information that would have allowed Washington to go public about Libya's misbehavior.

⁹⁴ CIA, "721 Report," June 2003, <https://www.cia.gov/library/reports/archived-reports-1/jan_jun2003.htm#6>.

⁹⁵ Ibid.

⁹⁶ "Libya's disclosures revealed that the A. Q. Khan network had provided Libya with designs for Pakistan's older centrifuges, as well as designs for more advanced and efficient models, and components." Ibid.

equipment from the A. Q. Khan network bound for Tripoli on the *BBC China*.⁹⁷ The German-owned ship's manifest noted five shipping containers carrying only "used machine parts."⁹⁸ The Libyans had been caught red-handed.

The question now was how to play this ace. It certainly could have been used as a hammer, to come down hard on the Libyans and prove to the world that they were up to no good. This is certainly what John Bolton preferred. Aware of the interception but unaware of the talks, Bolton planned to hold a press conference hailing the seizure of the *BBC China*.

But those who knew about ongoing negotiations thought better of it. Robert Joseph, the NSC's senior director for counter-proliferation strategy, argued that the intercept should be kept secret to use as leverage in the negotiations. Steve Hadley concurred. "Bush and Blair determined that the *BBC China* intelligence would advance the negotiations if we kept it secret and conveyed it privately to the Libyans," recalls William Tobey.⁹⁹ As Tenet explained, "We were concerned that if U.S. officials launched into the typical and well-deserved Libya-bashing language, Qaddafi might cancel the whole deal out of embarrassment."¹⁰⁰ Tenet effectively gagged Bolton. Four days after the secret interception, the British acted to reassure Qaddafi. They dispatched Mark Allen to make Qaddafi aware of the seizure "before [it] hit the press," in Tenet's words.

The strategy worked. Libya perceived the *BBC China* interception as pressure with credible coercive assurance. Saif Qaddafi later reported (as written by Tobey) that "the firm, but discreet way in which the U.S. and Britain handled the incident had reassured his father that London and Washington were acting in good faith, rather than creating a pretext for military

⁹⁷ The ship was tracked from Malaysia to Dubai and then rerouted to Italy from its planned route of Dubai to Tripoli.

⁹⁸ Tobey, "A Message from Tripoli: How Libya Gave Up Its WMD, Part 1," 2014.

⁹⁹ William H. Tobey interview with the author. March 14, 2018. Cambridge, MA.

¹⁰⁰ Tenet, *At the Center of the Storm: My Years at CIA* (2007), p. 294.

action.”¹⁰¹ The fact that the intelligence was not made public coercively assured the Libyans. To *Time* magazine, Saif recalled that while the seizure added pressure on Libya to come clean, the lack of bullying by MI6 and the CIA reassured Gaddafi. “We realized that we were dealing with friends and sincere people,” said Seif al Islam.¹⁰² Bowen describes the episode as building trust: “The [BBC China] revelations...demonstrated to the Libyans that their British and American partners trusted them enough to share very sensitive information at a time when the A.Q. Khan network remained under investigation and its existence had yet to be publicly acknowledged.”¹⁰³

Libya relented on inspections (“technical visits”) and a secret team flew to Libya within two weeks. Sharing intelligence, instead of publicizing it to build a case for regime change, made the United States seem a more credible bargaining partner.

At the first technical visit, October 19-29, 2003, Tenet writes that during a personal encounter with Kappes, Qaddafi asked “if the United States would really fulfill its commitments if he renounced his WMD programs.” ““Yes sir, the president is a man of his word,”” Kappes replied. ““But if he feels his word has been dishonored ... well, he is a very serious-minded man.””¹⁰⁴

At the visit, which lasted ten days,¹⁰⁵ the Libyans “provided additional information about their missile and chemical weapons programs,” but continued to dissemble about their nuclear

¹⁰¹ Tobey, “A Message from Tripoli: How Libya Gave Up Its WMD, Part 1,” 2014.

¹⁰² Scott MacLeod, “Behind Gaddafi’s Diplomatic Turnaround,” *Time*, May 18, 2006.

Note, however, that the BBC China intercept story broke publicly only two days after the final deal was reached in December 2003. Julian Coman and Colin Brown, “Revealed: the real reason for Gaddafi’s WMD surrender,”

Telegraph, December 21, 2003,

<<http://www.telegraph.co.uk/news/worldnews/africaandindianocean/libya/1450010/Revealed-the-real-reason-for-Gaddafis-WMD-surrender.html>>.

¹⁰³ Bowen, “Libya and Nuclear Proliferation: Stepping Back from the Brink” (2006), p. 66.

¹⁰⁴ Tenet, *At the Center of the Storm: My Years at CIA* (2007), p. 295. This meeting took place on October 21.

¹⁰⁵ Ten days is the length reported by Corera. Gordon Corera, “Behind Closed Doors,” *The Independent*, August 25, 2011.

program. They argued that they only sought nuclear power. The inspectors concluded that their Libyan counterparts “had not been instructed to speak freely or ‘come clean.’”¹⁰⁶

Later, on November 20, 2003, U.S. and UK negotiators confronted the Libyans with additional intelligence. At a “tense meeting” in a small Cotswold hotel, the CIA presented a recording of a bugged conversation from February 2002 between A. Q. Khan and Matuq in Casablanca, Morocco.¹⁰⁷

After the fall of the Qaddafi regime, British journalists uncovered a Libyan transcript (in Arabic) of this November meeting. According to the document, Kappes first tells Musa Kusa that the West knows of Libya’s uranium enrichment program. “We, with all caution, recorded that incident and the meeting that went on between them and we have the full tape,” said Kappes.¹⁰⁸ He then handed Kusa a CD with the recording that he said proved Libya’s nuclear program was for “military and not peaceful purposes.”¹⁰⁹ Kappes then referenced making the case for war against Iraq. “Maybe in other circumstances and in other times, this information [on Libya’s nuclear plans] could be used adversely,” Kappes said, “Maybe [Secretary of State] Powell could talk about it in the UN.”¹¹⁰ *The Times* emphasizes that Kappes “quickly reverted to focusing on how the goal was to restore relations with the Tripoli regime.”¹¹¹ This was a threat of regime change to be certain, but also an assurance signal highlighting American forbearance and the contingency of the punishment on Libya’s actions.

Kappes then delivered a message to Qaddafi direct from President Bush conveying his “personal desire for friendship.” In the meeting, Kappes stresses Bush’s sincerity. “The President

¹⁰⁶ Tobey, “A Message from Tripoli: How Libya Gave Up Its WMD, Part 1,” 2014.

¹⁰⁷ Corraera, *Shopping for Bombs*, pp. 189-190.

¹⁰⁸ Deborah Haynes, “How a Little Cotswold Hotel Became the Rendezvous for Gaddafi’s Nuclear Climbdown,” *The Times (UK)*, November 1, 2011.

¹⁰⁹ Ibid.

¹¹⁰ Ibid.

¹¹¹ Ibid.

has not sent any letters lately so it is a very important decision for him to write,” Kappes says, “This is the strongest sign for the President to be personally involved.”¹¹² Libyan negotiators agreed to a second on-site technical visit.

The second “technical visit” took place on December 1-12, 2003.¹¹³ The Libyans were much more forthcoming, including disclosing some facilities which the Americans did not know about.¹¹⁴ They admitted to having nuclear weapons ambitions, revealed the UF6 cylinders acquired from A. Q. Khan and surrendered their designs for a nuclear warhead.¹¹⁵

True to a pattern of this case, these technical visits were kept secret from the IAEA.¹¹⁶

The Final Coercive Assurance after Saddam’s Capture

At this point in coercive bargaining, the parties were close to concluding a deal, but fate sent one more curveball. On December 14, 2003, American troops in Iraq pulled Saddam Hussein out of a hiding hole. The manhunt for the toppled dictator ended at a farm near his hometown of Tikrit. Cameras recorded his humiliation.

The signal was strong. Qaddafi received it. But the capture of Saddam had the counterproductive effect of increasing Qaddafi’s appetite for coercive assurance. Libya again balked, suggesting a postponement of the upcoming concessions and asking for assurances that the U.S. would not pursue regime change. He feared the U.S. would be after him next, WMD or

¹¹² Ibid.

¹¹³ Corera reports that the second technical visit began on December 9. Corera, “Behind Closed Doors,” 2011.

¹¹⁴ Tobey, “A Message from Tripoli: How Libya Gave Up Its WMD, Part 2,” 2014.

¹¹⁵ Corera reports: “Rain fell on the last full day, as the possibility of failure hung over the visiting team. In the dark before dawn the next morning, they headed to the airport. As they prepared to board, the Libyans handed over a stack of brown envelopes about a foot high. Inside was the design for a nuclear weapon.” Corera, “Behind Closed Doors,” 2011.

¹¹⁶ Braut-Hegghammer, *Unclear Physics* (2016), p. 215.

no WMD. He also did not wish to be perceived as having been cowed into submission by Saddam's capture.¹¹⁷

Blair decided to place a personal phone call to Qaddafi on December 17.¹¹⁸ As Tobey recalls the end-game, "Bush and Blair wanted to know how to push Qaddafi over the hump and reassure him. The call was intended to push Qaddafi over the hump."¹¹⁹ He recounts the call as follows:

To improve their chances, Tony Blair called Qaddafi at midday, London time. Qaddafi expressed two concerns, perhaps inadvertently revealing his underlying motivation for abandoning his banned weapons programs. First, he said he did not wish to appear to have capitulated to Washington's demands. In light of Saddam's capture only days earlier, comparisons between Iraq and Libya would be inevitable, he complained. Second, he feared that the United States would attack Libya if it acknowledged possessing proscribed weapons—paradoxically, the reverse of Washington's view of the matter. Qaddafi added that because he disliked the wording of the draft statement, he wanted his foreign minister make the announcement. Blair replied that if Qaddafi was clear and explicit about Libya's possession of the WMD programs and his determination to eliminate them, the United States and Britain would respond positively in return.¹²⁰

¹¹⁷ "Worried that the humiliating capture of Saddam would be viewed as the driving force behind his voluntary disarmament, Gaddafi suddenly proposed a postponement." Scott MacLeod, "Behind Gaddafi's Diplomatic Turnaround," *Time*, May 18, 2006.

¹¹⁸ Braut-Hegghammer, Tobey, and others agree the call took place on December 17. Gerzhooy claims the call took place on December 18.

¹¹⁹ William H. Tobey interview with the author. March 14, 2018. Cambridge, MA.

¹²⁰ Tobey, "A Message from Tripoli: How Libya Gave Up Its WMD, Part 2," 2014. According to another account: Blair gave "reassurances that if Gaddafi supported the statement there would be an immediate and positive response from London and Washington. But it had to be absolutely clear what Gaddafi was saying. No more WMD." Peter Beaumont, Kamal Ahmed and Martin Bright, "The Meeting that Brought Libya in from the Cold," *Observer*, December 21, 2003, <<http://www.globalsecurity.org/org/news/2003/031221-libya-meeting.htm>>.

Blair was offering a personal assurance. The call lasted thirty minutes. Afterward, he called Bush. Both leaders agreed that after hearing Qaddafi himself come clean and pledge to dismantle his WMD program each would make reassuring statements welcoming the decision and looking forward to better relations.¹²¹

Tobey recounts the last-minute back and forth communications between the delegations over the language of the final statement and who would deliver it.¹²² Indeed, Tobey's first role on the Libya portfolio was to advise on what the content of a Libyan disarmament statement should say. "I had a weird day in October 2003," recalls Tobey. "I was told that my two jobs that day were to give a visiting Iraqi Science Minister a tour of the West Wing and to draft a statement on Libyan WMD dismantlement—to be issued by Qaddafi. My bosses wanted to know, what would we need to hear Qaddafi say to indicate that it was a true strategic decision to dismantle his WMD programs and not return to them later."¹²³ Tobey advised that Qaddafi should make the statement personally and that it should contain specific references to complete dismantlement, compliance with all treaties, and verification access to all sites, documents, and people involved in the WMD program. "We needed to hear the Libyans say that they acknowledged the program would be dismantled and verified. A statement that Qaddafi was turning his back on the WMD programs," he says.¹²⁴

Finally, on December 19, 2003, Libya announced that it would abandon its nuclear weapons program, destroy CW stockpile, declare activities to the IAEA and allow inspections, destroy missiles with more than 300km range and 500kg payload, and join the CWC. "Libya has

¹²¹ Tobey, "A Message from Tripoli: How Libya Gave Up Its WMD, Part 2," 2014.

¹²² *Ibid.*

¹²³ William H. Tobey interview with the author. March 14, 2018. Cambridge, MA.

¹²⁴ William H. Tobey interview with the author. March 14, 2018. Cambridge, MA.

decided, with its own free will, to get rid of these substances, equipment and programmes and to be free from all internationally banned weapons,” the statement read on radio.¹²⁵ In the end, it was Libyan Foreign Minister Abdel Rahman Shalgham who made the statement. Qaddafi endorsed it afterward with a single written sentence.¹²⁶ “Qaddafi’s ‘endorsement’ was satisfactory,” Tobey told me. “Sometimes you don’t get everything you want, but we were generally satisfied.”¹²⁷

President Bush and Prime Minister Blair made complementary statements. Bush’s remarks communicated both the threats and assurances that yielded Libyan compliance, saying, the United States had “sent an unmistakable message to regimes that would seek or possess weapons of mass destruction. Those weapons do not bring influence or prestige. They bring isolation and otherwise unwelcome consequences”—a threat. But Bush continued, “and another message should be equally clear: Leaders who abandon the pursuit of chemical biological, and nuclear weapons, and the means to deliver them, will find an open path to better relations with the United States and other free nations”—a coercive assurance.¹²⁸ Bush claimed the United States had “clarified the choices left to potential adversaries.”

Blair “applauded” Qaddafi’s “courageous decision” and noted that “Libya’s actions entitle it to rejoin the international community. I have spoken to Colonel Gaddafi to say that, as the process of dismantlement goes forward, I now look forward to developing a productive relationship with him and with Libya.”¹²⁹

¹²⁵ “Libyan WMD: Tripoli’s Statement in Full,” BBC, <<http://news.bbc.co.uk/2/hi/africa/3336139.stm>>.

¹²⁶ Tobey, “A Message from Tripoli: How Libya Gave Up Its WMD, Part 2,” 2014.

¹²⁷ William H. Tobey interview with the author. March 14, 2018. Cambridge, MA.

¹²⁸ “Bush’s Remarks on Arms Agreement with Libya,” *New York Times*, December 19, 2003.

<http://www.nytimes.com/2003/12/19/international/bushs-remarks-on-arms-agreement-with-libya.html>

¹²⁹ “Full Transcript: Blair’s Libya Statement,” BBC News, December 19, 2003, <http://news.bbc.co.uk/2/hi/uk_news/politics/3336073.stm>.

Post-Bargain Face Saving

By September 2004, all materials acquired from A. Q. Khan were shipped out of Libya.¹³⁰ President Bush lifted most U.S. sanctions on April 23, 2005. The United States restored full diplomatic relations with Libya on May 15, 2006. By the end of June Libya was officially removed the list of states designated as sponsors of terrorism. Libya was elected to a term on the UNSC in October 2007.

In constructing post-bargain verification, American officials did compromise on transparency, allowing the Libyans to claim some modicum of deniability. In the words of Bob Joseph, “While a number of questions remained even after the return of the experts in December [2003]—including the precise nature of the North Korean connection to Libya’s missile project, the extent of the work on nerve agents, and the possibility of hidden centrifuges—the intelligence assessment was that sufficient confidence existed to proceed to policy discussions and that these outstanding questions should not be an obstacle to moving forward.”¹³¹ The priority was going forward, not forcing Libya to come publicly clean.

The March 2005 U.S. Robb-Silberman Report evaluating American intelligence collection in the Libya case (and others, especially Iraq) effectively concurred with the focus on the future. “There is little doubt that important questions remain about Libya’s WMD programs,” the report noted. Nonetheless, it expressed optimism that “with the establishment of an official presence in Tripoli, the United States has had, since January 2004, a standing presence in-

¹³⁰ For details of how the United States pulled off this massive logistical effort, see William Tobey, “A Message from Tripoli: How Libya Gave Up Its WMD, Parts 3 and 4,” *Bulletin of the Atomic Scientists*, December 3, 2014.

¹³¹ Joseph, *Countering WMD*, p. 57. Quoted in Nathan E. Busch and Joseph F. Pilat, *The Politics of Weapons Inspections: Assessing WMD Monitoring and Verification Regimes* (Stanford University Press, 2017), p. 115.

country that will provide continuous assessment of Libya's compliance with its dismantlement commitments."¹³²

Finally, just as Qaddafi's December 19th statement had stressed that his concessions were made of Libya's "own free will," over the years Libyan officials took pains to emphasize the "voluntary" nature of their disarmament. That Libya was now leading peace movements all over the world was a "first step to prove that [the decision to give up WMD] was taken voluntarily," said Qaddafi in April 2004 in Brussels where he met with EU officials.¹³³ Seif was clear in interviews that Libya did not acquiesce "because we are afraid" or because of "American pressure or blackmail."¹³⁴ Similarly, Shalgham emphasized that Libya's deal with the West was subject to "verification" and not "inspections," which had been applied most embarrassingly in the 1990s in the Iraqi case.¹³⁵ Qaddafi had indeed emphasized his opposition to "inspections" in his first meeting with the Kappes and Allen in September 2003, but he suggested he was open to "visits."¹³⁶ Focusing on the future, "The caravan is moving on," said Shalgham in February 2004. And, at a March 10 IAEA Board of Governors meeting, Libya's representative Matouq acknowledged not that his country had had a nuclear weapons program, but that it had sought "self-reliance in a number of fields, including embarking on the development of a nuclear fuel cycle programme"; indeed, Libya's leaders had "always called for the elimination of WMDs on

¹³² "The Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction," Report to the President of the United States, March 31, 2005, pp. 262-263. <https://fas.org/irp/offdocs/wmd_report.pdf>.

¹³³ Bowen, "Libya and Nuclear Proliferation: Stepping Back from the Brink" (2006), p. 48.

¹³⁴ Ibid. At the same time, Libyan officials readily admitted that they gave up on nuclear pursuits for sanctions relief. Libya struck a bargain in order "to concentrate on development projects and normalizing relations with the U.S." Seif, too, described "political, economic, cultural and military gains." Ibid., p. 49.

¹³⁵ Ibid., p. 49.

¹³⁶ Tobey, NPEC Occasional Paper, 2018.

the grounds that they posed a threat to international peace and security.”¹³⁷ These words mattered to the Libyans.

The IAEA also played along. In both its March 2004 and September 2008 resolutions on the Libya file, the IAEA Board of Governors referred explicitly to Tripoli’s “voluntary decision” to abandon its clandestine nuclear program.¹³⁸ At the March 10, 2004 Board of Governor’s meeting, American representative Brill took a forward-looking approach, emphasizing that Libya’s “non-compliance appeared to have been consigned to the past” and that Libya was working “to wipe the slate clean.”¹³⁹ And at a March 13, 2004 Board of Governors meeting, Brill referred to Libya’s “farsighted and courageous decision to turn voluntarily away from the pursuit of weapons of mass destruction,” contrasting Libya with Iran, which had ongoing compliance issues at the time.¹⁴⁰ In this context, Libya could also take up a public mantle as a nonproliferation champion. In the depth of confrontation over Iran’s nuclear program, Libya’s representatives to the IAEA repeatedly claimed that Libya “had always emphasized the importance of universal adherence to the NPT and the application of safeguards,” and thus called upon Iran to cooperate fully with the IAEA.¹⁴¹

To be clear, the IAEA and the international community did learn a great deal about Libya’s clandestine nuclear program.¹⁴² This was no cover up; it was a tacitly coordinated effort

¹³⁷ IAEA Board of Governors, “Record of the 1092nd Meeting,” March 20, 2004, GOV/OR.1092, p. 4-5. IAEA Archives, Vienna, Austria.

¹³⁸ “Implementation of the NPT Safeguards Agreement of the Socialist People’s Libyan Arab Jamahiriya,” March 10, 2004, GOV/2004/18. IAEA Archives, Vienna, Austria. “Implementation of the NPT Safeguards Agreement of the Socialist People’s Libyan Arab Jamahiriya: Resolution adopted by the Board of Governors on 24 September 2008,” GOV/2008/53. IAEA Archives, Vienna, Austria.

¹³⁹ IAEA Board of Governors, “Record of the 1092nd Meeting,” March 20, 2004, GOV/OR.1092, p. 3. IAEA Archives, Vienna, Austria.

¹⁴⁰ IAEA Board of Governors, “Record of the 1094th Meeting,” March 13, 2004, GOV/OR.1094, p. 17. IAEA Archives, Vienna, Austria.

¹⁴¹ IAEA Board of Governors, “Record of the 1199th Meeting,” November 23, 2007, GOV/OR.1199, p. 1. IAEA Archives, Vienna, Austria.

¹⁴² See all four IAEA Safeguards Reports on the Libyan program: “Implementation of the NPT Safeguards Agreement of the Socialist People’s Libyan Arab Jamahiriya,” February 20, 2004; “Implementation of the NPT

to save face. Indeed, Qaddafi's willingness to invite organizations like the IAEA and the OPCW into the dismantlement process was done to add credence to Libya's claim that they voluntarily disarmed rather than gave in to coercion.¹⁴³ Moreover, in the shadow of a failure to recover any WMD in Iraq, Bush and Blair had a vested interest in cultivating the legacy of the 'Libya Model.' According to Tobey, "While there were no promises given in advance, Bush and Blair wanted this to work as a model of WMD nonproliferation. They talked about this explicitly at Camp David. They had an interest in convincing others that Libya's was a good path to follow."¹⁴⁴ Tobey indicated that things like stomaching ironic Libyan statements about how they were now champions of nonproliferation and "voluntarily" got rid of their weapons were part of this effort to hold Libya up as a model.

V. Conclusion

Libya's coercers ultimately succeeded in concluding an agreement to verifiably eliminate its nuclear weapons program in December 2003. During these negotiations, Qaddafi was continually concerned that the West intended to disarm him and attack Libya. Indeed, 9/11 and the Iraq War caused Qaddafi to hold fast to his nuclear ambitions, because they underlined the credibility of Western threats without supporting complementary coercive assurances. As secret negotiations dragged on, however, the U.S. came around to understanding the role of assurance. Indeed, negotiations were deadlocked until credible threats were paired with coercive assurance.

Safeguards Agreement of the Socialist People's Libyan Arab Jamahiriya," May 28, 2004; "Implementation of the NPT Safeguards Agreement of the Socialist People's Libyan Arab Jamahiriya," August 30, 2004; "Implementation of the NPT Safeguards Agreement of the Socialist People's Libyan Arab Jamahiriya," September 12, 2008. Available online at: <<http://isis-online.org/iaea-reports/category/libya>>.

¹⁴³ Bowen, "Libya and Nuclear Proliferation: Stepping Back from the Brink," (2006), p. 72. Cited in Busch and Pilat, *The Politics of Weapons Inspections: Assessing WMD Monitoring and Verification Regimes* (2017), p. 116.

¹⁴⁴ William H. Tobey interview with the author. March 14, 2018. Cambridge, MA.

For a long time, however, regime change *was* the U.S. goal. From 1986 to 1998, Libya defied coercion because of its accurate perception of U.S. maximalism. Demands of such great magnitude undermine coercion by eliminating bargaining space. Only after the United States dropped its goal of regime change did U.S.-Libya relations encounter a coercive assurance problem, during which time Washington took pains to signal that it no longer sought regime change.

Earlier, from 1980 to 1986, Libya defied coercion because it did not perceive that American threats to use military force were credible.

Returning to Hypotheses on Threat Credibility Theory vs. Coercive Assurance Theory

What caused the success of coercive bargaining in December 2003? Coercive Assurance Theory receives stronger support in this case than Threat Credibility Theory. Consider again the hypotheses. Libyan policymakers did justify cheating on the NPT with assessments that American threats of military force (from air strikes to invasion) were not credible (H1a), but only from 1980 to 1986. Thereafter, and when American threats became credible, Libya continued to defy compellence, disconfirming H1b. H2a is also disconfirmed, as Tripoli chose to continue to invest in its nuclear program after sanctions were considered severe; and the fact that an increase in the severity of punishments is not associated with the timing of acquiescence provides evidence against H2b.

An alternative explanation for coercion failure—the magnitude of the coercer’s demands—receives strong support in this case between 1986 and 1998. Qaddafi perceived accurately that Washington sought his ouster. Maximalist demands, not a commitment problem, impeded Libya’s willingness to concede.

The record of bargaining between 1998 and 2003 also affirms both Coercive Assurance Theory hypotheses (H3a and H3b) because of Libya's consistent demand for greater coercive assurance and its decision not to concede until its assurant concerns were addressed.

The official Libyan motivation to concede the stake was that nuclear weapons were no longer in the state's security interests. "The arms race is conducive neither to its [Libya's] own security nor to that of the region," read Libya's communique to the UNSC in December 2003. "The nuclear bomb represents a danger to the country which has [it]," Qaddafi said in March 2004.¹⁴⁵ And Seif, his son, reiterated that Libya was actually "safer without those items."¹⁴⁶ But what exactly had changed Tripoli's mind to bolster its coercers' assurances? I return to the hypotheses on the causes of credible coercive assurance next.

Returning to Hypotheses on the Causes of Credible Coercive Assurance

"Qaddafi only came around to conceding to pressure incrementally," recalls William Tobey. "He needed to be brought along."¹⁴⁷ Libya's coercers did so by disentangling demands, maintaining coercive control, and reducing the visibility of Qaddafi's concessions. Hypotheses on all three proposed causes of assurance credibility are affirmed, though evidence is limited on Libya's perception of coercive control signals.

First, Lockerbie guilt and compensation was resolved and taken off the table before Libya agreed to WMD concessions. This had two key effects: (1) allowing the United States to scale back its demands of regime change (resolving the problem of maximalist demands), and (2) disentanglement of UN and U.S. sanctions over the two issues of Lockerbie and WMD, which

¹⁴⁵ Bowen, "Libya and Nuclear Proliferation: Stepping Back from the Brink" (2006), p. 48.

¹⁴⁶ Ibid.

¹⁴⁷ William H. Tobey interview with the author. March 14, 2018. Cambridge, MA.

had resulted in Libyan concessions on neither stake (a problem of coercive assurance). Applying each punishment to a different demand in 1998, however, contributed to Libya's decision to concede one issue at a time, as one stake did not impede the other. Both H6_{D1} and H6_{D2} are affirmed. Moreover, even in 2003, the Bush administration had to consider how to disentangle stakes to provide sanctions relief. As William Tobey recalls: "WMD, terrorism, and human rights sanctions were all interwoven. The Bush administration debated how to decouple these sanctions and provide some relief on the WMD issue after the announcement."¹⁴⁸ It helped that Bush and Blair wanted to provide relief as a means of upholding the 'Libya Model' as a path worthy of emulation by other isolated states.

Second, Libya's coercers exerted coercive control both internationally and domestically, providing support for H7_{C2} that targets will not concede if a veto player could act independently to spoil a coercive bargain. Internationally, the United States maintained coercive control by freezing Israel, a potential spoiler, out of the coercive bargaining process. Domestically, the United States relied on the secrecy of negotiations with Libya to keep hardline opponents out of the process. Bargaining with Libya was unacceptable to hawkish members of the Bush administration and members of Congress with the backing of the powerful lobby for victims of the Lockerbie bombing.

In terms of my theoretical framework, the UK was a "partner" to the United States in negotiations and not a potential "spoiler". Between its two coercers, the United States dominated Britain in terms of leverage. It was the U.S. whose sanctions mattered most to Libyan revival. As Bowen writes, "while the British government certainly fulfilled a pivotal role in the secret negotiations, and provided the Libyans with a bridge to the Americans, only the United States

¹⁴⁸ Ibid.

had in its gift what the Libyans most sought: an end to American sanctions and reengagement with Washington.”¹⁴⁹

Although these efforts by coercers to signal coercive control are clear, we have less evidence that these signals were received in Tripoli. Perhaps the best indication that the Libyan leadership was concerned with coercive control was when they asked for signs that they were bargaining with the right members of the U.S. and UK governments. Both the United States and the United Kingdom, at different times, responded by sending messages from their heads of state and sending high-level representatives to assure the Libyans of sincerity. H6C1 thus receives support, as the target feared fragmented coercers.

Coercive control also seems to convey signaling information about the intent of the coercer. Freezing hardline spoilers out of coercive bargaining communicates to the target that its coercers are not setting it up for regime change. Had Libya’s coercers been after a pretext for invasion, they would likely not have isolated spoilers from the process. The next mechanism provides more direct evidence for the effects of such signaling benefits.

Third, and finally, the Libyan case affirms both hypotheses on the role of reducing visibility in communicating credible coercive assurance. Libya was very weak relative to its coercers, so it perceived a short shadow of the future. Under such conditions, I theorized that targets of compellence fear the commitment problem of coercive restraint more than the commitment problem of snowballing demands. They are concerned with survival. Thus, Qaddafi had to be credibly assured that the West was not after regime change before he concerned himself with who might come calling next. Nevertheless, even this case, Libya’s reluctance to

¹⁴⁹ Bowen, “Libya and Nuclear Proliferation: Stepping Back from the Brink” (2006), pp. 59-60.

make or admit public concessions affirms H8_{v1}, while its coercers' successful efforts to confront it with unpublicized intelligence about its nuclear program affirms H8_{v2}.

Reducing visibility had the practical benefit of constricting the amount of information available to third parties about the target's concessions. With less information, other enemies (domestic or international) can draw fewer inferences about the target's acquiescence and the target is thus less likely to acquire a reputation for backing down. Importantly, a conceding target likes to believe that it will not acquire a reputation for backing down, whether or not reputations matter in international politics. In Libya's case, Qaddafi appreciated keeping his concessions less visible. When Libya made its public statement announcing its bargain with the West, it emphasized its decision to do so "of its own free will."

Reducing visibility also had the signaling benefit of communicating that the intentions of the coercers was not to pursue regime change. Qaddafi was indeed wary of coming clean to his coercers. "Qaddafi genuinely feared that if he admitted to his WMD program that we would use force against him," recalls Tobey.¹⁵⁰ The United States and Britain therefore chose to confront Libya with intelligence in a reassuring way. The seizure of the *BBC China* and recordings of the A. Q. Khan network were both kept secret and discussed with the Libyans privately.¹⁵¹

Returning to Hypotheses on the Relationship Between Threat and Assurance Credibility

Lastly, this case has helped to test the hypotheses on the relationship between the credibility of threats and assurance. Overall, some of the hypotheses on both Threat-Assurance Independence and Threat-Assurance Tradeoff are affirmed.

¹⁵⁰ William H. Tobey interview with the author. March 14, 2018. Cambridge, MA.

¹⁵¹ Libya is an intriguing case of information asymmetry—the target did not know how much its coercers knew about its nuclear program. This was because of the independent discovery of the A. Q. Khan Network, which allowed the United States to learn much about the Libyan program through a third party.

Consider the hypotheses on Independence first. The fact that Libya perceived credible threats and severe punishments but did not concede until coercers bolstered their assurances affirms H5a—perceptions of assurance credibility varied without affecting threat credibility or severity. Moreover, there is no evidence to suggest that the causes of assurance credibility in this case—disentangling demands, coercive control, and reducing visibility—diminished the credibility of threats, affirming H5b. That the United States walked back its earlier *demand* for regime change did not decrease the credibility of its *threat* of regime change; instead the threat became credibly *contingent* (i.e. that it would not be carried out if Qaddafi abandoned his nuclear program).¹⁵²

Consider now the Tradeoff hypotheses. H4b is disconfirmed for the same reasons as H5b; that is, as the credibility of assurance increased it only bolstered the contingency of credible threats and did not undermine their credibility. H4c is also disconfirmed by Libyan willingness to continue its nuclear program and defy compulsion in the face of increasingly credible and severe threats. Libya's coercers' threats, which culminated in an invasion of another rogue state over a similar stake (WMD), were never too credible.

H4a, however, receives support—when perceptions of threat credibility spiked, the target's perception of assurance credibility decreased and it demanded greater coercive assurance. Two instances in the Libya chronology allow us to see this relationship: the invasion of Iraq and the capture of Saddam Hussein. At these two moments, the military threat from the United States spiked and Tripoli's leadership demanded credible assurance that Libya would not suffer the same fate.

¹⁵² Said another way, walking back its demand for regime change did decrease the credibility of Washington's non-contingent threat to impose regime change regardless of Libyan behavior.

The invasion of Iraq increased the credibility of American threats to use force against Libya if it did not give up its WMD program. It did so by demonstrating resolve to confront proliferators with force and simply by placing more American forces in the region. These forces would have been redirected westward if Libya was to be next. Qaddafi was afraid. But he was not compelled into concessions. We now know that Libya continued to import black-market nuclear infrastructure until late 2003. Qaddafi saw the U.S. and UK make the case for war against Iraq based on WMD proliferation and he feared that coming clean about his own program would provide ammunition for them to make the same case for war against him.

Later, the capture of Saddam Hussein increased the severity of the threatened punishment to Qaddafi.¹⁵³ Saddam's humiliation was captured on camera and televised. Qaddafi saw not only that the West might be willing to invade, but that he could be captured, humiliated, and given over to his political enemies for judgement. Again, the timing of this spike in threat severity suggests that it was counterproductive for coercion. Qaddafi was indeed fearful, but after Saddam's capture he balked one last time on a deal that was nearly completed. Blair spent another 30 minutes on the phone with Qaddafi, reassuring him that his fate would not be the same as Saddam's.¹⁵⁴ The Libyans had fully revealed the most secretive elements of their nuclear program in early December, before the United States captured Saddam. If anything, Saddam's capture was counterproductive to striking a coercive bargain with Libya.

Therefore, as these two episodes indicate, spikes in threat credibility were associated with Libyan demands for greater assurance. This supports Coercive Assurance Theory, but also H4a on the tradeoffs between signaling threat and assurance credibility. Together with an affirmed H5b (on the ability of coercers to bolster their assurances without undermining threats), this

¹⁵³ The timing of Saddam's capture is exogenous to negotiations with Libya.

¹⁵⁴ MacLeod, "Behind Gaddafi's Diplomatic Turnaround," 2006.

finding suggests a more nuanced picture of the relationship between threat and assurance: sunk cost material signals used to bolster threats, such as the mobilization of military forces, may undermine assurance credibility, even though threat and assurance do not always tradeoff.

Summary of Evidence for the Mechanisms

This section restates the key evidence in the Libya case and specifies how each supports a theorized mechanism. It also evaluates the strength of the evidence (Strong, Fair, Weak). Stronger evidence is well-sourced and is challenged by fewer potential confounding explanations. I walk through the below chart from top to bottom.

Libya Mechanisms	Direct Effect	Signaling Effect
<i>Disentangling Demands</i>	--	1998 Lockerbie settlement (Fair evidence)
<i>Coercive Control (Domestic and International)</i>	2003 UK as partner (Weak evidence)	2003 Secret negotiations; Domestic hawks and Israel frozen out (Weak evidence)
<i>Reducing Visibility (Domestic and International)</i>	--	2003 BBC China seizure; AQ Khan intel shared (Fair evidence)

First, in 1998 the United States and the United Nations disentangled their demands of Libya over the stakes of WMD and Lockerbie. UN sanctions would be lifted if Libya agreed to Lockerbie guilt and compensation, while American sanctions could remain tied to demands for the dismantlement of WMD production facilities. Libya took this deal and handed over two Lockerbie bombing suspects for trial. This is fair evidence in favor of the disentangling demands mechanism, as the correlation of disentangled demands and concession is clear. It is not strong

evidence, however. I have no access to internal Libyan decisionmaking at the time. Moreover, the effect of disentangling demands is clouded by the simultaneous effect of reducing the magnitude of American demands of Libya—after 1998, the United States no longer sought regime change in Tripoli. Elsewhere I addressed this alternative explanation not captured in the chart.

Second, when negotiations with Tripoli began over its WMD program, two variables may have affected the target's perception of coercive control. London served as a "partner" to Washington, suggesting that one coercer's renegeing would be less damaging if the other remained committed to a bargain. Moreover, the negotiations handled secretly by US and UK intelligence channels, which meant that domestic (e.g. John Bolton) and international (e.g. Israel) opponents of negotiations could be frozen out of the process. By maintaining this coercive control, Tripoli's interlocutors signaled that they were serious about striking a bargain and that their interests did not align with those who sought pretexts for aggression against Libya. This evidence is weak, however. Without access to internal Libyan records there is little evidence available to show that Libya perceived the signals. Nonetheless, Libya's requests for secret communications from both U.S. and UK heads of state may be a sign of such discussion behind the scenes—they wished to be sure that they were bargaining with the right people whose views represented the intentions of their governments.

Third, two episodes of private intelligence sharing from coercer to Tripoli provide evidence in favor of the mechanism of reducing visibility. When coercers shared the fact that they had intercepted the BBC China en route to Tripoli with centrifuge equipment and recorded a conversation between AQ Khan and Matuq Matuq, they did so without going public. Based on a limited availability of direct quotes from Qaddafi and his coterie in secondary sources, these

private signals were perceived and interpreted as assuring. Since the American invasion of Iraq, Qaddafi had dreaded that the West would justify war against Libya next on the basis of an illicit WMD program. Qaddafi therefore feared coming clean and handing his enemies a pretext for invasion. However, once the United States and the UK demonstrated their willingness to keep secrets about its WMD program, Libya was more willing to make concessions. The intelligence sharing directly resulted in technical inspections over which Libyan negotiators had long been skeptical. I consider this “fair” evidence in favor of the mechanism of reducing visibility. American negotiators explicitly pursued the strategy and are confident in their recollections that the private information had an effect, which the timeline of events also bears out. Moreover, three key statements from Qaddafi, his son, and foreign minister are consistent with the mechanism—that they sought deniability and were pleased to receive it. Still, without records of internal Libyan decisionmaking it is difficult to corroborate this limited data.

Possible Confounders

I consider here some case-specific alternative explanations for American coercive behavior and Libya’s concessions.

First, some suggest that Libya was merely incapable of building nuclear weapons and so traded its program away with little concern. For example, Braut-Hegghammer writes that due to insufficient indigenous expertise “the Libyan nuclear weapons project is better described as a plan than a program.”¹⁵⁵ IAEA reports do reveal how much Libyan scientists struggled to master nuclear technology and develop expertise. When the IAEA Director General visited after the December 2003 deal, he concluded Libya was in fact “several years away” from the bomb.

¹⁵⁵ Braut-Hegghammer, *Unclear Physics* (2016), p. 183.

Supply-side disruptions certainly impede Libyan progress on nuclear weapons. Owing to proliferation concerns, most nuclear suppliers refused to conduct business with Libya. Most importantly, the Soviet Union cancelled plans to sell Tripoli a 440 MW pressurized water reactor in 1986 at least in part because of the Gorbachev's concern for Libyan proliferation.¹⁵⁶

Nonetheless, coercion aims to alter a proliferator's pursuit of nuclear weapons. Libya's ambitions are clear in their investments. Tripoli spent hundreds of millions of dollars to try to solve its technical woes. Early on it sought to buy a bomb outright from Pakistan or China. As late as 2002, it purchased weapons designs and a "turnkey" uranium enrichment facility from A. Q. Khan. A lot of what Libya received from the black-market was useless—e.g. first-generation centrifuges that Pakistan could not get to work.¹⁵⁷ But other shipments were serious, especially later in the decade and into the early 2000s, including Chinese warhead designs, some second-generation centrifuges, and actual converted UF₆ to feed into them.

The Libyans were serious about building a nuclear weapon. By 2003, Libyan leaders believed they were just a few years away. Indeed, in the aftermath, experts realized that Libya had been "further advanced in the nuclear realm than previously thought."¹⁵⁸

Libya may never have figured out how to build a bomb. We cannot know now. But the underlying policy and investments pursued until December 2003 were consistent: pursuit of the bomb. Libya indeed had to be compelled out of its nuclear ambitions.

Second, there are possible other reasons for American and British secrecy that have less to do with coercive bargaining. A concern to protect sources and methods amid ongoing efforts

¹⁵⁶ Bowen, "Libya and Nuclear Proliferation: Stepping Back from the Brink" (2006), p. 33.

¹⁵⁷ The Libyans recognized that they had purchased low-quality goods from the North Koreans as well. In negotiations, when Donald Mahley, a deputy assistant secretary in the State Department's Nonproliferation Bureau, asked the Libyans for a statement saying that they would not buy any more North Korean missiles, a Libyan official responded: "If you think we are going to buy that crap again, you are mistaken." William H. Tobey interview with the author. March 14, 2018. Cambridge, MA.

¹⁵⁸ Bowen, "Libya and Nuclear Proliferation: Stepping Back from the Brink" (2006), p. 8.

to penetrate the Khan Network may help to explain the utmost secrecy. If this was the case, however, U.S. officials' decisions to share intelligence with Libyan interlocutors and not Israeli officials is even more puzzling. Israeli intelligence could even have been helpful with collection on the Khan Network. Moreover, it is unclear when the U.S. and UK investigation into A. Q. Khan actually began.¹⁵⁹ In 1996, a concerning "unspecified piece of intelligence" drew attention to Khan.¹⁶⁰ In 1997, Khan met with Libyans at a hotel in Casablanca, Morocco. MI6 planted a microphone on Urs Tinner, a Swiss machinist working with Khan.¹⁶¹ But it seems that critical insight into the extent of Khan's network was only achieved in 2001 or 2002, when CIA and MI6 observed him in Dubai and Malaysia arranging to deliver equipment to Tripoli. And secrecy is even more puzzling as a choice given recent scholarship that expects publicity of norm violators for the purpose of enforcing and defending normative regimes.¹⁶²

The United States may have also had additional motivation to stay silent: to save its own skin by presenting a *fait accompli* diplomatic victory in the context of an emerging intelligence and military disaster in Iraq (i.e. that tough U.S. threats and bold action had cowed Qaddafi). Nonetheless, the narrative that the Iraq War cowed Qaddafi into concessions was exaggerated by post-hoc spin.¹⁶³ The Bush administration especially sought to connect the invasion of Iraq to successful Libyan disarmament during the 2004 presidential election campaign. In the first presidential debate against Senator John Kerry, Bush highlighted the victory as follows: "...we use diplomacy every chance we get, believe me. And I hope to never have to use force. But by

¹⁵⁹ See Cullen Nutt, "Proof of the Bomb: The Influence of Previous Failure on Intelligence Judgments of Nuclear Programs," *Security Studies* (forthcoming).

¹⁶⁰ See David Albright, *Peddling Peril* (New York: Free Press, 2010).

¹⁶¹ Cullen Nutt, "Proof of the Bomb: The Influence of Previous Failure on Intelligence Judgments of Nuclear Programs," *Security Studies* (forthcoming).

¹⁶² Allison Carnegie and Austin Carson, "The Spotlight's Harsh Glare: Rethinking Publicity and International Order," *International Organization* (forthcoming).

¹⁶³ Bowen agrees. See Bowen, "Libya and Nuclear Proliferation: Stepping Back from the Brink" (2006), p. 50-51.

speaking clearly and sending messages that we mean what we say, we've affected the world in a positive way. Look at Libya. Libya was a threat. Libya is now peacefully dismantling its weapons programs. Libya understood that America and others will enforce doctrine."¹⁶⁴ Cheney similarly called the Libya deal "one of the great by-products...of what we did in Iraq and Afghanistan."¹⁶⁵ As I show in this chapter, the invasion of Iraq increased the credibility of American threats, but that is only half the battle. The assurances remained to be communicated and were actually more difficult as a result of the spike in threats. Finally, the most extreme version of the connection between Iraq and Libya is the folklore that Saddam's capture led days later to the Qaddafi deal, but the record of secret bargaining suggests that Qaddafi was ready to concede his nuclear program prior to Saddam's capture; and, in fact, seeing Saddam pulled from a hole on television caused Qaddafi to balk at disarmament. He only came around after another assuring phone call with his coercers.

Third, the findings of this chapter may need to be scoped for regime type. That is, Libya was ruled by a charismatic dictator.¹⁶⁶ Qaddafi and those loyal to him governed Libya. I was not even really a coalition of political factions. It was an authoritarian state with a leader who could not afford to look weak in the slightest. Qaddafi may be an easy test for face-saving theories, since he was so paranoid about appearing strong. In Suskind's interpretation, "The choice for Gadhafi was not whether he was willing to disarm... It was how to do it in a way that wouldn't make him seem diminished among the Libyan people, as well as other Arab nations."¹⁶⁷ It is

¹⁶⁴ "Transcript of the Candidates' First Debate in the Presidential Campaign," *The New York Times*, October 1, 2004.

¹⁶⁵ Cheney remarks in vice presidential debate in 2004. Quoted in Jentleson and Whytock, "Who 'Won' Libya?" (2005/2006).

¹⁶⁶ Max Weber, "The Three Types of Legitimate Rule." Also Max Weber, "Politics as a Vocation," <<http://anthropos-lab.net/wp/wp-content/uploads/2011/12/Weber-Politics-as-a-Vocation.pdf>>.

¹⁶⁷ Ron Suskind, *One Percent Doctrine: Deep Inside America's Pursuit of Its Enemies Since 9/11*, (New York, NY: Simon and Schuster, 2006), p. 265.

possible that reducing visibility as a proposed cause of credible assurance did not face a hard test in this case.

Fourth, the case chronology suggests that Libya and its coercers may have benefited from diplomatic momentum. That is, building on successful negotiations over Lockerbie to build trust, the states struck another deal on WMD. This interpretation is more in line with theories of trust-building, linkages, and cooperation in international politics. It is plausible. Nonetheless, it does not diminish my findings on coercive bargaining. Assurance was no less necessary as a complement to threats. Moreover, there are also reasons to suspect that the Lockerbie negotiations were sufficiently different as to not impact the subsequent dialogues. For instance, the western interlocutors were different.

Finally, this case is especially puzzling because only eight years after successfully compelling concessions, Libya's coercers intervened to support a rebellion that ousted the Qaddafi regime. As records become available, more research needs to be done to shed light on whether and how Obama administration officials considered the 2003 deal in their decision to intervene in 2011.¹⁶⁸ While the United States did not put a traditional security assurance in writing, the United Kingdom did. Building their new relationship, Libya and the UK signed a "Joint Letter on Peace and Security" on June 26, 2006. The letter specified that each country "will refrain in their international relations from the threat or use of force against the territorial integrity or political independence of either state" and committed to "settlement of their mutual

¹⁶⁸ Sanger and Specia claim in a *New York Times* article that at the time of the 2011 Libya intervention "no one in the Situation Room debated what message the decision to turn on Colonel Qaddafi might send to other countries that the United States was trying to persuade to relinquish their weapons, according to interviews conducted later with more than a half-dozen people engaged in the discussion." Megan Specia and David E. Sanger, "How the 'Libya Model' Became a Sticking Point in North Korea Nuclear Talks," *New York Times*, May 16, 2018, <<https://www.nytimes.com/2018/05/16/world/asia/north-korea-libya-model.html>>.

differences through dialogue and direct negotiation and peaceful and friendly means.”¹⁶⁹ In 2011, the UK reneged on these formal commitments. Furthermore, I have shown in this book that coercive assurance is axiomatic to coercion—it is not axiomatically credible, but it is axiomatically implied. Through this lens, the United States also reneged on a coercive assurance in 2011 when it helped to topple Qaddafi.

¹⁶⁹ “Communication Received from the Permanent Mission of the Libyan Arab Jamahiriya to the Agency,” INFCIRC/679, July 26, 2006. IAEA Archives, Vienna, Austria. The letter was signed by Libyan Secretary of European Affairs Abdulai Ibrahim Al Obidi and British Minister of State at the Foreign and Commonwealth Office Kim Howells. The letter also reiterated the application of a security assurance issued by Britain in 1995 to come to the aid of non-nuclear weapons states that are victim to nuclear attack. The assurance was extended to chemical and biological weapons as well.

CHAPTER 5: IRAN 2003-2008

This chapter and the next explain Iranian positioning and decision-making about its nuclear program during the critical years when it faced compulsion from the United States and international community. Iran is a highly relevant case of potential nuclear proliferation for policymakers. It is especially puzzling why Iran was willing to strike a nonproliferation bargain so soon after the public demise of Libya's Qaddafi. Iran's Supreme Leader indeed complained about an American reputation for "backpedaling on its commitments,"¹ but after multiple rounds of bargaining, Iran struck a deal with its coercers in 2015—the Joint Comprehensive Plan of Action (JCPOA). Merely three years later, the United States abrogated its commitments and reimposed sanctions. So far, Tehran has kept its nuclear program within the limits of the deal but has threatened a breach.

I find mixed results for Coercive Assurance Theory. When Iran defied compelling demands it did so primarily because it perceived a lack of credible coercive assurance, not because it perceived compelling threats to be insufficiently credible or painful. Nevertheless, extreme threat credibility in the wake of the 2003 American invasion of Iraq caused Iran to make some concessions absent coercive assurance. I show in this time period that Iran's desire for coercive assurance increased yet it made concessions anyway—evidence against Coercive Assurance Theory.

¹ Faith Karimi and Deirdre Walsh, "Iran: No signing final nuclear deal unless economic sanctions are lifted," *CNN*, April 9, 2015, <<http://www.cnn.com/2015/04/09/politics/iran-nuclear-bill/>>.

In later interactions, however, I find support for all three of my proposed mechanisms on the causes of credible coercive assurance—Disentangling Demands, Coercive Control, and Reducing Visibility. Iran’s coercers benefited from hiving off the nuclear issue alone and separating nuclear- from non-nuclear-related sanctions in JCPOA negotiations. Washington also partnered with the P5+1 and signaled control over international and domestic spoilers by publicly discouraging Israeli air strikes and legislatively bounding congressional oversight over JCPOA sanctions relief. And, as part of the 2015 bargain, the United States and the IAEA allowed Iran to deny the past “Possible Military Dimensions” of its nuclear program. (Summary in Table 2.) Together these mechanisms explain the timing of Iranian concessions better than a chief alternative explanation: that Iran was bought off by carrots. In 2012-2015, Iran was coerced and assured.

The chapter proceeds as follows. Section one reviews the theory and alternative explanations, deriving hypotheses to be tested with empirical evidence. Section two reviews the origins of Iran’s nuclear program and interest in the bomb. Sections three and four describe the nature of international compellent demands directed at Tehran between 2003 and 2008. Extreme threats of invasion emanating from the 2003 Iraq War were able to compel concessions from Iran without the mechanisms of coercive assurance. Thereafter, Iranian leaders mostly perceived sanctions to be painful, yet coercive assurance remained a sticking point of any agreement. I show this by examining critical timeframes in Iran’s nuclear decision-making about how to respond to international pressure: 1990-2002, 2003, 2003-2005, 2006. The next chapter considers 2009-2011 and 2012-2015. Tables 1 and 2 below previews these findings.

Table 1: Coercive Assurance Caused Compellent Success in the Iran Case

Decision Point Year(s)	Threat	Assurance			Concessions
	Credible	Demand Disentanglement	Coercive Control	Reducing Visibility	
1990-2002	No	No	No	No	No
2003	Yes	No	No	No	Yes
2003-2005	Yes	No	No	No	No
2006	Yes	No	No	No	No
2009-2011	Yes	Yes	No	No	No
2012-2015	Yes	Yes	Yes	Yes	Yes

Table 2: Evidence for Each of the Mechanisms in the Iran Case

Mechanism	Direct Effect	Signaling Effect
<i>Disentangling Demands</i>	2015 UN resolution	CBI sanctions; Business outreach
<i>Coercive Control (Domestic and International)</i>	P5+1 Partners	Discouraging Israel; 2015 INARA
<i>Reducing Visibility (Domestic and International)</i>	--	2015 PMD

I. Testing Coercive Assurance Theory in the Iranian Case

Iran was subject to external pressure over its nuclear program. Its resistance warrants explanation. In this chapter, I conduct theoretical tests in two parts. First, I investigate the causes of Iranian behavior in the face of compellence. I test Coercive Assurance Theory against Threat Credibility Theory. This test generates mixed results in favor of both theories. Most often Iranian leaders perceived the implied assurances of its coercers' threats to be incredible and therefore chose to defy compellent demands. On the other hand, in 2003 the United States was able to compel concessions without bolstering coercive assurance. Second, throughout I surface the causes of coercive assurance credibility in the Iranian case. I investigate all three of my proposed

mechanisms—Disentangling Demands, Coercive Control, and Reducing Visibility—and find evidence in their favor, especially proximate to the negotiation of the 2015 nuclear deal.

Predictions of Coercive Assurance Theory versus Threat Credibility Theory

To remind the reader, all coercive threats at least imply an assurance that targets can avoid punishment by complying. This book explains the importance in statecraft of these contingent pledges not to punish. It also illuminates the causes of coercive assurance credibility. The problem of coercive assurance credibility is at root two commitment problems: (1) The Coercive Restraint Problem: Targets of coercion fear that the threatened pain is not in fact contingent on their own behavior. The threatener may punish them regardless of whether they comply. If targets expect punishments to be capriciously applied, defiance runs little or no additional risk and compliance is fruitless. (2) The Snowballing Demands Problem: Targets of coercion fear complying because they think they will acquire a reputation for backing down, which will encourage the coercer or other adversaries to demand additional concessions in the future.

Threat Credibility Theory contends that these commitment problems are not so severe and that targets will give in to compellent demands if threats are sufficiently credible and severe. Threat Credibility Theory predicts in the Iranian case that policymakers in Tehran will acquiesce to compellent demands when they perceive threats to be sufficiently credible. That is, if they believe that the punishments are certain to be imposed if they defy. Iranian behavior should be primarily driven by a fear of punishment. Thus, speech evidence questioning the credibility of compellent threats should accompany Iranian defiance, and vice versa. Moreover, an increase in

the perceived credibility of American threats should accompany any Iranian decision to terminate its nuclear weapons research.

H1a: Iranian policymakers will justify continued pursuit of a nuclear option with assessments that American threats are not credible.

H1b: Iranian policymakers will accept limits on their nuclear program when American threats become more credible.

Threat Credibility Theory also predicts in the Iranian case that policymakers in Tehran will acquiesce to compellent demands when they perceive compellent punishments to be too costly. That is, Tehran would sign the NPT if the United States communicated threats of punishment sufficiently certain and severe. Speech evidence asserting the low cost of threatened punishments (and their willingness to bear them) should accompany Iranian defiance. Moreover, Iran should accept limits on its nuclear program when American punishments become too severe relative to the utility they assign to nuclear weapons.

H2a: Iranian policymakers will justify continued pursuit of a nuclear option with assessments that American punishments are not so severe.

H2b: Iranian policymakers will accept limits on their nuclear program when punishments become too severe.

Coercive Assurance Theory, on the other hand, contends that assurance commitment problems make it difficult for a target to comply with compellent demands. Coercive Assurance

Theory predicts in the Iranian case that policymakers in Tehran will acquiesce to compellent demands when they perceive that threats of compellent punishment will not be carried out if they comply. That is, Tehran would accept limits on its nuclear program if the United States communicated threats of punishment sufficiently contingent upon Iran's signature. Speech evidence asserting the non-contingent nature of U.S. threats should accompany Iranian defiance. Moreover, Iran should accept limits on its nuclear program if the United States credibly communicates coercive assurance.

H3a: Iranian policymakers will justify continued pursuit of a nuclear option with assessments that American punishments will be applied whether or not Tehran accepted limits on its program.

H3b: If Iran perceives that American compellent threats are credibly contingent on their behavior, Tehran will accept limits on its nuclear program.

The results of this chapter bear out some of the predictions of both Threat Credibility Theory and Coercive Assurance Theory. Iran perceived American sanctions threats and punishments to be credible and painful. These fears proved enough to compel Tehran to scale back its nuclear weapons program in 2003. Yet a fear of non-contingent punishment drove the Iranian leadership to defy further compellence until the JCPOA. When, in the 2012-2015 timeframe, leaders in Tehran began to perceive credible coercive assurance, Iran signed an agreement to accept verifiable limits on its nuclear program. In sum, there are two major episodes of concession in this case—2003 and 2015—and each is explained better by a different theory; while Coercive Assurance Theory also explains episodes of defiance.

Predictions of Threat-Assurance Tradeoff versus Threat-Assurance Independence

The second theoretical investigation of this case study is to determine the causes of credible coercive assurance in Iran. Why did Tehran perceive assurance to be non-credible and how did it ever become credible?

Threat-Assurance Tradeoff theory predicts that as threat credibility goes up, assurance credibility should go down, and vice versa. I test this by examining the effects of large variations in the credibility of coercer threats. This suggests the following hypotheses.

H4a: When perceptions of threat credibility spike, assurance credibility will decrease and targets will demand greater assurance.

H4b: Perceptions of greater assurance credibility should be accompanied by decreases in threat credibility.

H4c: Threats increasing in credibility will reach a point of diminishing returns. If a threat is increasing in credibility, a target will be more likely to concede before the threat becomes maximally credible (i.e. threats can be too credible).

Threat-Assurance Independence theory uniquely predicts that perceived increases in threat credibility may be accompanied by perceived increases in assurance credibility.

H5a: Perceptions of threat credibility may remain the same or increase as perceptions of assurance credibility increase.

H5b: Variables may bolster the perception of assurance credibility without affecting the perceived credibility of threats.

Specific to my three proposed mechanisms on the causes of credible assurance—Demand Disentanglement, Coercive Control, and Reducing Visibility—I make the following hypotheses.

H6_{D1}: Targets will not concede if multiple demands are linked to the same punishment(s).

H6_{D2}: Targets will concede after a coercer disentangles multiple demands by making them independently contingent on separable punishments.

H7_{C1}: Targets will fear fragmented coercers

H7_{C2}: Targets will not concede if a veto player could act independently to spoil a coercive bargain

H8_{V1}: Targets will fear making public concessions

H8_{V2}: Targets confronted by coercers with unpublicized, private information about the target will be more likely to concede; that is, targets will be assured by a coercers' demonstrated ability and willingness to keep secrets about the them

The evidence corroborates the hypotheses on Demand Disentanglement, Coercive Control, and Reducing Visibility.

First, I show that the entanglement of the nuclear issue with Iran's pursuit of ballistic missiles, human rights violations, and support for terrorism contributed to failed coercion (H6_{D1}).

When the United States and other coercers sought to compel Iran to abandon its nuclear ambitions, they benefited from hiving off the nuclear issue alone. Furthermore, in the weeds of negotiations over potential sanctions relief, Iran sought specific disentanglement of entangled sanctions against entities such as the Central Bank of Iran (H6_{D2}).

Second, the hypotheses on Coercive Control (H7_{C1} and H7_{C2}) are confirmed in the Iran case. Domestically, before any final bargain could be struck with Iran, the United States had to pass legislation to bound congressional oversight over sanctions relief. Internationally, the Obama administration took pains to discourage the independent use of military force against Iran's nuclear program by Israel. It is suggestive evidence in favor of H7_{C2} that Iran came to the table for a deal only after the window of a potential Israeli strike closed in 2012. Iran was also assured by the presence of multiple coercers in the P5+1, as the deal could, in theory, survive the renegeing of any single coercer—the reneger would be isolated by the others remaining in the deal and Iran could still see some benefit to sanctions relief from the others.

Third, concurrent with Iran's final accession to compellent demands in 2015, it tacitly cooperated with the IAEA and its coercers to cover up the extent of its concessions. The IAEA's open file on the "Possible Military Dimensions" of Iran's nuclear program was accelerated and closed as part of a conscious decision not to rake Iran over the coals for its past nuclear sins. Comparing IAEA reports and pre-JCPOA American intelligence to the revelations of Iran's so-called "Atomic Archives" purloined by Israeli intelligence in 2018 shows this strategy of granting plausible deniability in stark relief. Reducing the visibility of its concessions was important to the Iranian leadership (H8_{V1}), and Iran's coercers tacitly colluded to grant Tehran such deniability (H8_{V2}).

Overall, the results bear out the predictions of Independence slightly more so than Tradeoff theory. All three theorized causes of assurance credibility are affirmed, none are falsified. Moreover, Independence theory hypotheses (H5a and H5b) are confirmed—the assurance signals sent in 2012-2015 did not undermine the credibility of threats—and two Tradeoff theory hypotheses (H4b and H4c) are correspondingly disconfirmed. On the other hand, spikes in threat credibility—after the 2003 invasion of Iraq and the 2006 referral of Iran to the UNSC—were associated with greater demand for coercive assurance, affirming one Tradeoff hypothesis (H4a).

Methods and Evidence

This chapter tells the Iranian nuclear saga in novel way.² My research uses primary documents from the International Atomic Energy Agency (IAEA). Although it is ostensibly a neutral international institution, the IAEA was a crucial interlocutor for coercive bargaining between the international community and Iran. Moreover, while the IAEA strives to maintain an apolitical stance (as well it should), the information revealed through IAEA inspection is anything but apolitical. The political uses of this information and its varying political salience to coercers is of important scholarly significance.³ I also conduct interviews with American and

² The closest pieces to this argument are Robert Jervis, “Getting to Yes with Iran: The Challenges of Coercive Diplomacy,” *Foreign Affairs* (January-February 2013); Sarah Kreps and Zain Pasha, “Threats for Peace? The Domestic Distributional Effects of Military Threats,” in Etel Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (Cambridge University Press, 2012), pp. 174-207; and Nicholas L. Miller, *Stopping the Bomb: The Sources and Effectiveness of U.S. Nonproliferation Policy* (Cornell University Press, 2018). Jervis assessed the barriers in 2013 to credible threats and promises in the Iran case; some of the promises he discusses are better labelled as coercive assurance. Kreps and Pasha, in part, argue that threat can be counterproductive because “at a macro level credible military threats generally contribute to increased military spending.” Miller argues that the credibility of threats alone explains Iranian decisionmaking—Tehran pursued the bomb when they were less dependent upon the western economy and only ceased pursuit when a tough multilateral sanctions regime coalesced. Neither piece points to the role of assurance.

³ IAEA Archives Board of Governors documents especially provide good evidence, because they are protected and not made public until at least two years after production so that representatives may speak more freely. Moreover, since the very mission of the Agency is transparency, any gaps for deniability of past transgression are noticeable.

Israeli policymakers who participated in the coercive bargaining process with Iran. Their perceptions of Iranian perceptions provide indirect evidence to test theory. Finally, I use records from a tranche of Iranian documents stolen and partially released by Israeli intelligence, to shed light on the Iranian nuclear weapons program. These documents have been filtered through a state intelligence service en route to scholars and are therefore heavily biased sources. I consider this bias carefully and conclude that these documents are worth including in scholarly work. The narrative unfolds chronologically.

II. Iran's Nuclear Program: Motivation and Beginning

Motivations for the bomb in Iran changed over time. In the days of the Shah, Iran sought to hedge. The 1979 revolution brought a pause to the program, only to have it restarted for security imperatives during the Iran-Iraq War. After the fall of Saddam in 2003, the program remained motivated by the threat from the United States, which maintained forces on its eastern and western doorsteps.⁴ From the outset of its nuclear interest, Iran seemed determine to master the full fuel cycle. Scholars of Iran also find a consistent narrative of technological self-reliance at the core of this pursuit.⁵

The Shah

In 1967, the United States supplied Tehran with a nuclear research center and a 5MW research reactor, named the Tehran Research Reactor (TRR).⁶ Iran signed the NPT in 1968

⁴ On motivations, see also Miller, *Stopping the Bomb* (2018), p. 227.

⁵ Ariane Tabatabai, "Negotiating the 'Iran talks' in Tehran: the Iranian drivers that shaped the Joint Comprehensive Plan of Action," *Nonproliferation Review* 24, 3-4 (2017), p. 235. Tabatabai suggested that this narrative "politicized" this issue of enrichment such that it was more difficult for Iranian negotiators to make concessions on enrichment. Tabatabai, "Negotiating the 'Iran talks' in Tehran" (2017), p. 236.

⁶ "Iran: Country Profile," Nuclear Threat Initiative, Updated May 2018, <<https://www.nti.org/learn/countries/iran/nuclear/>>.

(ratified in 1970). In 1973, Iran's monarch, Shah Mohammad Reza Pahlavi, announced ambitious plans for nuclear power growth. He established the Atomic Energy Organization of Iran (AEOI) and signed a comprehensive safeguards agreement with the IAEA in 1974.⁷

Under the Shah, Iranian nuclear weapons exploration began in 1974. With his investments, he sought to build a nuclear hedge option.⁸ In the words of Akbar Etemad, director of the AEOI in the 1970s, the Shah wanted “the option of assembling the bomb should his regional competitors move in that direction.”⁹

As a western ally, Iran pursued its ambitions through links to major nuclear suppliers. Tehran invested in a French enrichment firm and bought a stake in a Namibian uranium mine.¹⁰ The Shah also purchased yellow cake from South Africa.¹¹

Pressure from a Patron

The first pressure brought to bear on Iran over its nuclear ambitions came from its patron, the United States, in 1976. Nicholas Miller, in his study of American nonproliferation sanctions, observes that Tehran limited its nuclear ambitions in 1976 and 1977, “after Washington established a credible threat of sanctions.”¹² Prior to those years, the United States sought only to influence Iran's nuclear program through a supplier relationship; it had not threatened Iran with

⁷ Semira N. Nikou, “Timeline of Iran's Nuclear Activities,” U.S. Institute of Peace, <<https://iranprimer.usip.org/resource/timeline-irans-nuclear-activities>>.

⁸ Bleek agrees that the Shah sought a weapons hedge. Philipp C. Bleek, “When Did (and Didn't) States Proliferate?” Discussion Paper (Cambridge, MA: Project on Managing the Atom, Belfer Center for Science and International Affairs, Harvard Kennedy School and the James Martin Center for Nonproliferation Studies, Middlebury Institute of International Studies, Monterey, CA, June 2017).

⁹ Miller, *Stopping the Bomb* (2018), p. 218. Tabatabai cites Akbar Etemad as well. Tabatabai, “Negotiating the ‘Iran talks’ in Tehran” (2017), p. 227.

¹⁰ “Iran: Country Profile,” Nuclear Threat Initiative, Updated May 2018, <<https://www.nti.org/learn/countries/iran/nuclear/>>.

¹¹ Ibid.

¹² Miller, *Stopping the Bomb* (2018), p. 217.

any punishment, despite concern over its pursuit of plutonium reprocessing technology.¹³ When Kissinger met with the Shah in Tehran in August 1976, however, he mixed threats and coercive assurance to compel Iranian concessions. Kissinger “raised the potential of an aid cutoff or limits on arms sales if Iran were to acquire [plutonium] reprocessing facilities. Kissinger also reportedly reassured Iran of America’s commitment...”¹⁴ The Shah complied and did not pursue reprocessing any further.

Soon, Iran would no longer be an American ally and coercive efforts to alter its behavior became much more difficult.

The 1979 Revolution and After

As student-led anti-monarchy demonstrations grew in 1978, Iran was thrust into political turmoil. The Shah fled in January 1979, never to return. In April, Iran formed an Islamic Republic and, by December, Ayatollah Khomeini was installed as Supreme Leader of the world’s newest theocracy. Under the religious authority, a president and a parliament would hold regular elections.

Iranian nuclear efforts paused during and after the revolution, from 1979 to 1983, as Khomeini thought nuclear weapons incompatible with Shia teachings. Construction at ongoing nuclear projects like Bushehr was suspended.¹⁵

Saddam Hussein’s invasion in 1980, and his cruel but effective employment of chemical weapons on the battlefield, changed this new status quo. Security motivations during the Iran-Iraq War led to a new compromise between the security and the religious establishments. The

¹³ Ibid., p. 220.

¹⁴ Ibid., p. 225.

¹⁵ “Iran: Country Profile,” Nuclear Threat Initiative, Updated May 2018, <<https://www.nti.org/learn/countries/iran/nuclear/>>.

secular and religious bureaucracies agreed that the bomb was worth pursuing but only to serve as a deterrent.¹⁶ Iranian parliamentary leader Akbar Rafsanjani put the compromise into words in the late 1980s, saying that the Iran-Iraq War had shown that WMD were “decisive” and that Iran “should fully equip ourselves both in offensive and defensive use of chemical, bacteriological, and radiological weapons.”¹⁷

In 1984, Iran restarted its nuclear investments and established a nuclear research facility at Isfahan. Covert efforts to build a uranium enrichment capacity began in 1985.¹⁸ In the late 1980s, Iran began construction on a laser enrichment facility and “publicly hinted” at its weapons ambitions.¹⁹ In 1987, Iran made contact with AQ Khan and purchased centrifuge designs and parts, as well as information about uranium metal casting and weapons designs.²⁰ Iran made contact with A. Q. Kahn again in 1994.²¹

Having signed nuclear cooperation agreements with Pakistan (1987), the Soviet Union then Russia (1989 then 1992), and China (1990),²² Iran expanded its efforts in the 1990s and oriented its program towards covert nuclear weapons acquisition. Iran began to build a uranium enrichment facility at Natanz and a heavy water reactor at Arak. China agreed to supply a uranium conversion facility at Isfahan in 1995 but withdrew in 1997, leaving Iran to complete

¹⁶ Tabatabai, “Negotiating the ‘Iran talks’ in Tehran” (2017), p. 235.

¹⁷ Miller, *Stopping the Bomb* (2018), p. 227. He cites Bowen and Kidd, “The Iranian Nuclear Challenge,” *International Affairs* (2004), p. 263-264.

¹⁸ “Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran,” Report by the Director General, IAEA Board of Governors, GOV/2003/75, November 10, 2003, annex 1, p. 8.

¹⁹ Miller, *Stopping the Bomb* (2018), p. 228. He cites “Iran: Country Profile,” Nuclear Threat Initiative, Updated May 2018, <<https://www.nti.org/learn/countries/iran/nuclear/>>.

²⁰ Michael Laufer, “A. Q. Khan Nuclear Chronology,” Carnegie Endowment for International Peace, September 7, 2005, <<https://carnegieendowment.org/2005/09/07/a.-q.-khan-nuclear-chronology-pub-17420>>; and Mark Fitzpatrick, “Lessons Learned from Iran’s Pursuit of Nuclear Weapons,” *Nonproliferation Review* 13, 3 (November 2006), p. 529. See also IAEA Board of Governors, GOV/OR.1148, IAEA Archives, Vienna, Austria.

²¹ Fitzpatrick, “Lessons Learned from Iran’s Pursuit of Nuclear Weapons,” (2006), p. 533.

²² “Iran: Country Profile,” Nuclear Threat Initiative, Updated May 2018, <<https://www.nti.org/learn/countries/iran/nuclear/>>.

the project by itself.²³ Russia agreed in 1995 to completed construction of the Bushehr reactor.²⁴ Iran separated its first plutonium in 1988,²⁵ imported UF₆ in 1991 and started to enrich small amounts of uranium with laser enrichment technology.²⁶ It tested its gas centrifuges for the first time in 1998.²⁷ A “probable military front company” began a uranium mine and milling project at Gchine in 2000.²⁸ Its underground weapons program was well on its way.

American Compellence

Decision Point Year(s)	Threat	Assurance			Concessions
	Credible	Demand Disentanglement	Coercive Control	Reducing Visibility	
1990-2002	No	No	No	No	No

In the wake of the Iranian revolution and the Iran Hostage Crisis, the United States imposed sanctions and seized billions in Iranian assets.²⁹ The United States targeted the Iranian oil and military sectors, support for terrorism, trafficking and money laundering.³⁰ Sanctions prevented Iran from upgrading its oil infrastructure with US technology.³¹

The United States also sought to impede Iranian proliferation through suppliers, convincing potential nuclear suppliers—including Germany, Argentina, and Russia—to curtail

²³ “Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran,” Report by the Director General, IAEA Board of Governors, GOV/2003/75, November 10, 2003, annex 1, p. 1.

²⁴ A project begun and abandoned by Germany.

²⁵ Miller, *Stopping the Bomb* (2018), p. 228.

²⁶ *Ibid.*, p. 229.

²⁷ *Ibid.*, p. 230.

²⁸ Fitzpatrick, “Lessons Learned from Iran’s Pursuit of Nuclear Weapons” (2006), p. 528.

²⁹ Alireza Nader, “Influencing Iran’s Nuclear Decisions,” in Etel Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (Cambridge University Press, 2012), p. 213.

³⁰ Celia L. Reynolds and Wilfred T. Wan, “Empirical trends in sanctions and positive inducements,” in Etel Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (Cambridge University Press, 2012), p. 78.

³¹ *Ibid.*

some agreements with Iran.³² The United States also continued to monitor Iranian progress, including sharing intelligence with the IAEA that led to inspections of suspicious buildings in November 1993.³³

Sanctions tied explicitly to WMD began in the 1990s.³⁴ American compellence against Iran especially increase after the United States and Israeli intelligence estimated in January 1995 that Iran could be five years away from acquiring the bomb.³⁵ Iran's support for terrorism grew more deadly as well; the Khobar Towers bombing, for instance, killed 19 U.S. service members with Iranian backing. The Iran and Libya Sanctions Act of 1996 threatened financial penalties against any firm that invested more than \$20 million in the Iranian oil sector.³⁶ President Clinton's Executive Order 12959 "banned all residual U.S. trade with and investment in Iran."³⁷

These sanctions, however, were insufficiently painful to yield any policy change. Iran had "little to lose" from U.S. sanctions after the revolution severed it from the western economy.³⁸ The United States needed to recruit partners to aid its coercion. Soon the opportunity presented itself.

³² "Iran: Country Profile," Nuclear Threat Initiative, Updated May 2018, <<https://www.nti.org/learn/countries/iran/nuclear/>>; Reynolds and Wan, "Empirical trends in sanctions and positive inducements," in Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (2012), p. 78.

³³ Miller, *Stopping the Bomb* (2018), p. 229.

³⁴ Major American policies included: Foreign Appropriations Act (1990), the Iran-Iraq Arms Non-Proliferation Act (1992, amended in 1996), the Iran-Libya Sanctions Act (1996), the Iran Non-proliferation Act (2000), and Executive Orders 12938, 12957, 12959, and 13059. Gary Samore (ed.), "Sanctions Against Iran: A Guide to Targets, Terms, and Timetables," Harvard Kennedy School, Belfer Center, June 2015; and Reynolds and Wan, "Empirical trends in sanctions and positive inducements," in Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (2012), p. 78.

³⁵ Miller, *Stopping the Bomb* (2018), p. 229. Miller cites Chris Hedges, "Iran May Be Able to Build an Atomic Bomb in 5 Years, U.S. and Israeli Officials Fear," *New York Times*, January 5, 1995, <<https://www.nytimes.com/1995/01/05/world/iran-may-be-able-build-atomic-bomb-5-years-us-israeli-officials-fear.html>>.

³⁶ The Libya sanctions were lifted separately in 2006. Samore (ed.), "Sanctions Against Iran: A Guide to Targets, Terms, and Timetables," 2015; Alireza Nader, "Influencing Iran's Nuclear Decisions," in Etel Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (Cambridge University Press, 2012), p. 214.

³⁷ Miller, *Stopping the Bomb* (2018), p. 230.

³⁸ *Ibid.*, p. 217.

In August 2002, it was revealed publicly that Iran had been concealing an enrichment facility at Natanz and a possible heavy water production plant at Arak.³⁹ The revelation spurred an IAEA investigation and, in early 2003, Iran admitted to these facilities as well as a centrifuge production facility in Tehran. Many scholars date the beginning of the Iranian nuclear crisis to this exposure of Natanz and Arak in 2002.⁴⁰

III. Successful Compellence: Iran’s 2003 “Halt”/“Hide” Order

Decision Point Year(s)	Threat	Assurance			Concessions
	Credible	Demand Disentanglement	Coercive Control	Reducing Visibility	
2003	Yes	No	No	No	Yes

This section considers Iran’s concessions in 2003. It reveals evidence in favor of Threat Credibility Theory and against Coercive Assurance Theory. The invasion of Iraq compelled Iran to make some significant concessions.

Iran’s approach to the newly public nuclear crisis in 2003 was conciliatory. The Khatami government in Tehran agreed to participate in the E3 talks “to avoid referral to the UN Security Council.”⁴¹ In October 2003, Iran suspended uranium enrichment and plutonium reprocessing activities and pledged to behave in accordance with the Additional Protocol.⁴² Furthermore, in secret, Iran ended a clandestine nuclear weapons project called the “AMAD Plan.” With the

³⁹ Ibid., p. 231. See also “Iran: Country Profile,” Nuclear Threat Initiative, Updated May 2018, <<https://www.nti.org/learn/countries/iran/nuclear/>>.

⁴⁰ Tabatabai, “Negotiating the ‘Iran talks’ in Tehran” (2017), p. 227.

⁴¹ “Iran: Country Profile,” Nuclear Threat Initiative, Updated May 2018, <<https://www.nti.org/learn/countries/iran/nuclear/>>.

⁴² Iran, however, “disagreed with the IAEA on the actual scope of the suspension and continued to produce uranium hexafluoride, the feed material for gas centrifuges.” Reynolds and Wan, “Empirical trends in sanctions and positive inducements,” in Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (2012), p. 80.

benefit of IAEA reports and Iranian files stolen by Israel, we can more accurately assess what was conceded.

Iran's Concessions

After making contact with AQ Khan in 1987, Iran established “organizational structures and administrative arrangements for an undeclared nuclear programme...managed through the Physics Research Centre (PHRC)” and overseen by “the Defence Industries Education Research Institute (ERI), established to coordinate defence R&D for the Ministry of Defence Armed Forces Logistics (MODAFL).”⁴³ These PHRC efforts were consolidated into the “AMAD Plan” in 1999 or early 2000. The Plan was supervised by the “Supreme Council for Advanced Technologies,” which consisted of President Mohammad Khatami, Supreme National Security Council Secretary General Hassan Rouhani (now President), Minister of Defense Ali Shamkhani, and the Head of AEOI Gholamreza Aghazadeh.⁴⁴ The Council approved a budget of \$100 million (in 1999 dollars) to build five nuclear warheads of 10 kilotons each.⁴⁵ Concurrent with this reorganization, very senior Iranian leaders made a political decision to acquire and test a nuclear device by 2003.⁴⁶

The AMAD Plan was in full operation in 2002 and 2003 under the leadership of Executive Officer Mohsen Fakhrizadeh.⁴⁷ The scale of foreign assistance was large—over a

⁴³ IAEA Board of Governors, “Implementation of the NPT Safeguards Agreement and relevant provisions of Security Council resolutions in the Islamic Republic of Iran,” GOV/2011/65, November 8, 2011, Annex p. 5.

⁴⁴ A senior representative of the Foreign Ministry may also have sat on the Council. Aaron Arnold, Matthew Bunn, Caitlin Chase, Steven E. Miller, Rolf Mowatt-Larssen, and William H. Tobey, “The Iran Nuclear Archive: Impressions and Implications,” Harvard Kennedy School Belfer Center for Science and International Affairs Report (April 2019).

⁴⁵ Money was also allocated for the acquisition of HEU from abroad. There is no evidence HEU was actually acquired from abroad. Aaron Arnold notes from Israeli intelligence briefing, January 2019.

⁴⁶ Arnold, Bunn, Chase, Miller, Mowatt-Larssen, and Tobey, “The Iran Nuclear Archive: Impressions and Implications,” (2019).

⁴⁷ GOV/2011/65 Annex, p. 5.

dozen foreign experts and four foreign bomb designs (from which the Iranians innovated their own design). And the program was intended to have a “parallel fuel cycle to produce HEU for nuclear weapons,” including use of the Fordow enrichment plant.⁴⁸

To construct the warheads, Iran dug a tunnel complex underneath Parchin, where they intended to house metallurgy equipment for uranium casting (Project 110 of the AMAD Plan).⁴⁹ The IAEA’s November 2011 Report Annex further recounts that “in 2002-2003 Iran may have planned and undertaken preparatory experimentation relevant to testing a nuclear explosive device,” including preparing explosive bridge wiring to reliably detonate a device “located down a deep shaft.”⁵⁰

In a November 2007 U.S. National Intelligence Estimate on Iran’s Nuclear Intentions and Capabilities, the U.S. National Intelligence Council (NIC) judged with “high confidence” that in fall 2003, Tehran “halted” its “nuclear weapon design and weaponization work and covert uranium conversion-related and uranium enrichment-related work.”⁵¹ This so-called “halt” order came from high up in the Iranian government. What exactly did Iran concede?

First, Iran dissolved the official organizational structure of the AMAD Plan. Second, Iran abandoned its plans to construct and test a nuclear device by the end of 2003. Third, Iran ceased construction of the tunnel complex under Parchin intended to house metallurgy equipment to

⁴⁸ Material to feed this cascade was to come from the Gchine uranium mine.

⁴⁹ Arnold, Bunn, Chase, Miller, Mowatt-Larssen, and Tobey, “The Iran Nuclear Archive: Impressions and Implications,” (2019).

⁵⁰ “Final Assessment on Past and Present Outstanding Issues regarding Iran’s Nuclear Programme,” IAEA, GOV/2015/68, December 2, 2015, p. 12.

⁵¹ National Intelligence Council, “Iran: Nuclear Intentions and Capabilities,” National Intelligence Estimate, November 2007, <https://www.dni.gov/files/documents/Newsroom/Reports%20and%20Pubs/20071203_release.pdf>. See also “Background Briefing with Senior U.S. Officials on Syria’s Covert Nuclear Reactor and North Korea’s Involvement,” April 24, 2008. <<https://fas.org/irp/news/2008/04/odni042408.pdf>>. Sometimes scholars take this to mean that Iran suspended its pursuit of the bomb in 2003, which is not accurate. Iran continued to hedge by developing its fissile material production capacity. It was not until 2015 that Iran accepted verifiable limits on its nuclear ambitions.

make nuclear cores. (While the facility was nearly completed, the halt order came down before equipment was installed.) Together, these concessions were significant and represented a very real slowdown in the Iranian pursuit of a nuclear weapon.

Iran made these concessions out of fear. The United States had invaded its neighbor and brought hundreds of thousands of American forces to the region. With American forces on its eastern border in Afghanistan as well, Iran saw threats on two fronts. Moreover, the American military routed Iraqi forces in combat; effectively two divisions conquered the country in just three weeks. Washington had also justified its war with Iraq on the basis of a (non-existent) WMD program. Iran's real nuclear weapons program was by comparison a more than sufficient *causis belli*; and Tehran, now under greater scrutiny and a named member of the "Axis of Evil," did not know how much AQ Khan's network, now penetrated, was telling the American intelligence community. Even short of military conflict, Iran sought to avoid referral to the UN Security Council, which could act to impose more painful multilateral sanctions.

Iran therefore took American threats in 2003 seriously. One indication of this is that Iran increased military spending.⁵² The liberal *Banyon* newspaper called for "preventive plans and measures that would render any possible aggression of the United States to be irrelevant."⁵³ And Iran braced itself for "asymmetrical" warfare.⁵⁴

Iran's concessions in response to these threats were real and significant. They were not, however, an end to the Iranian nuclear weapons programs.

⁵² Sarah Kreps and Zain Pasha, "Threats for Peace? The Domestic Distributional Effects of Military Threats," in Etel Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (Cambridge University Press, 2012), p. 200.

⁵³ Quoted in *Ibid.*, p. 198.

⁵⁴ *Ibid.*, p. 200. Iran seems to have feared American military force until 2007. The threat of an American strike seemed to abate once the U.S. was bogged down fighting insurgencies in Iraq and Afghanistan. "The US is stuck up in Iraq and cannot dare attack Iran," said a Member of the Iranian Parliament, Parviz Sourori. Quoted in *Ibid.*, p. 202.

What Remained

The 2003 “halt” order was also a “hide” order, aimed at a slower but consistent and hidden ambition to acquire nuclear weapons. Iranian documents, stolen by Israel in January 2018,⁵⁵ show that Iran’s 2003 decision “did not stop all the work.”⁵⁶ Instead, it divided the research program into overt and clandestine parts intended to “fill in technical gaps” toward the acquisition of a nuclear weapon.⁵⁷ Overt research continued “openly under civilian rationales,” for example, on neutron generator development.⁵⁸ While the tranche of so-called “Atomic Archive” documents have been used by many analysts to threat-inflate, IAEA documents corroborate this characterization of the 2003 decision to hide the program.⁵⁹ The IAEA’s November 2011 report acknowledges that after 2003 “staff remained in place to record and document the achievements of their respective projects,”⁶⁰ while “equipment and work places were either cleaned or disposed of so that there would be little to identify the sensitive nature of the work which had been undertaken.” Moreover, “...some activities previously carried out under the AMAD Plan were resumed later.”⁶¹ The IAEA’s 2015 PMD report specifies that between 2005 and 2009, Iran continued “computer modelling of a nuclear explosive device.”⁶² It

⁵⁵ This so-called “Atomic Archive” evidence is filtered through an intelligence community hostile to Iran and should be interpreted as such. See the next chapter’s section on the “possible military dimensions” of Iran’s nuclear program for more discussion of these documents and their biases.

⁵⁶ Arnold, Bunn, Chase, Miller, Mowatt-Larssen, and Tobey, “The Iran Nuclear Archive: Impressions and Implications,” (2019).

⁵⁷ Arnold, Bunn, Chase, Miller, Mowatt-Larssen, and Tobey, “The Iran Nuclear Archive: Impressions and Implications,” (2019).

⁵⁸ The IAEA’s 2015 PMD Report indicated that “from around 2006 onwards, Iran embarked on a four-year programme on the validation of shock-driven neutron source design, including through the use of non-nuclear material to avoid contamination.” GOV/2015/68, p. 12. See also Arnold, Bunn, Chase, Miller, Mowatt-Larssen, and Tobey, “The Iran Nuclear Archive: Impressions and Implications,” (2019).

⁵⁹ See IAEA Board of Governors, “Implementation of the NPT Safeguards Agreement and relevant provisions of Security Council resolutions in the Islamic Republic of Iran,” GOV/2011/65, November 8, 2011, Annex p. 5; and “Final Assessment on Past and Present Outstanding Issues regarding Iran’s Nuclear Programme,” GOV/2015/68, December 2, 2015, p. 15.

⁶⁰ GOV/2011/65, Annex, p. 5.

⁶¹ Ibid.

⁶² GOV/2015/68, p. 12.

also indicates that Iran continued procurement of items relevant “to the development of a nuclear explosive device” until 2007.⁶³

The leadership of Iran’s nuclear program also remained unchanged. “Mr Fakhrizadeh retained the principal organizational role, first under a new organization known as the Section for Advanced Development Applications and Technologies (SADAT) 28, which continued to report to MODAFL, and later, in mid-2008, as the head of the Malek Ashtar University of Technology (MUT) in Tehran.”⁶⁴ Moreover, the IAEA remained interested in Fakrizadeh as he moved to a university setting.⁶⁵ Crucial aspects of the program continued in a deniable research capacity after 2003, some of which the IAEA noted “would be highly relevant to a nuclear weapon programme.”⁶⁶ Research on projects like neutron initiators, for instance, allegedly continued in an academic capacity.⁶⁷ Considering the IAEA’s own identified four activities of concern “relevant to the development of a nuclear explosive device”—(1) procurement of nuclear-related and dual-use equipment by the military, (2) “efforts to develop undeclared pathways” to production of fissile material, (3) acquisition of nuclear warhead designs and (4) indigenous refinement thereof, including “testing of components”—only the acquisition of warhead designs seems to have stopped after 2003.⁶⁸

⁶³ Ibid., p. 6.

⁶⁴ The IAEA also continued to track Fakrizadeh. “In February 2011, Mr Fakhrizadeh moved his seat of operations from MUT to an adjacent location known as the Modjeh Site, and that he now leads the Organization of Defensive Innovation and Research.” GOV/2011/65, Annex, p. 5. (Organization of Defensive Innovation and Research is also known by the acronym SPND.)

⁶⁵ GOV/2011/65, Annex, p. 5.

⁶⁶ Ibid.

⁶⁷ Ibid., p. 11.

⁶⁸ Ibid., p. 8.

Some analysts assert that this information shows that the 2007 NIE assessment was incorrect.⁶⁹ On the contrary, a ‘hide and preserve’ order would be consistent with the 2007 NIE’s often overlooked “moderate-to-high confidence” assessment that “Tehran at a minimum is keeping open the option to develop nuclear weapons.”⁷⁰ Obama administration officials additionally told reporters in 2010 that “in contrast to the 2007 NIE finding,” they and U.S. key allies believed Iran’s nuclear weapons design work was “continuing on a smaller scale.”⁷¹

Successful Compellence

In response to coercion in 2003, Iran hid and slowed down its nuclear program, which included significant concessions on its most sensitive weaponization activities. This behavior is consistent with Threat Credibility Theory and inconsistent with Coercive Assurance Theory. The threat of American invasion was so credible and severe in 2003 that Iran scrambled to avoid potentially imminent costs. It did so even in the absence of American efforts to signal coercive assurance. The George W. Bush administration’s aggressive rhetoric communicated no limits of American policy in Iran or its neighborhood. Some Bush administration threats also lacked contingency—no demand was made of the target. For instance, at the time of the invasion of Iraq, when asked what message Washington wished Tehran would learn from the invasion, a

⁶⁹ David Albright, Olli Heinonen, and Andrea Stricker, “Breaking Up and Reorienting Iran’s Nuclear Weapons Program - Iran’s Nuclear Archive Shows the 2003 Restructuring of its Nuclear Weapons Program, then called the AMAD Program, into Covert and Overt Parts,” ISIS, October 29, 2018.

⁷⁰ National Intelligence Council, “Iran: Nuclear Intentions and Capabilities,” National Intelligence Estimate, November 2007, <https://www.dni.gov/files/documents/Newsroom/Reports%20and%20Pubs/20071203_release.pdf>.

⁷¹ Miller, *Stopping the Bomb* (2018), p. 236. See also, David Sanger and William Broad, “U.S. Sees Window to Pressure Iran on Nuclear Fuel,” *New York Times*, January 3, 2010.

senior Bush administration official replied, “take a number.”⁷² What behavior on the part of Iran could have avoided the punishment remained opaque.

Iran’s concessions, however, did not constitute the entirety of its nuclear weapons program. Iran conceded what it perceived as enough to avoid an invasion, while maintaining progress toward building nuclear weapons in the future. Tehran did probe the possibility of making more concessions if its coercers could provide sufficient coercive assurance; but none was forthcoming. If Iran’s so-called “2003 Grand Bargain Letter” was sincere, it is notable sign of insufficient coercive assurance that Iran’s first item requested from the United States, according to its letter, would have been to “refrain from supporting change of the [Iranian] political system by direct interference from outside.”⁷³

Moreover, one should note the contextual similarity of Iran’s concessions to all three mechanisms of coercive assurance—Disentangling Demands, Coercive Control, and Reducing Visibility. The United States did not offer any of these coercive assurances, but Iran may have perceived some. First, if Iran’s “grand bargain” offer is indicative of its strategic intent, Tehran expressed a willingness to acquiesce on multiple issues and not just in the nuclear domain. This would have overcome the entangled demands problem. Second, neither was any other power threatening to invade Iran absent American initiative. No spoilers were present on this particularly extreme punishment. Third, Iran’s nuclear concessions were deniable. It ended only

⁷² Sonni Efron, “Looking Past Baghdad to the Next Challenge,” *Los Angeles Times*, April 6, 2003, <<http://articles.latimes.com/2003/apr/06/news/war-whatnext6>>.

⁷³ Iran’s Proposal for a ‘Grand Bargain,’ *New York Times*, <https://static01.nyt.com/packages/pdf/opinion/20070429_iran-memo-3.pdf>. See also Robert S. Litwak, “Living with Ambiguity: Nuclear Deals with Iran and North Korea,” *Survival* 50, 1 (February-March 2008), pp. 101-102. Much remains in doubt about the episode, even if it was a true offer from Iran made via Switzerland. According to William Tobey who was in the U.S. National Security Council at the time, “I don’t know anyone who took the 2003 grand bargain letter seriously. It was not bona fide. The Iranians could have proposed a bargain in a bona fide way, there were bona fide methods of passing along the message, but they did not do so.” William H. Tobey interview with the author. March 14, 2018. Cambridge, MA. Nicholas Miller takes the 2003 grand bargain offer seriously. See Miller, *Stopping the Bomb* (2018), p. 231.

secret aspect of its program and covered up them up. Iran may have perceived the opportunity to concede in the dark, despite no coercer offering to tacitly collude. To be clear, I do not consider this evidence affirming Coercive Assurance Theory as I have defined it. The parallels simply show the potential power of the theory if one were to relax the assumption that coercers take an active role in its implementation.

While Iran's behavior in 2003 provides evidence against Coercive Assurance Theory, the period may still have been a moment of missed opportunity for US-Iran relations. Iran made concessions but did not abandon its nuclear pursuits or accept intrusive verification of its intentions. The United Kingdom, France, and Germany (known collectively as the E3 or EU3) took the lead in subsequent talks with Iran. Critically, the Bush administration did not participate.

IV. Failed Compellence: 2003-2008

This section reviews coercive diplomacy with Iran after the invasion of Iraq and its initial concessions. Consistent with the predictions of Coercive Assurance Theory, Iran defied further compellence because it perceived that it would endure punishments regardless of its behavior. The 2003-2005 E3 talks failed, in part because Iran's coercers lacked coercive control—the United States, a potential spoiler, did not participate. In 2006, the IAEA referred Iran to the UN Security Council for noncompliance with its nonproliferation obligations, increasing the credibility and severity of multilateral sanctions. Iran continued to defy, even restarting enrichment once paused as a confidence-building measure. As sanctions tightened and the Bush administration even floated a carrot of maintaining a limited enrichment capacity, Tehran still

defied. A coercive diplomacy of big sticks and little carrots failed to break the impasse.

Assurance was lacking.

Failure of the E3, America on the Sidelines but in the Front Row

Decision Point Year(s)	Threat	Assurance			Concessions
	Credible	Demand Disentanglement	Coercive Control	Reducing Visibility	
2003-2005	Yes	No	No	No	No

Iran’s coercers were split on their strategies of coercion in 2003. The United States wanted immediate referral to the UN Security Council (UNSC) by the IAEA Board of Governors. The European Union, on the other hand, preferred to use trade incentives as carrots, holding the referral as a threat in abeyance.⁷⁴ To pursue this linkage of trade carrots to the nuclear issue, the EU suspended trade negotiations with Iran in June 2003, the same month the IAEA reported that Iran had indeed concealed Natanz.⁷⁵

The IAEA put its weight behind the EU plan. It did not refer Iran to the UNSC and called on Iran to come clean and cooperate with full verification by end of October 2003.

The approach lacked coercive assurance for a number of reasons, but most grievously because it left out the United States. When Iran engaged with the E3, Washington, an uncontrolled spoiler, was not at the table. As Tabatabai writes, “even though the United States was not directly involved in the talks, it nonetheless played a role. President George W. Bush advocated a zero-enrichment standard that Iran was unwilling to accept.”⁷⁶ Iran had no reason to believe that any deal struck with the E3 would be followed by American restraint.

⁷⁴ Miller, *Stopping the Bomb* (2018), p. 232.

⁷⁵ Ibid.

⁷⁶ Tabatabai, “Negotiating the ‘Iran talks’ in Tehran” (2017), p. 228.

In fall 2003, Iran provided to the IAEA an incomplete declaration of its nuclear program. Talks sputtered on.⁷⁷ As a confidence building measure, the E3 and Iran reached the Paris Agreement on November 15, 2004. Iran agreed to temporarily suspend all enrichment and reprocessing activities and abide by, but not ratify, the Additional Protocol while talks continued.⁷⁸ However, the sides could reach no further agreements.

Iranians voiced their frustrations about a lack of coercive assurance at IAEA Board of Governors meetings. Iran's representative to the IAEA, Salehi, often complained of "obvious political motivation"⁷⁹ behind its coercers' demands, an "existing hostile environment,"⁸⁰ "political bullying,"⁸¹ and hoped that in short order "the underlying political motivations would be dispelled."⁸² Perceiving that Iran's coercers meant it harm regardless of Tehran's behavior, Iran's Salehi declared that "the use of threatening language was futile. Despite its unprecedented cooperation, Iran had received only increased pressure from a few influential Member States."⁸³ The United States merely meant to "set the stage for confrontation."⁸⁴

The relative power of its coercers, especially the United States, was forefront in Iran's mind. Noting the power asymmetry with Iran's coercers, Salehi also observed that "When

⁷⁷ Notably, during the 2003-2005 E3 talks, Hassan Rouhani was the Secretary of the Supreme National Security Council and Javad Zarif was the Ambassador to the United Nations. Both men also played a key role in negotiations that led to the JCPOA in 2015.

⁷⁸ I do not consider these quickly reversible and temporary measures to be coercive concessions. "Iran: Country Profile," Nuclear Threat Initiative, Updated May 2018, <<https://www.nti.org/learn/countries/iran/nuclear/>>.

⁷⁹ IAEA Board of Governors, "Record of the 1071st Meeting," June 18, 2003, GOV/OR.1071, p. 9-10. IAEA Archives, Vienna, Austria.

⁸⁰ IAEA Board of Governors, "Record of the 1115th Meeting," November 29, 2004, GOV/OR.1115, p. 14. IAEA Archives, Vienna, Austria.

⁸¹ IAEA Board of Governors, "Record of the 1081st Meeting," September 12, 2003, GOV/OR.1081, p. 1. IAEA Archives, Vienna, Austria.

⁸² IAEA Board of Governors, "Record of the 1072nd Meeting," June 19, 2003, GOV/OR.1072, p. 9. IAEA Archives, Vienna, Austria.

⁸³ IAEA Board of Governors, "Record of the 1077th Meeting," September 9, 2003, GOV/OR.1077, p. 11. IAEA Archives, Vienna, Austria.

⁸⁴ IAEA Board of Governors, "Record of the 1109th Meeting," September 18, 2004, GOV/OR.1109, p. 16-17. IAEA Archives, Vienna, Austria.

powerful countries took the attitude that might makes right, they assumed the roles of both judge and prosecutor” and the “some countries seemed not to want the problem to be solved, but rather to exploit it for their own ends”⁸⁵—a clear skepticism about intentions. Further, “the United States...might even wield its massive power to crush the perceived culprit. Nothing could quench its thirst for vengeance short of confrontation and war. It was no secret that influential groups in the current United States administration were toying with the idea of invading yet another country as part of a plan to reshape the Middle East region.”⁸⁶ Iranians were defiant that “Iran was not Iraq, and the United States was no longer the self-appointed policeman of the world.”⁸⁷ A coercer perceived to be bent on regime change cannot assure.

Finally, Iran perceived no ability to save any face at the time, even if were to back down. Iran complained often about the Board of Governors that its coercers were “focusing disproportionately on the past” and not accounting for Iranian changes of behavior.⁸⁸ Coercers indeed called for full transparency. At an early Board of Governors meeting, the French Ambassador said, “Iran could not regain the international community’s confidence solely by rectifying past failures, but only by a clear and irreversible commitment to transparency which it could demonstrate by signing, ratifying and implementing an additional protocol without preconditions as soon as possible.”⁸⁹ And Mr. Naseri of the Iranian delegation perceived that, “Unfortunately, the attitude of the United States was a backward-looking one, despite what

⁸⁵ IAEA Board of Governors, “Record of the 1071st Meeting,” June 18, 2003, GOV/OR.1071, p. 9-10. IAEA Archives, Vienna, Austria.

⁸⁶ IAEA Board of Governors, “Record of the 1081st Meeting,” September 12, 2003, GOV/OR.1081, p. 1. IAEA Archives, Vienna, Austria.

⁸⁷ IAEA Board of Governors, “Record of the 1133rd Meeting,” August 11, 2005, GOV/OR.1133, p. 6. IAEA Archives, Vienna, Austria.

⁸⁸ IAEA Board of Governors, “Record of the 1086th Meeting,” November 26, 2003, GOV/OR.1086, p. 6. IAEA Archives, Vienna, Austria.

⁸⁹ IAEA Board of Governors, “Record of the 1071st Meeting,” June 18, 2003, GOV/OR.1071, p. 1. IAEA Archives, Vienna, Austria.

appeared to be a very strong body of opinion in favour of looking to the future...prudence called for emphasizing the positive that now existed rather than the negative that belonged in the past. Doing so would be in the interests of the Agency and of the international non-proliferation regime. Moreover, it would be conducive to conciliation in Iran's part of the world, which might help in dealing with a number of situations."⁹⁰ Face-saving measures may have helped.

In spring 2005, talks stalled in anticipation of the Iranian presidential elections. Iran was dissatisfied with elusory trade carrots. Coercers remained concerned with lack of Iranian concessions or transparency. Hard-liner Mahmoud Ahmadinejad used Western opposition on the nuclear issue as part of his platform to assume the presidency on August 3rd.⁹¹

Consistent with the predictions of Coercive Assurance Theory, Iran rejected the E3's final offer in August 2005. Shortly thereafter, Iran restarted uranium conversion and enrichment activities.⁹²

While a lack of coercive assurance certainly contributed to the failure of E3 negotiations in 2003-2005, the episode is a weaker test of Coercive Assurance Theory, because the credibility of American military threats decreased during this period. The peak of military coercion came in 2003, when an imminent invasion of Iran was plausible. U.S. ground forces in the region to support the invasion of Iraq were highly lethal and maneuverable armored forces. As the United States adapted its theater mission to counterinsurgency, its ground forces presented less of a threat to Iran. The U.S. got bogged down. Still, Iran was vulnerable to American air power and,

⁹⁰ IAEA Board of Governors, "Record of the 1084th Meeting," November 21, 2003, GOV/OR.1084, p. 12. IAEA Archives, Vienna, Austria.

⁹¹ Iranian presidential elections are not truly democratic. Freedom House writes, the elections "fall short of democratic standards due in part to the influence of the hard-line Guardian Council, an unelected body that disqualifies all candidates it deems insufficiently loyal to the clerical establishment. Ultimate power rests in the hands of the country's supreme leader." See "Iran Profile," *Freedom House*, <<https://freedomhouse.org/report/freedom-world/2018/iran>>.

⁹² Miller, *Stopping the Bomb* (2018), p. 233.

most importantly, feared an escalation of economic coercion in the form of referral to the UN Security Council. These more circumscribed threats mattered, too.

Referral to the UN Security Council

Decision Point Year(s)	Threat	Assurance			Concessions
	Credible	Demand Disentanglement	Coercive Control	Reducing Visibility	
2006	Yes	No	No	No	No

In January 2006, Iran resumed enrichment and ceased compliance with the Additional Protocol.⁹³ After a brief delay to give Iran one more chance,⁹⁴ on February 4, 2006, the IAEA Board of Governors voted to refer Iran to the UN Security Council for non-compliance with its obligations.⁹⁵

With the referral, the threat of painful multilateral sanctions against Iran became more credible. Iran, however, defied and questioned the intentions of its coercers. At an IAEA Board of Governors meeting after the referral, Iranian representative Soltanieh questioned the intentions of the “warmongers in Washington.” “It was impossible not to cast doubt on the intentions of a State that clearly based its policies on regime change in Iran, allocating budget resources and continuously planning for that outcome,” he declared. “People around the world should ask themselves how much they trusted the United States and how much they worried about invasion

⁹³ “Iran: Country Profile,” Nuclear Threat Initiative, Updated May 2018, <<https://www.nti.org/learn/countries/iran/nuclear/>>.

⁹⁴ The IAEA Board discussed a September 24, 2005 resolution (GOV/2005/77) which found Iran to be in non-compliance, but delayed to give them one more chance. IAEA Board of Governors, “Record of the 1150th Meeting,” GOV/OR.1150. IAEA Archives, Vienna, Austria.

⁹⁵ The report on Iran’s nuclear program was formally sent to the UN Security Council on March 8, 2006. For a helpful timeline, see IAEA, “IAEA and Iran: Chronology of Key Events,” <<https://www.iaea.org/newscenter/focus/iran/chronology-of-key-events>>.

by and threats from the United States. In his region, people showed that concern every day.”⁹⁶ He continued, “Taking the matter to the Security Council, by application and implication, made it a security issue, which would leave Iran with no choice but to consider it in that context.”⁹⁷

The UNSC did not immediately act on the Iran portfolio. In July 2006, the United States entered the formal fray to offer with the E3+3 a new package of incentives to Iran.⁹⁸ This coercive diplomacy again failed.

Despite its new seat at the table, the Bush administration did not prioritize offering coercive assurance. The E3+3 offer to Iran made in 2006 maintained American preconditions, including the suspension of enrichment. Moreover, they explicitly did not include an assurance of non-intervention. And when asked about non-intervention, the United States refused to discuss it. “Security assurances are not on the table,” said Condoleezza Rice.⁹⁹ While “security assurances” are not synonymous with coercive assurance, I consider an unwillingness to discuss security assurances as an indicator of incredible coercive assurance. Moreover, when Russian Foreign Minister Sergey Lavrov said that the P5+1 ought to be prepared to “give Iran security guarantees,” Washington responded the same day through White House Deputy Press Secretary Gordon Johndroe saying, “Security guarantees are not something we are looking at [at] the moment.”¹⁰⁰ Iranian officials continued to question the Bush administration’s intentions. Larijani said on June 25 that Washington was still intent on “overthrowing Iran’s government.”¹⁰¹ And in September, Soltanieh complained of America’s role as spoiler to the IAEA Board, saying, “On

⁹⁶ IAEA Board of Governors, “Record of the 1156th Meeting,” March 8, 2006, GOV/OR.1156, p. 8. IAEA Archives, Vienna, Austria.

⁹⁷ Ibid.

⁹⁸ Miller, *Stopping the Bomb* (2018), p. 233.

⁹⁹ Litwak, “Living with Ambiguity,” (2008), p. 104.

¹⁰⁰ Peter Crail, “Iran Presented with Revamped Incentives,” *Arms Control Today*, August 7, 2008, <https://www.armscontrol.org/act/2008_07-08/IranIncentives>.

¹⁰¹ Paul Kerr, “U.S., Allies Await Iran’s Response to Nuclear Offer,” *Arms Control Today*, July 1, 2006, <https://www.armscontrol.org/act/2006_07-08/IranResponse>.

the eve of the negotiations [between the EU and Iran], which had been welcomed by virtually all countries, the United States had poisoned the positive atmosphere by repeating unfounded allegations.”¹⁰²

To be clear, there is little evidence to suggest that Washington had any serious intention to overthrow the regime in Tehran. If they did, we should observe a whole host of accompanying phenomena, such as military planning for an occupation or a strike that would decapitate the regime. We do not. Instead, Washington pursued a coercive strategy that emphasized threats alone. I cite Iranian perceptions of this threat as evidence that they perceived no coercive assurance from Washington.

Following Iranian defiance of the July 2006 Resolution 1696, in which the UNSC threatened sanctions unless Iran “suspended all enrichment-related or reprocessing activities,” the UNSC finally acted and imposed its first Iran sanctions in December 2006 (Resolution 1737).¹⁰³ Thus began multilateral efforts to economically squeeze Iran into compliance. Iran, long fearing UN referral and multilateral economic coercion, braced for punishment.

Tightening the Economic Noose

Initial UN sanctions, while not sufficiently painful on their own, represented the opening salvo of a renewed campaign of economic coercion. The United States cut off Iranian banks from even indirect access to the US financial system and froze the assets of individuals suspected of ties to the nuclear program.¹⁰⁴ These targeted sanctions, coupled with matching efforts by the UK

¹⁰² IAEA Board of Governors, “Record of the 1171st Meeting,” September 14, 2006, GOV/OR.1171, p. 6. IAEA Archives, Vienna, Austria.

¹⁰³ Miller, agreeing with Sauer, thinks that the threat of painful UN sanctions was likely not credible, as Iran felt it would be protected from the worst by Russia and China. Miller, *Stopping the Bomb* (2018), p. 233; Tom Sauer, “Coercive Diplomacy by the EU: The Iranian Nuclear Weapons Crisis,” *Third World Quarterly*, 28, 3 (2007).

¹⁰⁴ Nader, “Influencing Iran’s Nuclear Decisions,” in Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (2012), p. 214.

and Australia, were estimated by Rouhani to have increased the costs of Iranian imports by 10-30%.¹⁰⁵

UN sanctions only targeted at first trade and financial elements related to the nuclear program, but their strength grew over time. Resolution 1747, though still watered down by Russia and China, was passed in March 2007. And the United States capitalized on IAEA frustration over Iranian delays and deflections to galvanize more UNSC action.¹⁰⁶ The E3+3 offered Iran another inducements package. The United States was directly involved in negotiations for the first time.¹⁰⁷ Iran rejected it.

Throughout this period, Iranian officials often came back to the language of coercive assurance. “The more Iran had cooperated with the Agency since 2003, the harsher the response it had been faced with and the tougher the resolutions proposed by certain countries,” complained Soltanieh to the IAEA Board of Governors.¹⁰⁸ Expressing further frustration over the role of the United States as spoiler, he protested that despite Iranian compliance the E3 “probably owing to political pressure from the United States, had responded by proposing a tougher resolution against Iran.” “Consequently, the Government of Iran had come to the conclusion that, no matter how many concessions it made, the intention was to keep the Iranian nuclear issue on the Board’s agenda because there was in fact a hidden agenda, namely to pave the way for the issue to be referred to the Security Council in order to impose sanctions and further punitive

¹⁰⁵ Reynolds and Wan, “Empirical trends in sanctions and positive inducements,” in Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (2012), p. 79.

¹⁰⁶ In November 2007, Director General El Baradei said the IAEA could not certify the absence of undeclared nuclear material and activities in Iran. Iran’s coercers were able to turn this conclusion into another UN sanction in March 2008, Resolution 1803. In September 2008, Resolution 1835 reaffirmed Resolutions 1696, 1737, 1747, and 1803. See Miller, *Stopping the Bomb* (2018), p. 234.

¹⁰⁷ Ibid.

¹⁰⁸ IAEA Board of Governors, “Record of the 1199th Meeting,” November 23, 2007, GOV/OR.1199, p. 4. IAEA Archives, Vienna, Austria.

measures,” he argued.¹⁰⁹ Iran consistently questioned the intentions of coercion. Iran’s persistent place on the IAEA’s agenda was “merely a pretext to cover the hidden agenda of the United States and other countries, such as France and the United Kingdom.”¹¹⁰

The vexing Iran portfolio passed to the Obama administration in January 2009.

¹⁰⁹ Ibid.

¹¹⁰ IAEA Board of Governors, “Record of the 1225th Meeting,” November 27, 2008, GOV/OR.1225, p. 18. IAEA Archives, Vienna, Austria.

CHAPTER 6: IRAN 2009-2019

This chapter continues to examine the case of Iran, focusing heavily on negotiations leading to the 2015 Joint Comprehensive Plan of Action (JCPOA). Given the recency of these coercive interactions, I draw evidence primarily from IAEA records and interviews with American and Israeli officials, as well as some published memoirs.

The exodus of many Democratic policymakers from the U.S. government after the election of a Republican administration in 2016 gave scholars good access to former officials willing to speak on the record about coercive bargaining with Iran. Of course, this access to evidence came with a validity tradeoff: these officials were willing to speak in order to defend the record of their policy choices. Indeed, I interviewed officials both before and after the Trump administration withdrew from the JCPOA and reimposed sanctions. Prior to that decision, interviewees were inclined to defend the deal in the hopes of saving it; after, they were more inclined to cast blame. Neither is biased in favor of or against Coercive Assurance Theory. Subjects may have even been more inclined to tout the efficacy of their threats, consistent with the threat-alone conventional wisdom of how coercion works. I endeavored not to prime interviewees with details of my theory.

These interviews and memoirs are also naturally self-serving and selective accounts. This kind of evidence often lacks important substance. Indeed, some interviewees expressly admitted that they could not share some details of the Iran negotiations, especially about the role of

intelligence community. I believe, however, that compiling this evidence yields a valuable first-cut at history. Some cases are important enough not to wait until records are declassified.

I was also able to test the part of my theory that relies most heavily on the role of intelligence—the mechanism on reducing visibility—by comparing IAEA documents to a tranche of documents stolen from Iran in a 2018 Israeli intelligence operation. Again, this evidence comes from a source with a clear agenda: the demise of the JCPOA and unyielding containment of the Iranian regime. I therefore use these partial and filtered “Atomic Archives,” as the Israelis call them, in ways that bias against finding evidence in favor of the mechanism of reducing visibility. This evidence is too valuable to dismiss outright. Scholars can be clear about its publication as part of an Israeli threat-inflation information operation, yet still use the evidence to test theory. Section two considers the direction of bias in this tranche of documents in greater detail.

Section one details the failed period of outreach during the first years of the Obama administration, 2009-2011. Section two evaluates the conditions that led to the successful conclusions of the JCPOA between 2012 and 2015. Section three describes and evaluates the policy choices of the Trump administration since 2017. Section four considers possible confounders. Section five concludes.

IX. Obama’s Failed Compellence: 2009-2011

Decision Point Year(s)	Threat	Assurance			Concessions
	Credible	Demand Disentanglement	Coercive Control	Reducing Visibility	
2009-2011	Yes	Yes	No	No	No

This 2009-2011 period of unrequited outreach shows that it was not accommodation that brought Iran to the table ready to make concessions. The Obama administration initially took a softer line on Iran, in essence turning away from threats.¹ The period also shows that coercive assurance cannot be communicated by words alone. Iran rejected this outreach both because it was insufficiently threatened and because the conditions were not yet conducive to complementary assurance. It took until 2012 to get those conditions in place.

A Failed Period of Outreach: Nowruz, Ahmadinejad, and Fordow

President Obama came into office offering to return to negotiations with Iran without preconditions. He recorded a Nowruz message in March 2009.² Deputy Assistant to the President and National Security Advisor to the Vice President Colin Kahl described the context as follows: “The regime was extraordinarily skeptical of U.S. intentions. We began by trying to change Iranian perceptions that we were after regime change. Obama tried to engage on common interests and mutual respect. Obama’s Nowruz message was not just for the people, but for the Iranian leaders.”³ The White House put building further sanctions pressure on hold, instead opting for a period of outreach.⁴ Obama also reportedly sent two letters to the Supreme Leader in 2009, one proposing direct talks.⁵ Khamenei did not respond to the request for talks.⁶

¹ I still code the Threat variable as credible during this period, however, as Iran was still defying painful multilateral sanctions.

² “Videotaped Remarks by The President in Celebration of Nowruz,” The White House, March 20, 2009, <<https://obamawhitehouse.archives.gov/blog/2009/03/19/a-new-year-a-new-beginning>>.

³ Reid Pauly interview with Colin Kahl, Stanford, CA, November 2, 2018.

⁴ Although sanctions were on hold, the Obama administration was still preparing throughout 2009 for the sanctions campaign to begin, rallying partners. John Wolfsthal told me: “The Obama administration was organized around Iran negotiations as early as 2009. Getting Russian cooperation early was the plan from the start. Even the Prague Speech was part of this effort.” Reid Pauly telephone interview with Jon Wolfsthal, March 21, 2018.

⁵ Ewen MacAskill, “Obama sent letter to Khamenei before the election, report says,” *Guardian*, June 24, 2009; “Obama sent second letter to Khamenei,” *Washington Times*, September 3, 2009.

⁶ Daniel Sobelman, “Restraining an Ally: Israel, the United States, and Iran’s Nuclear Program, 2011-2012,” *Texas National Security Review* (August 14, 2018).

The outreach yielded little. Iran remained skeptical. “The international community was well aware that the United States sought an excuse for pursuing its hegemonic and aggressive policy in the Middle East,” Iranian officials said at IAEA Board meetings. New American statements were “reminiscent of those made under the preceding administration.”⁷ Iran perceived no face-saving opportunity for discretion either.⁸

Three major events especially impeded any breakthroughs during this period of outreach. First, Ahmadinejad was reelected in a disputed presidential election in June 2009, followed by political unrest and government crackdown. Second, the revelation of yet another undeclared nuclear facility, the Fordow Fuel Enrichment Plant, in September 2009 upended the prospect of talks. The deeply buried enrichment facility near the city of Qom was discovered by Western intelligence and only disclosed to the IAEA in September 2009. It had been under development since 2006.⁹ Third, Iran rejected a P5+1 offer to exchange uranium for fuel for the Tehran Research Reactor (TRR)—Iran would receive 20% enriched LEU nuclear fuel for the 5-megawatt TRR in exchange for sending a large portion of its 3-5% enriched uranium to Russia for fuel fabrication. Ahmadinejad had been interested in the swap, but he was criticized domestically for considering “a weak-kneed accommodation of the West,” so he rejected the deal “to save face domestically.”¹⁰

⁷ IAEA Board of Governors, “Record of the 1273rd Meeting,” June 9, 2010, GOV/OR.1273, p. 4. IAEA Archives, Vienna, Austria.

⁸ It protested that despite the confidentiality of IAEA Board deliberations, “a number of Western countries had not hesitated to make certain information public when it had suited their campaigns against certain states.” IAEA Board of Governors, “Record of the 1231st Meeting,” March 4, 2009, GOV/OR.1231, p. 11. IAEA Archives, Vienna, Austria. Although Iranian officials were “ready to seek a face-saving solution through constructive dialogue,” they were publicly resolved to “never yielded to pressure.” IAEA Board of Governors, “Record of the 1341st Meeting,” November 30, 2012, GOV/OR.1341, p. 14. IAEA Archives, Vienna, Austria.

⁹ Fordow was also originally conceived as part of the Amad Plan. See chapter 5. See also Wyn Bowen and Jonathan Brewer, “Iran’s Nuclear Challenge: Nine Years and Counting,” *International Affairs*, Vol. 87, Iss. 4 (July 2011), pp. 927-928.

¹⁰ Reynolds and Wan, “Empirical trends in sanctions and positive inducements,” in Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (2012), p. 83.

Recognizing temporary failure, the Obama administration decided to restart financial pressure in fall 2009. President Obama issued an ultimatum: Iran had until the end of the year to comply with the IAEA's demand and end enrichment, otherwise he would pursue tighter sanctions.¹¹ Iran defied. At the Board meeting when the resolution was passed, Iran's representative took it as evidence that Iran "was justified in not believing that the United States [Obama administration] was truly extending its hand in cooperation—it was simply trying to mislead the international community."¹² Concurrently, in late 2009, the Stuxnet cyber-attack began to take out Iranian centrifuges. The stage was set for the next round of compellence. The United States rallied the UN to begin to ratchet up sanctions again with Resolution 1929, passed in June 2010.

A Renewed Sanctions Campaign

UN sanctions resolution 1929, passed in June 2010, began a renewed and concentrated effort of strict and painful sanctions to compel Iran to make nuclear concessions.¹³ Up to 2009, sanctions had been effective but insufficiently painful. GDP growth fell from 5.7% to 4.1%, a bearable cost.¹⁴ Now, new sanctions targets included the Central Bank of Iran and the IRGC and sectors including nuclear, energy, banking, shipping, and insurance. Iran's coercers also froze assets abroad and imposed an arms embargo.

¹¹ IAEA demand came in a November 2009 Board of Governors resolution. IAEA Board of Governors, "Implementation of the NPT safeguards agreement and relevant provisions of Security Council resolutions 1737 (2006), 1747 (2007), 1803 (2008) and 1835 (2008) in the Islamic Republic of Iran," GOV/2009/82, November 27, 2009.

¹² IAEA Board of Governors, "Record of the 1258th Meeting," November 27, 2009, GOV/OR.1258, p. 11. IAEA Archives, Vienna, Austria.

¹³ Overall, there were six key UNSC resolutions against Iran: 1696 (July 2006), 1737 (December 2006), 1747 (March 2007), 1803 (March 2008), 1835 (June 2010), 1929 (June 2010). Samore (ed.), "Sanctions Against Iran: A Guide to Targets, Terms, and Timetables" (2015), p. 7.

¹⁴ Miller, *Stopping the Bomb* (2018), p. 235.

Resolution 1929 included a ban on conventional arms sales and, for the first time, mandatory financial restrictions. The language in Resolution 1929 that connected Iran's oil revenue to its proliferation activities allowed the EU to impose an oil embargo in 2012.¹⁵ And in March 2012, the EU cut off access to the SWIFT system and froze European assets of Iran's central bank.¹⁶

Washington complemented these multilateral efforts with strictly enforced targeted and secondary sanctions. The Comprehensive Iran Sanctions, Accountability, and Divestment Act (CISADA) passed in July 2010 and said that any bank doing business with the Central Bank of Iran could not also do business in the United States. The Iran Threat Reduction and Syria Human Rights Act (August 2012) locked oil revenue in escrow accounts. And the Iran Freedom and Counterproliferation Act (January 2013) targeted shipping and shipping insurance.¹⁷ The United States also closed the 'U-turn' loop hole, which had allowed non-American banks to conduct transactions with each other in U.S. dollars by clearing them through New York. And blacklisting the IRGC was the "first time the United States had sanctioned part of another country's armed forces."¹⁸ The Treasury Department ramped up its enforcement efforts, actively seeking to adapt to the enemy by seeking out front companies and punishing violators.¹⁹ Israeli

¹⁵ This language was: "the potential connection between Iran's revenues derived from its energy sector and the funding of Iran's proliferation sensitive nuclear activities." Samore (ed.), "Sanctions Against Iran: A Guide to Targets, Terms, and Timetables" (2015), p. 6.

¹⁶ Samore (ed.), "Sanctions Against Iran: A Guide to Targets, Terms, and Timetables" (2015), pp. 8, 9.

¹⁷ Other major American sanctions measures included: Executive Orders 13438, 13553, 13572, 13590, 13599, 13606, 13608, 13622, 13628. And in 2011 the United States designated the entire Iranian financial sector a money laundering concern under the Patriot Act. Samore (ed.), "Sanctions Against Iran: A Guide to Targets, Terms, and Timetables" (2015), pp. 10-11.

¹⁸ Ibid., p. 8.

¹⁹ Richard Nephew, *The Art of Sanctions* (New York, NY: Columbia University Press, 2018); Juan C. Zarate, *Treasury's War: The Unleashing of a New Era of Financial Warfare* (New York, NY: Public Affairs, 2013).

intelligence also aided with the enforcement effort by passing along to the U.S. Treasury information about shell companies for Iranian nuclear procurement and financing.²⁰

Everything began to peak in late 2011 and the first half of 2012. In November 2011, the IAEA had released its most comprehensive report on Iranian weaponization suspicions, showing starkly what Iran had to answer for.²¹ In April 2012, the Obama administration gave Iran a “last chance” to negotiate concessions, cease enrichment at Fordow and ship out 20% enriched uranium.²² Soltanieh, Iran’s IAEA representative, was defiant at the spring 2012 Board of Governors meeting, assessing that “while sanctions had been in place since the victory of the Islamic revolution, the nuclear issue was a recent phenomenon and so the Supreme Leader had concluded that the West’s real problem with Iran was that it was a nation that had decided to be independent.”²³ Iran’s coercers, in his view, would never relent. Meanwhile, Israel remained a potential spoiler, as Iran’s continued defiance in the face of sanctions and Stuxnet led Israeli leaders to seriously consider preventive air strikes.²⁴ The coercive campaign was reaching an inflection point—would it break in favor of war or peace?

The next section assesses the causes of the coercive breakthrough that began in mid-2012. All three hypothesized mechanisms of Coercive Assurance Theory proved important complements to coercive threats.

²⁰ Ronen Bergman, “Will Israel Attack Iran?” *New York Times Magazine*, January 25, 2012.

²¹ IAEA, GOV/2011/65.

²² Miller, *Stopping the Bomb* (2018), p. 236; David Sanger and Steven Erlanger, “US Defines its Demands for Iran Talks,” *New York Times*, April 7, 2012.

²³ IAEA Board of Governors, “Record of the 1324th Meeting,” March 8, 2012, GOV/OR.1324, p. 10. IAEA Archives, Vienna, Austria.

²⁴ Miller, *Stopping the Bomb* (2018), p. 236.

X. Successful Compellence and the JCPOA: 2012-2015

Decision Point Year(s)	Threat	Assurance			Concessions
	Credible	Demand Disentanglement	Coercive Control	Reducing Visibility	
2012-2015	Yes	Yes	Yes	Yes	Yes

Iran struck a bargain with its coercers in July 2015—the Joint Comprehensive Plan of Action (JCPOA). This section focuses in on the negotiations that led to that agreement. I find that Iran was successfully compelled because it was credibly threatened, given some carrots, but also coercively assured.

The breakthrough began in the summer of 2012 when the United States and Iran opened a secret diplomatic channel. In June, Director of Policy Planning Jake Sullivan and Special Assistant to the President and NSC Senior Director for Iraq, Iran, and the Gulf States Puneet Talwar travelled to Oman to meet with an Iranian delegation led by SNSC Secretary Saeed Jalili.²⁵ The sides were feeling each other out, but still hesitant. Deputy Secretary of State William Burns made another trip to Oman in March 2013.

Rouhani was then elected the new Iranian president in June 2013 on a platform that included sanctions relief. Talks continued when Rouhani came into office and the United States added a carrot: in August 2013, the United States offered “to entertain the possibility of very limited uranium enrichment, if it could be tightly monitored and verified.”²⁶ Wendy Sherman then returned from a subsequent meeting in Oman in October 2013 with the “(heavily bracketed) text of an interim agreement.”²⁷

²⁵ *Politico* reports the date of this Oman meeting as July 2012. Michael Crowley, “Hillary Clinton’s Secret Iran Man,” *Politico*, April 3, 2015.

²⁶ Bill Burns and Jake Sullivan made this offer to an Iranian delegation in Oman in August 2013. Wendy R. Sherman, *Not for the Faint of Heart: Lessons in Courage, Power, and Persistence* (New York: Public Affairs, 2018), pp. 34-35.

²⁷ Sherman, *Not for the Faint of Heart* (2018), p. 37.

The two sides took the talks public and unveiled the Joint Plan of Action (JPOA), an interim agreement, in November 2013. The JPOA provided for limited sanctions relief, allowing Iran to gain access to \$7 billion in frozen assets between January and November 2014. In exchange, Iran agreed not to enrich uranium beyond 5%, dilute the concentration of its 20% enriched uranium, and not install new centrifuges. Initially providing six months for negotiations to continue, the parties extended the window for talks in July 2014 and again in November 2014.

The P5+1 and Iran came to a Framework Agreement in Lausanne in March 2015. And the final Joint Comprehensive Plan of Action (JCPOA) was concluded in Vienna on July 14, 2015. Broadly, the terms of the JCPOA lifted nuclear-related sanctions in exchange for Iran uninstalling two-thirds of its centrifuges, limiting enrichment to 3.67%, shipping out nearly all of its enriched uranium, and changing the design of its Arak reactor core. Intrusive inspections, including novel monitoring of the nuclear supply chain and uranium mills, would verify Iranian compliance with these limitations. The JCPOA's terms amounted to a “dramatic reduction in Iranian nuclear capabilities.”²⁸

Why was Iran willing to make these concessions between 2012 and 2015? The following sections detail how Iran's coercers matched credible and painful threats with coercive assurance. The specific mechanisms of Coercive Assurance Theory—that targets concede when coercers complement credible threats with disentangled demands, coercive control, and reduced visibility—are affirmed.

²⁸ Miller, *Stopping the Bomb* (2018), p. 238.

Military and Economic Threats

Of course, Iran had to be credibly threatened with military force. American force posture in the Persian Gulf was highly visible and prepared for air strikes on short notice. Procurement and deployment of the GBU-57 Massive Ordnance Penetrator (MOP) “bunker buster” bomb signaled that Washington could hold the deeply buried Fordow centrifuge facility at risk. The Pentagon perfected war plans and exercised them regularly. Washington’s somewhat arbitrary choice of “one year of breakout time” as the key measurement of Iranian nuclear capability during the negotiations reflected this logic of military action—one year was considered long enough to detect and destroy a clandestine Iranian weaponization effort.

U.S. force posture changes were explicitly coercive. “We carried out a very aggressive deployment of aerial and supporting assets to multiple countries in the region, and in a conspicuous way so that Iran could see that we could pursue a military strike if we wanted,” recalls Jake Sullivan, National Security Advisor to the Vice President. “It had also emerged publicly that we had the capability to hold Fordow at risk.” Second, the Obama administration’s rhetoric about using force changed toward the end of 2012. “It went from ‘all options on the table’ to specifics from Obama himself about American resolve and willingness to strike. And the Iranians saw this,” said Jake Sullivan.²⁹ Iranians perceived these threats clearly, Sullivan believes. In negotiations, “the Iranians sought negative security assurances from the United States—that we would not attack—and even, I believe, some kind of language that would include Israel as well.”³⁰

²⁹ Reid Pauly telephone interview with Jake Sullivan, March 27, 2018.

³⁰ Ibid.

The Obama administration also ramped up the ongoing coalitional campaign to coerce Iran economically, organizing an intense multilateral sanctions regime.³¹ The details of this campaign are discussed in the last section.

These punishments hurt. Iran's GDP contracted by 9% from 2012 to 2014.³² Analysts estimated in 2015 that given the pre-2012 growth trajectory, the Iranian economy was 10-15% smaller in 2015 than it would have been without sanctions.³³ The value of its currency (rial) fell by 56% from 2012 to 2014, causing inflation to reach 40%.³⁴ Iran's total exports fell from \$145 billion in 2011-2012 to \$98 billion in 2012-2013, and continued to fall thereafter. Crude oil exports fell by 50% 2011-2013.³⁵ While a 2012-2015 loss of \$160 billion in revenue for the oil sector was painful,³⁶ the prospect of even more pain was intense, as oil was trading over \$100 a barrel through Fall 2014—any volatility would be felt even more. While there were many reasons for Iranian economic malaise,³⁷ sanctions clearly had an effect. Economic mismanagement exacerbated these effects and impeded coping.

³¹ Note that the threats of military force and sanctions are inextricably linked. Partner nations, such as Russia and China, would likely not have agreed to impose and abide by multilateral sanctions had they not believed that the alternative to sanctions was war.

³² "The Iran Primer: Iran's Economy, By the Numbers," United States Institute of Peace, May 11, 2015, <<https://iranprimer.usip.org/blog/2015/may/11/irans-economy-numbers>>.

³³ Ibid.

³⁴ Ibid.

³⁵ Nephew, *The Art of Sanctions* (2018), p. 139.

³⁶ Tabatabai, "Negotiating the 'Iran talks' in Tehran" (2017), p. 233. See also "The Iran Primer: Iran's Economy, By the Numbers," 2015.

³⁷ Such factors include "...over reliance on oil exports for revenues; state dominance of the economy where the government or state-affiliated entities own approximately 65-70% of the economy; a poor tax base that provides only 7 percent of GDP; rampant tax evasion; high subsidies accounting for approximately 18-30 percent of GDP; the favoring of high-technology industries (e.g. nuclear energy and space technologies) to the detriment of more traditional, labor-intensive industries; and the existence of a black market economy that accounts for approximately 20 percent of GDP." Reynolds and Wan, "Empirical trends in sanctions and positive inducements," in Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (2012), p. 80.

Impediments to Assurance

Yet in compelling Iran, coercers struggled with both coercion commitment problems—coercive restraint and snowballing demands. Barriers to credible assurance came in three forms. (1) Tehran feared that nuclear-related sanctions might easily be relabeled missile-related or terrorism-related and in practice remain in effect. (2) Domestic and international opponents—the U.S. Congress and Israel, respectively—were not party to the negotiations and were therefore potential spoilers even if Iran acquiesced. (3) Iranian leaders feared acquiring a reputation for backing down and did not wish to admit the extent of their concessions.

The Supreme Leader himself made many according statements about the lack of assurance he perceived from Iran's coercers, especially the United States. He commonly referred to the United States as “obstinate, unreliable, dishonest and into backstabbing.”³⁸ He believed that the United States would seek to sanction Iran regardless of its behavior or the contents of a deal.³⁹ “No one should imagine that the enemy may stop its enmity and maliciousness,” Khamenei said. “Once you forget and trust the enemy, then the enemy finds the chance to pursue its goals in the country.”⁴⁰ And on sanctions relief, Khamenei demanded specifics: “Everything lies in the details. [...] The other side, which is known for backpedaling on its commitments, may want to corner our country when it comes to the specifics.”⁴¹ Khamenei further perceived domestic disagreements in the United States about sanctions relief for Iran. In April 2015, in his first speech since the unveiling of a Framework Agreement, Khamenei warned, “I have told the

³⁸ Karl Vick, “The 3 Things the Ayatollah Wanted to Achieve in His Defiant Speech,” *Time*, April 15, 2015, <<http://time.com/3823976/ayatullah-khamenei-speech-iran-negotiations/>>.

³⁹ On this perception see also Tabatabai, “Negotiating the ‘Iran talks’ in Tehran” (2017), p. 238.

⁴⁰ Thomas Erdbrink, “Iran’s Supreme Leader Is Skeptical of Nuclear Talks with U.S.,” *New York Times*, January 7, 2015, <https://www.nytimes.com/2015/01/08/world/middleeast/irans-supreme-leader-is-skeptical-of-nuclear-talks-with-us.html>

⁴¹ Faith Karimi and Deirdre Walsh, “Iran: No signing final nuclear deal unless economic sanctions are lifted,” *CNN*, April 9, 2015, <<http://www.cnn.com/2015/04/09/politics/iran-nuclear-bill/>>.

officials to not trust the opposing side, to not be fooled by their smiles, to not trust their promises because when they have achieved their objectives they will laugh at you.... After every round of talks they make public comments that they then tell us in private was meant to save face in their own country and to counter their opponents, but this is their own problem and has nothing to do with us.”⁴² Finally, the proud Supreme Leader demanded respect. Any agreement must “ensure the interests and dignity of the (Iranian) nation,” he declared, and must “safeguard national interests and dignity.”⁴³

There is some evidence that Obama officials were aware of these Iranian perceptions, and therefore sought to coercively assure Iran. Under Secretary of State for Political Affairs and lead negotiator of the JCPOA Wendy Sherman reflected that the White House was sensitive to the “long, bitter history” between Iran and the United States; overcoming this meant “operating not solely from a position of overwhelming power but treating Iran as a party who could bargain credibly...”⁴⁴ Sherman further acknowledged that “power can be a burden...negotiations rarely come down to a simple calculation of who has more of it.”⁴⁵ Indeed, the United States and its partners possessed a massive relative power advantage over their coercive target. Power and threat alone was insufficient, however, as the United States had to mitigate Iran’s assurance concerns by communicating domestic and international Coercive Control and by Reducing Visibility.

⁴² Kay Armin Serjoe, “U.S. Cannot Be Trusted, Iran’s Supreme Leader Says,” *Time*, April 9, 2015, <http://time.com/3815110/us-iran-khamenei-lausanne/>

⁴³ Karimi and Walsh, “Iran: No signing final nuclear deal unless economic sanctions are lifted,” 2015.

⁴⁴ Sherman, *Not for the Faint of Heart* (2018), p. 26.

⁴⁵ *Ibid.*, p. 63.

Coercive Control: Domestic

Entangled Sanctions, INARA, and Domestic Coercive Control

Coercive control for the United States in the Iran case took two forms: domestic and international. Domestically, the White House had to circumvent congressional opposition to sanctions relief. Moreover, as further evidence that coercive control was necessary for target concession, this control had to be demonstrated before Iran would strike a coercive bargain. In its absence, Iranian negotiators did not believe that striking a bargain would actually result in an end to severe sanctions punishment. American officials were aware of this concern. “Iranian negotiators were very worried about whether they would get sanctions relief or whether there would be some kind of bait and switch to keep existing sanctions,” recalls Jake Sullivan.⁴⁶

The prospect of lifting sanctions was far from straightforward. Sanctions against Iran had not developed linearly or predictably. They were rather aptly described as a spider web, “mutated over three decades...imposed by a variety of actors and aimed at a wide range of objectives.”⁴⁷ These objectives (demands) included curtailing nuclear proliferation, ballistic missile development, support for terrorism, and human rights violations.⁴⁸ Only “nuclear-related” sanctions were to be lifted under the JCPOA. Indeed, negotiating over the discrete nuclear issue alone, disentangling it from other issues of concern to Iran’s coercers, helps to explain why Iran came to the table at all. Nonetheless, Iran needed to know from its coercers which nuclear-related sanctions would be lifted and which non-nuclear ones would not. As Amb. Wendy Sherman reflected, “[Sanctions were a] very tangled mess and we just had to make judgements

⁴⁶ Reid Pauly telephone interview with Jake Sullivan, March 27, 2018.

⁴⁷ Ali Vaez, “Spider Web: The Making and Unmaking of Iran Sanctions,” *International Crisis Group* (February 2013).

⁴⁸ Samore (ed.), “Sanctions Against Iran: A Guide to Targets, Terms, and Timetables” (2015), p. 19.

about which sanctions would continue and which sanctions were nuclear-related and would be lifted...to give them enough of a benefit to make it worthwhile.”⁴⁹

Two prime examples of this disentanglement effort were (1) the fate of sanctions against the Central Bank of Iran and (2) UN sanctions. First, Iran’s Central Bank was subjected to US and EU sanctions that essentially severed it from international financial markets. In taking such action, the United States and the EU “emphasized the central bank’s role in money laundering—helping other evade sanctions.”⁵⁰ As one former Obama administration official observed prior to the conclusion of the JCPOA, this action was “not strictly ‘nuclear-related’” yet Iran was unlikely to agree to any deal that left the CBI disconnected from the global financial system.⁵¹ In the end, the two sides split the difference, keeping the Central Bank of Iran designated as a money laundering concern yet unfreezing its foreign assets and reconnecting it to the SWIFT communications system.⁵² Where possible, the definition of what was “nuclear-related” was essentially relaxed.

⁴⁹ Reid Pauly interview with Amb. Wendy Sherman, Cambridge, MA, March 18, 2019.

⁵⁰ The basis of this money laundering charge was a whole basket of “Iran’s support for terrorism; pursuit of weapons of mass destruction (WMD); reliance on state-owned or controlled agencies to facilitate WMD proliferation; and the illicit and deceptive financial activities that Iranian financial institutions – including the Central Bank of Iran – and other state-controlled entities engage in to facilitate Iran’s illicit conduct and evade sanctions.” U.S. Department of the Treasury, “Fact Sheet: New Sanctions on Iran,” November 21, 2011, <<https://www.treasury.gov/press-center/press-releases/Pages/tg1367.aspx>>. The Obama administration also pointed to the recommendations of the Financial Action Task Force (FATF)—“a multilateral standard-setting body for anti-money laundering and combating the financing of terrorism”—when it issued the designation. “Iran Sanctions,” *Congressional Research Services*, February 4, 2019, <<https://fas.org/sgp/crs/mideast/RS20871.pdf>>.

⁵¹ Samore (ed.), “Sanctions Against Iran: A Guide to Targets, Terms, and Timetables” (2015), pp. 23-24.

⁵² Post-JCPOA, Iran was also allowed to make progress toward eliminating punishments associated with the money laundering designation. On June 24, 2016, Iran filed an “action plan” with FATF, which suspended “countermeasures” and reupped the suspension in June and November 2017 and February 2018. Iran has been given until February 2019 to satisfactorily implement anti-terrorism financing measures. Iran has unsuccessfully sought an exception for its support to Hezbollah and Hamas. The matter is ongoing. “Iran Sanctions,” *Congressional Research Services*, February 4, 2019, <<https://fas.org/sgp/crs/mideast/RS20871.pdf>>.

Second, UN resolutions meant to coerce Iran entangled sanctions for both nuclear proliferation and ballistic missile development. Sanctions could not simply be rescinded, therefore, as only nuclear-related punishments were to be lifted under any deal. Iran and its coercers overcame with entanglement by negotiating a wholly new UN Security Council resolution, which endorsed the JCPOA, lifted prior sanctions, but maintained ballistic missile authorities. Iran would not agree to any concessions without this disentanglement. In fact, Wendy Sherman reports that this UN resolution language was the very last piece of the puzzle to fall into place before Iran agreed to the deal.⁵³

The terms of the JCPOA itself bear out Iranian fears. The text spells out that it would be a violation of the bargain to reimpose the same sanctions with other justifications (e.g. replacing nuclear sanctions with terrorism sanctions).⁵⁴ “Iran was very concerned about this,” recalls Jon Wolfsthal, who served as senior director for arms control and nonproliferation at the National Security Council.⁵⁵ “The Iranians were skeptical of this,” concurred former State Department Special Advisor for Nonproliferation and Arms Control Robert Einhorn.⁵⁶ “It was understood early on that any deal would be a quid pro quo – nuclear restrictions in exchange for sanctions relief,” Einhorn assessed, “It just wasn’t clear where we would draw the line—which sanctions would be lifted and which would remain.”⁵⁷

Coercers in part allayed Iran’s concerns with specifics. Of the negotiating process, Jake Sullivan recalls that, “Iran’s main interest was in making sure that the deal included annexes on

⁵³ This final agreement on the UN resolution was made on July 12, 2015. Sherman, *Not for the Faint of Heart* (2018), pp. xii, 63. In accordance with this final agreement, the unanimously adopted UN Security Council Resolution 2231 provided for an eight-year restriction on Iranian (nuclear-capable) ballistic missile activities and a five-year ban on conventional arms transfers. “Addressing Iran’s Ballistic Missiles in the JCPOA and UNSC Resolution,” *Arms Control Association* 7, 8 (July 27, 2015).

⁵⁴ U.S. Department of State, “Joint Comprehensive Plan of Action,” <<https://www.state.gov/e/eb/tfs/spi/iran/jcpoa/>>.

⁵⁵ Reid Pauly telephone interview with Jon Wolfsthal, March 21, 2018.

⁵⁶ Reid Pauly interview with Robert Einhorn, March 22, 2018.

⁵⁷ Reid Pauly interview with Robert Einhorn, March 22, 2018.

the specifics of entities that would experience relief—on whom and what sanctions would be lifted. And then they wanted to walk through in detail how exactly sanctions relief would work.”⁵⁸

Even more important to Iran’s prospect of sanctions relief was the question of who would be doing the lifting. The sanctions facing the biggest impediment to removal were American. European sanctions are imposed and lifted by a unanimous decision of the European Council.⁵⁹ These are easier to lift and harder to reimpose. Most American sanctions, however, were enshrined in legislation and could only be repealed by Congress.⁶⁰ As a Republican majority controlled the legislature, observers rightly concluded at the time that “permanently terminating US sanctions in the short term is nearly impossible.”⁶¹ Instead, the sanctions would have to be suspended through presidential waiver, an Executive authority provided for in the original sanctions legislation. Allowable waivers varied in length (30 days up to a year) but were renewable.⁶²

Tehran perceived these American domestic impediments to sanctions relief. According to Richard Nephew, then Principal Deputy Coordinator for Sanctions Policy at the Department of State, “the Iranians specifically asked us: ‘What if a Republican takes over? What will you do?’”⁶³

Congressional opposition also inserted itself into the process in such a way that the Iranians could not have missed. On March 9, 2015, forty-seven Republican senators sent an open

⁵⁸ Reid Pauly telephone interview with Jake Sullivan, March 27, 2018.

⁵⁹ Samore (ed.), “Sanctions Against Iran: A Guide to Targets, Terms, and Timetables” (2015), p. 20.

⁶⁰ *Ibid.*, p. 19.

⁶¹ *Ibid.*, p. 20.

⁶² *Ibid.*

⁶³ Reid Pauly interview with Richard Nephew, Harvard Kennedy School, Cambridge, MA, April 16, 2018.

letter addressed to the leaders of Iran.⁶⁴ Explaining the U.S. Constitution, the letter warned Iran that treaties required ratification by two-thirds of the Senate and that executive agreements could be undone by “the stroke of a pen.” White House officials were livid.

Obama officials first tried to assure Iran by pointing out “historic consistency in American foreign policy.” “Historically there has been inertia to agreements,” recalls Nephew, “so, we said, there is more space here than you think. We also told them that if a future Administration backed out it would be criticized by the rest of the world, and they understood this could be to their advantage.”⁶⁵ But more needed to be done to assert the White House’s coercive control—that it alone would impose or relieve punishments. Even if a deal would not be a treaty, Congress could spoil an agreement on sanctions relief by passing new ones.⁶⁶ To rein in this potential spoiler, the administration negotiated a new piece of legislation: INARA.

In parallel with the formal negotiations abroad, the Obama administration negotiated with a Republican congress to bound congressional oversight of any sanctions waivers.⁶⁷ Opponents originally conceived of legislation as a poison pill to a nuclear deal, attempting to require the president to certify Iran’s lack of support for terrorism a regular intervals—a provision that would have re-entangled nuclear and non-nuclear demands.⁶⁸ With interlocutors Senators Cardin and Corker, the Ranking Member and Chairman of the Senate Foreign Relations Committee, the executive and legislative branches pursued a creative compromise along the following terms: Congress could act to disapprove the bill by a certain deadline (eventually decided to be

⁶⁴ “Letter from Senate Republicans to the Leaders of Iran,” *New York Times*, March 9, 2015, <<https://www.nytimes.com/interactive/2015/03/09/world/middleeast/document-the-letter-senate-republicans-addressed-to-the-leaders-of-iran.html>>.

⁶⁵ Reid Pauly interview with Richard Nephew, Harvard Kennedy School, Cambridge, MA, April 16, 2018.

⁶⁶ Sherman, *Not for the Faint of Heart* (2018), p. 170.

⁶⁷ Sherman writes that the administration and the negotiating team had “largely ignored the question of congressional approval” until the Lausanne framework was agreed to in March 2015. Then the end game began.

⁶⁸ Ultimately, the actual INARA legislation only required the president to periodically recertify Iranian compliance with the JCPOA.

September 17, 2015); but if they did not disapprove, it would stand. “This gave members the option of a ‘pocket’ approval,” writes Sherman, “in which nobody had to go on the record with a vote at all.”⁶⁹ Additionally, if opposition to the deal did force a vote and a majority disapproved, the White House could veto the legislation to preserve the deal. Thus, only a two-thirds majority in each chamber could upend a deal.

Rallying senators to this compromise was a feat. “Many members of the Senate and House were reluctant to give up sanctions because they had been so successful in getting Iran to the table,” recalled Sherman, expressing frustration at poor instincts about coercive assurance. “We tried to explain to these opponents that the sanctions were a tool.”⁷⁰ “A lot of people believe that sanctions stop bad behavior and they actually don’t,” Sherman elaborated in an interview, “They compel people to come to the negotiating table, but they rarely change the behavior itself.”⁷¹

The White House’s full court press needed to work to communicate coercive assurance. According to Kahl, “Initially we were trying to avoid an INARA and then we shifted to just getting INARA right. If INARA had required ratification, Iran would have said that that was never going to happen.”⁷² He continued, “We said to the Iranians: ‘we wrote the legislation to be able to have the votes.’”⁷³ Iran was watching carefully to see what happened.

The result was the Iran Nuclear Agreement Review Act (INARA), passed by the Senate (98 to 1⁷⁴) on May 7 and then the House (400 to 25) on May 14, 2015—two months to the day before the JCPOA was finalized. INARA formalized the White House’s position that any deal

⁶⁹ Sherman, *Not for the Faint of Heart* (2018), p. 175.

⁷⁰ Sherman, *Not for the Faint of Heart* (2018), p. 198.

⁷¹ Reid Pauly interview with Amb. Wendy Sherman, Cambridge, MA, March 18, 2019.

⁷² Reid Pauly interview with Colin Kahl, Stanford, CA, November 2, 2018.

⁷³ Reid Pauly interview with Colin Kahl, Stanford, CA, November 2, 2018.

⁷⁴ Senator Tom Cotton, orchestrator of the earlier letter from 47 Senators, was the lone ‘nay’ vote.

would be considered an “executive agreement,” not a “treaty” that required Senate ratification. President Obama would therefore be free to waive by executive order many nuclear-related sanctions.⁷⁵ “Had INARA failed, we could not have signed [the JCPOA]. But INARA came together in a complementary way before the final agreement was signed,” said Jon Wolfsthal.⁷⁶ And Robert Einhorn assessed that, “The Iranians were confident that Obama could waive sanctions. INARA provided for very weak oversight. INARA’s passage essentially guaranteed that the JCPOA would enter into force.”⁷⁷ The timing of INARA passage before finalization of the JCPOA is evidence in favor of Coercive Assurance Theory—coercive control was necessary for target concessions.

P5+1 Partners and Multilateral Assurance of Sanctions Relief

The United States was of course the indispensable negotiating partner in the JCPOA, so it was critical that Washington be a part of the process to demonstrate coercive control. Earlier coercive diplomacy with Iran and European states had failed in large part because Washington was on the sidelines. As Sherman writes, “there was more than a little truth to the idea that the nuclear talks were fundamentally between the United States and Iran. ... if a deal escaped us, it would be up to the United States to take military action to stop Iran from gaining the bomb... The deal was ours to make, even if we couldn’t make it alone.”⁷⁸ Iran appreciated this necessity as well. In the words of the Head of the Atomic Energy Organization Ali Salehi, “If we hadn’t

⁷⁵ Albeit with recurring waivers and congressional oversight. But Iran had already seen such waivers work in the JPOA interim agreement, which allowed by presidential waiver the sale of some crude oil, the export of petrochemicals and gold and precious metals, suspended some automotive industry sanctions, and unfroze about \$700 million monthly (about \$12 billion by the end of the interim agreement).

⁷⁶ Reid Pauly telephone interview with Jon Wolfsthal, March 21, 2018.

⁷⁷ Reid Pauly interview with Robert Einhorn, March 22, 2018.

⁷⁸ Sherman, *Not for the Faint of Heart* (2018), p. 61.

negotiated with the US, the reality was, we wouldn't have reached a deal with the P5+1. ... We couldn't have moved forward with the others.”⁷⁹

At the same time, the presence of multiple coercing partners assured Iran that sanctions relief would be forthcoming after it struck a deal. One party's reneging on sanctions relief would be both more costly to the reneger and less costly to Iran. According to Colin Kahl, Iran “believed that other actors—the UNSC, the EU, and other countries—would constrain the United States. They believed that if the US reneged, they would be the ones isolated and not Iran.”⁸⁰ Wendy Sherman agreed that “the genius of the deal was that it gave Iran nowhere to turn to evade its provisions. By the same token, it made it harder for any one nation to unravel the agreement.”⁸¹

As for multilateral sanctions relief in the final JCPOA, the parties agreed to another creative solution called “Snap Back.” Russian foreign minister Lavrov is credited with devising this mechanism,⁸² whereby “any P5+1 member could demand a vote in the Security Council if it believed that Iran was in violation of the deal.” Moreover, the subsequent UNSC resolution “would be in the affirmative—that is, it would confirm that sanctions relief would continue. Any one country could then veto that resolution, snapping back the sanctions.”⁸³ The solution gave Iran confidence in sanctions relief, and the United States confidence that it could bring pressure on Iran to enforce the deal.

For analysis of the Trump administration's decision to reimpose sanctions, and the fallout thereof, see section three of this chapter.

⁷⁹ Ibid., p. 62.

⁸⁰ Reid Pauly interview with Colin Kahl, Stanford, CA, November 2, 2018.

⁸¹ Sherman, *Not for the Faint of Heart* (2018), p. 64.

⁸² Ibid., p. 199.

⁸³ Ibid.

Post-JCPOA Lessons, Sanctions Relief Purgatory

After the conclusion of the JCPOA (but pre-Trump), the United States experienced a lesson in the subtleties of coercive assurance and the realities of turning off financial sanctions. “We haven’t had much experience unraveling sanctions,” reflected Einhorn after the deal, “These sanctions [on Iran] were so interrelated that it is hard to unwind them.”⁸⁴ In its construction of Iran sanctions, the United States seems not to have considered the problem of assurance or at most assumed it was axiomatic. Einhorn, an architect of the Iran sanctions regime, recollected that “our message to partners was that sanctions pressure was necessary to give us leverage to get meaningful limits on Iran’s nuclear program. That they would be lifted in the event of a deal was implicit in that message.”⁸⁵

Iran was concerned about the credibility of sanctions relief during the negotiations. Zarif observed during negotiations that “the United States is obsessed with sanctions.”⁸⁶ Perhaps pursuing them for their own sake. Tabatabai cites interviews with senior Iranian officials who complained during negotiations about the lack of clarity on sanctions relief. One senior official described it as insufficient “reassurance” that “the sanctions that needed to be lifted would indeed be lifted.”⁸⁷ And Iranian and American officials both reported a disagreement over terminology. Americans preferred to call it “suspension” of sanctions, while the Iranians preferred “termination.”⁸⁸ Sherman reports “in the delicacy of negotiations” both sides landed on the word “lifted.”⁸⁹

⁸⁴ Reid Pauly interview with Robert Einhorn, March 22, 2018.

⁸⁵ Reid Pauly interview with Robert Einhorn, March 22, 2018.

⁸⁶ Suzanne Maloney, “Reading Between the Red Lines: An Anatomy of Iran’s Eleventh-Hour Nuclear Negotiating Strategy,” Brookings Institution, October 16, 2014.

⁸⁷ Quoted in Tabatabai, “Negotiating the ‘Iran talks’ in Tehran” (2017), p. 239.

⁸⁸ Cited in Tabatabai, “Negotiating the ‘Iran talks’ in Tehran” (2017), p. 239.

⁸⁹ Sherman, *Not for the Faint of Heart* (2018), p. 200.

After the deal, the Iranians claimed to be in a purgatory of sorts, having received sanctions relief yet still waiting to see the effects of punishment subside.⁹⁰ In the words of the Ayatollah, “Today, all across Western countries and those who are under their impact, our banking restrictions are still facing problems and repatriation of our assets are facing problems. ... The United States is severely working not to allow the deal’s results to become beneficial for the Islamic Republic. ... they have threatened us through other sanctions.”⁹¹

The Obama administration attempted to further overcome these assurance problems with outreach to the private sector to explain the terms of the JCPOA and smooth legitimate business with Iran. As Gary Samore assessed prior to the conclusion of the JCPOA, “Many international corporations, stung by billions of dollars of fines meted out by the U.S. government, will not be eagerly re-establishing relationships with Iran.”⁹² It proved true.

The administration’s intention to conduct this outreach to the private sector was in fact communicated to the Iranians during the negotiations.⁹³

To be sure, the Iranian economy did see benefits from the JCPOA. Iran’s GDP expanded by 13.4% in 2016, due in large part to the unleashing of the oil and gas sector.⁹⁴ And, of course, there were many domestic reasons why business was slower to return than expected. The Iranian economy is rife with corruption, a stifling bureaucracy, and a lack of transparency. Banks might not want to get involved anyway, regardless of the fate of the JCPOA.

⁹⁰ Bozorgmehr Sharafedin, “Iran says may withdraw from nuclear deal if banks continue to stay away,” *Reuters*, February 22, 2018, <<https://www.reuters.com/article/us-iran-usa-nuclear/iran-says-may-withdraw-from-nuclear-deal-if-banks-continue-to-stay-away-idUSKCN1G610S>>.

⁹¹ “Iran leader accuses US of renegeing on nuclear deal,” *Times of Israel*, March 20, 2016, <<http://www.timesofisrael.com/iran-leader-accuses-us-of-renegeing-on-nuclear-deal/>>.

⁹² Samore (ed.), “Sanctions Against Iran: A Guide to Targets, Terms, and Timetables,” (2015), pp. 24-25.

⁹³ Reid Pauly telephone interview with Jon Wolfsthal, March 21, 2018.

⁹⁴ “The Iran Primer: Iran’s Troubled Economy, By the Numbers,” United States Institute of Peace, January 10, 2018, <<https://iranprimer.usip.org/blog/2018/jan/10/iran's-troubled-economy-numbers>>.

American policymakers learned in the aftermath of the deal that relief should be considered in the construction of sanctions regimes. For instance, Richard Nephew regretted that in the process of imposing and enforcing sanctions, the United States had intentionally fostered the myth of omnipresent Islamic Revolutionary Guard Corps (IRGC) fingerprints throughout the Iranian economy. As Nephew writes, “the intent of the US strategy was to make the IRGC and Iran inseparable concepts with the aim of chilling even still legal forms of business.”⁹⁵ Under the JCPOA, the IRGC remained a sanctioned entity for non-nuclear issues; the belief in its tentacles was sticky.⁹⁶ On balance, Nephew assessed that elevating the IRGC boogie man may not have been worth it.⁹⁷ Post-JCPOA, Nephew believes that the United States, and the Treasury Department in particular, is “learning to be more discrete with sanctions over specific issues. No more omnibus sanctions against entire countries. And our designations are getting cleaner; being specific about what an entity is designated for.”⁹⁸

Coercive Control: International (Israel)

Internationally, “coercive control” communicates that threats will not be carried out if the coercer does not wish them to be carried out. There will be no spoiler. In negotiations with Iran over its nuclear program, both the United States and Israel possessed the primary tool of coercion: a credible threat of military force. Before a deal could be struck, however, the United States had to convince the Iranians that if anyone were to carry out an airstrike on Iranian nuclear

⁹⁵ Nephew, *The Art of Sanctions* (2018), p. 131.

⁹⁶ In an attempt to overcome this problem, the US Treasury issued an update to legal guidance in late 2016 that clarified that “transactions with IRGC-controlled entities might not necessarily be sanctionable” post-JCPOA. Nephew called it an “extraordinary step.” Nephew, *The Art of Sanctions* (2018), p. 132. Robert Einhorn, too, pointed to the problem of the IRGC in sanctions relief: “Sanctions against the IRGC remain. The problem is that the IRGC has vast economic interests in Iran. So you don’t know if you’re dealing with the IRGC. There is a lack of transparency in the Iranian economy.” Reid Pauly interview with Robert Einhorn, March 22, 2018.

⁹⁷ Reid Pauly interview with Richard Nephew, Harvard Kennedy School, Cambridge, MA, April 16, 2018.

⁹⁸ Reid Pauly interview with Richard Nephew, Harvard Kennedy School, Cambridge, MA, April 16, 2018.

facilities it would be the United States, and not Israel alone. The United States had to demonstrate resistance to “reckless driving” by its ally.⁹⁹ The United States thus tried to communicate that Israel, a state not officially party to the bargaining process, would nonetheless be bound by an agreement and not act as a spoiler. It is suggestive evidence in favor of Coercive Assurance Theory and against Threat Credibility Theory that Tehran came to the table only after the window for an Israeli strike closed. Threat Credibility Theory predicts that targets will concede when threats are most credible; waiting to concede until after an unpredictable actor closes the door on a strike is inconsistent with such a theory.¹⁰⁰

The White House took this signaling effort seriously. “There was genuine concern that the Israeli government might launch such a strike,” said William Burns in an interview.¹⁰¹ Jon Wolfsthal concurred, “There was some recognition that the Israelis were another party, like Congress, with whom we had to contend.”¹⁰² And according to Colin Kahl, Israel presented a spoiler to the whole American coercive effort: “We were not confident that the Iranians would even be able to tell if they were struck whether it had been the US or the Israelis. It would just look like fighter aircraft anyway, and we owned Iraqi airspace at the time.”¹⁰³

⁹⁹ On the moral hazard problem of “reckless driving,” see Barry Posen, *Restraint: A New Foundation for U.S. Grand Strategy*, (Ithaca, NY: Cornell University Press, 2014).

¹⁰⁰ Other theorists have difficulty explaining this puzzling timing of Iran’s concessions. Nicholas Miller, for example, argues that Iran’s security environment had little to do with its willingness to bargain after 2012. I argue that Iran’s security remained in doubt, but that the reduction of a threat from a potential spoiler aided American coercion. I believe I provide another answer to Miller’s puzzle: “while it is possible that Iran restrained its nuclear program partly in order to avoid preventive attack on its nuclear facilities, it is unclear why Iran would make this decision only in the 2013-2015 period.” Miller, *Stopping the Bomb* (2018), p. 239.

¹⁰¹ William Burns Interview with Daniel Sobelman. Quoted in Sobelman, “Restraining an Ally: Israel, the United States, and Iran’s Nuclear Program, 2011-2012,” (2018).

¹⁰² Reid Pauly telephone interview with Jon Wolfsthal, March 21, 2018.

¹⁰³ Reid Pauly interview with Colin Kahl, Stanford, CA, November 2, 2018. A U.S. strike would have caused greater damage, however, so I think it is likely that a post hoc damage assessment would have made the attacker clear.

The Israeli Debate about Iran (2002-2010)

When the Obama administration developed a policy to restrain Israel from acting on its own, it waded into an Israeli debate that had been going on for years. Ever since discovering secret enrichment facilities at Natanz in 2002, Israel had considered striking. At the time, instead of attacking, Prime Minister Sharon decided to sound the alarm by leaking the discovery to an Iranian dissident group.¹⁰⁴ Israel then adopted a “five front strategy” to counter Iranian efforts. Developed by Meir Dagan, the strategy pursued: 1) political pressure, 2) covert measures, 3) counterproliferation, 4) sanctions, and 5) regime change.¹⁰⁵ With the inclusion of the final category, the Israeli plan lacked any bargaining space or coercive assurance. Dagan emphasized that fostering domestic ethnic opposition to the regime “will bear fruit in due time, especially if they are given more attention.”¹⁰⁶ Israeli Mossad, likely under the direction of Meir Dagan and through a unit known as Caesarea, also coordinated a covert sabotage and assassination campaign.¹⁰⁷

Ehud Barak, Prime Minister Olmert’s defense minister (2007-2009), further directed IDF chief of staff Gaby Ashkenazi “to develop a plan for a surgical strike to destroy the most important facilities in the Iranians’ nuclear network.” Barak soon learned that Israel lacked the necessary penetrating munitions and aerial refueling capacity to strike Iran.¹⁰⁸

Barak tried to bolster Israel’s arsenal by requesting these military capabilities in meetings with U.S. Defense Secretary Robert Gates, CIA Director Michael Hayden, National Security Advisor Steve Hadley, and President George W. Bush. His requests for more heavy munitions

¹⁰⁴ This was the National Resistance Council. On the leak, see Bergman, “Will Israel Attack Iran?” 2012.

¹⁰⁵ Bergman, “Will Israel Attack Iran?” 2012.

¹⁰⁶ Specifically, Israel has reportedly provided financing for the MEK and Jundallah, and training to Iranian Kurds. Ibid.

¹⁰⁷ Ibid.

¹⁰⁸ Ehud Barak, *My Country, My Life: Fighting for Israel, Searching for Peace* (St. Martin’s Press, 2018), p. 417.

and to lease American tankers were rebuffed. Gates recalls in his memoir that he recommended denying Israeli requests for certain military items that, if transferred, would suggest American tacit support for a strike on Iran.¹⁰⁹ The United States should not be “handing over the initiative,” he thought. Barak further recalls a meeting in June 2008, in which President Bush made clear “that he knew what we were up to.” After a dinner, over whiskey and cigars, Barak recalls, “the president looked straight at me, and said to Olmert, ‘this guy scares the living shit out of me when he tells me what you want.’” Bush added, more explicitly, “We are totally against any action by you to mount an attack on the nuclear plants. ... We expect you not to do it. And we’re not going to do it, either, as long as I am president.”¹¹⁰ Barak believes that Bush left confident that Israel was incapable of an independent strike.¹¹¹

Despite his efforts, Barak assessed that Israel still did not have the capability to strike Iran when he became defense minister to the Netanyahu government in May 2009.¹¹² His aim was to acquire the capability to strike before Iran’s nuclear program entered a “zone of immunity”—a point at which damage from an Israeli strike would be “too negligible to be worth the operational, political, and diplomatic risks.”¹¹³

What followed were several critical months of military preparations and debates about whether to strike, which in Barak’s words was “both an internal debate among Israel’s political and military leadership and discussions with the Obama administration.”¹¹⁴ Below I assess

¹⁰⁹ Robert M. Gates, *Duty: Memoirs of a Secretary at War*, (New York: Alfred A Knopf, 2014), p. 190.

¹¹⁰ Ehud Barak, *My Country, My Life: Fighting for Israel, Searching for Peace* (St. Martin’s Press, 2018), p. 417. Sobelman also writes that in May 2008 Bush denied Israeli Prime Minister Olmert a so-called “green light” to attack Iran’s nuclear sites. Sobelman, “Restraining an Ally: Israel, the United States, and Iran’s Nuclear Program, 2011-2012,” (2018).

¹¹¹ Barak, *My Country, My Life* (2018), p. 418.

¹¹² Barak, *My Country, My Life* (2018), p. 418.

¹¹³ Barak, *My Country, My Life* (2018), pp. 424-425.

¹¹⁴ Barak, *My Country, My Life* (2018), p. 425.

factors that influenced these internal and external deliberations to test whether and how Washington demonstrated coercive control over Israel as a potential spoiler.

The Israeli Debate about an Independent Strike (2010-2012)

Internally, Israeli policymakers debated a strike on Iran at the highest levels of government and mostly within the “Group of Eight” (or Octet)—an informal security cabinet made up of senior ministers of the Israeli Prime Minister’s governing coalition.¹¹⁵ Despite the need for secrecy in this small forum, there was no shortage of leaks and vote counting in public—who did and who did not support a strike.¹¹⁶ The climax of strike deliberations occurred in the Spring and Summer of 2012. By Fall 2012, public reports of imminent Israeli strikes had waned.

Barak was believed to be the leading proponent of a strike by Israel analysts.¹¹⁷ Yet two other members of the Octet, Dan Meridor and Benny Begin, were opposed to a strike from the

¹¹⁵ Under Israeli law, major national security decisions must be approved by either a majority of the full 30-member cabinet or by a ministerial committee on national security (also called the Security Cabinet, made up of 15 members of the full cabinet). (Membership in the Security Committee has fluctuated as cabinet members changed. It may have up to 15 members. The Security Cabinet had 14 or 15 members for the period I am most concerned with. As of this writing, it has 13 members, as Netanyahu has not appointed a Defense Minister or a Foreign Minister and assumed those portfolios himself.) In effect, this means that eight votes carry the day, so an “Octet” meets to discuss sensitive decisions before there is a vote. It operates by informal consensus. Fail to convince the “Group of Eight” and you don’t get to strike Iran. In March 2012, the Group of Eight consisted of Bibi Netanyahu, Eli Yishai (ultra-Orthodox Shas party leader), Ehud Barak (defense minister), Dan Meridor (Likud party, a deputy prime minister and minister of intelligence and atomic energy), Moshe Ya’alon (Likud party, a deputy prime minister and minister of strategic affairs), Benny Begin (Likud party, minister without portfolio), Yuval Steinitz (Likud party, finance minister), and Avigdor Lieberman (leader of the Yisrael Beytenu party, foreign minister). Eli Lake, “Meet the Israeli ‘Octet’ That Would Decide an Iran Attack,” *The Daily Beast*, March 9, 2012. The Octet remained unchanged in September 2012. The rest of the National Security Cabinet included: Silvan Shalom (Vice PM, Regional Development Minister), Yitzhak Aharonovitch (Internal Security Minister), Yaakov Ne’eman (Justice Minister), Gideon Sa’ar (Education Minister), Uzi Landau (National Infrastructure Minister), and Ariel Atlas (Housing and Construction Minister). Jim Zanotti, et al., “Israel: Possible Military Strike Against Iran’s Nuclear Facilities,” *Congressional Research Service*, September 28, 2012, p. 24.

¹¹⁶ See, for example, Anshel Pfeffer, “Will They?,” *Tablet*, November 18, 2011; Jodi Rudoren and David E. Sanger, “Report on Iran Puts Israel in a Box,” *New York Times*, August 30, 2012; and Nathaniel Kern and Matthew M. Reed, “Netanyahu’s Divided Cabinet, Foreign Reports Bulletin,” *Middle East Policy Council*, September 19, 2012.

¹¹⁷ Eli Lake, “Meet the Israeli ‘Octet’ That Would Decide an Iran Attack,” *The Daily Beast*, March 9, 2012.

start.¹¹⁸ In Barak’s telling, “ministers who opposed a strike argued that we should rely on American economic and political pressure to deal with the threat. And if that failed, on *American* military action.”¹¹⁹ In other words, they granted the United States control over the tools of coercion. Other ministers’ views vacillated over time. For instance, a November 2011 report said that Benny Begin and Moshe Ya’alon were “currently opposed to an attack” citing Iranian retaliation.¹²⁰

The assessments of Israel’s military and intelligence leadership—the head of Mossad and chief of staff of the IDF especially—also matter greatly to the outcome of Group of Eight decisions. These establishment voices were the most consistently opposed to a strike. For instance, when Israel came closest to striking Iran in 2010, the Group of Eight¹²¹ met at a Mossad facility near Tel Aviv in November for a briefing on an attack plan. The Group agreed at that meeting that the chief of staff (“and ideally the heads of military intelligence and Mossad”) would have to sign off on the plan before it could be executed. To the hawks’ dismay, the chief of staff, Lt Gen Gaby Ashkenazi, did not approve the plan, saying that Israel had not yet “crossed the threshold of operational capability.”¹²² Barak, who personally believed Israel was capable, instead believed Ashkenazi to have “political reservations along the lines of those voiced by Dan Meridor.”¹²³ But consensus eluded the Group. No strike occurred.

It was also reported that in 2010 Netanyahu ordered a military high alert in preparation for a strike—a so called “P Plus” status, reserved for pre-attack phases. Senior military and intelligence officers strongly objected. Chief of staff Ashkenazi feared that enemies would notice

¹¹⁸ Barak, *My Country, My Life* (2018), p. 425.

¹¹⁹ *Ibid.*

¹²⁰ Anshel Pfeffer, “Will They?,” *Tablet*, November 18, 2011.

¹²¹ The chief of staff, head of military intelligence, and the commander of the air force also attended the meeting.

¹²² Barak, *My Country, My Life* (2018), p. 427.

¹²³ Barak, *My Country, My Life* (2018), pp. 425, 427.

the change in posture and launch a preemptive war. “The accordion produces music when you play with it,” he said. The Mossad chief, Meir Dagan, also reportedly decried the decision as illegal because Netanyahu had not received the approval of the Security Cabinet.¹²⁴

Meir Dagan and Gaby Ashkenazi were two of the more opinionated voices against a strike. Dagan told a group of reporters in January 2010 that striking Iran was “a foolish idea,” a strike would not halt the Iranian efforts, and Israel possessed “no such military capability” anyway. He admitted that he sometimes raised his voice and lost his temper when communicating this assessment to other Israeli policymakers.¹²⁵

Both men were removed—Dagan in early 2011 and Ashkenazi in February 2011—in a likely effort by Netanyahu to eliminate obstacles to a strike. Dagan spoke out afterwards to the press, saying, “I decided to speak out because when I was in office, [Yuval] Dishkin, Ashkenazi and I could block any dangerous adventure. Now I am afraid there is no one to stop Bibi and Barak.”¹²⁶

But their successors held the line. Tamir Pardo replaced Dagan as head of Mossad and testified to the Knesset in 2011 that he did not think an Iranian nuclear weapon was an “existential” threat.¹²⁷ Ashkenazi’s replacement, Benny Gantz, was also hesitant to support a strike.¹²⁸ Opposition then seemed to increase over time. According to Barak, in late 2011, “there were still voices of opposition within the inner group of eight: not just Dan Meridor and Benny

¹²⁴ “Netanyahu Reportedly Backed Off Preps for Iran Strike in 2010 amid rift with Israel’s Military,” *CBS News*, November 8, 2012.

¹²⁵ Bergman, “Will Israel Attack Iran?” 2012.

¹²⁶ Ethan Bronner, “A Former Spy Chief Questions the Judgment of Israeli Leaders,” *New York Times*, June 3, 2011.

¹²⁷ Lake, “Meet the Israeli ‘Octet’ That Would Decide an Iran Attack,” 2012. See also Pardo’s reported opposition to a strike in 2011. Chris Pleasance, “It was Not a Drill,” *Daily Mail*, May 31, 2018, <<https://www.dailymail.co.uk/news/article-5790089/Ex-Israeli-spy-chief-Netanyahu-planned-Iran-strike-2011.html>>.

¹²⁸ Jim Zanotti, et al., “Israel: Possible Military Strike Against Iran’s Nuclear Facilities,” *Congressional Research Service*, September 28, 2012, p. 26; and in March 2012 General Benny Gantz was still reported to be against a strike, see Lake, “Meet the Israeli ‘Octet’ That Would Decide an Iran Attack,” 2012.

Begin by the minister for strategic affairs, Boogie Ya'alon, and Finance Minister Yuval Steinitz. This meant that we could not count on passing a resolution to go ahead with the operation.”¹²⁹

Overall, many sources concur that Israel's national security chiefs consistently opposed a strike on Iran.¹³⁰ American counterparts perceived the Israeli debate similarly. In the assessment of Colin Kahl, “The Israelis pushing back most against Netanyahu and Barak were the military and intelligence professionals. These professionals didn't believe that we wouldn't come to their aid, they likely thought that we would; but they rightly perceived a threat to strategic long-term US-Israeli relations.”¹³¹

Israel's Capability to Strike

The question most basic to its internal debate was whether Israel was capable of carrying out a mission to cause sufficient damage to set back the Iranian nuclear program. As discussed, cabinet officials disagreed on this matter. A senior official reportedly told the Israeli Cabinet in September 2011: “We have no ability to hit the Iranian nuclear program in a meaningful way.”¹³² Dagan and Ashkenazi concurred with the pessimistic assessment. Barak was more confident.

It would have, in fact, been very challenging for the Israeli military to strike Iran during the critical years of deliberation (2010-2012). Two critical variables limited Israel's capability: the target set's distance from Israel and its resilience to Israeli munitions.

Among what surely would be a longer target list for an air strike are Iran's four major nuclear complexes: the Natanz pilot and commercial centrifuge facilities, the Fordow centrifuge

¹²⁹ Barak, *My Country, My Life* (2018), p. 429. See also, Barak Ravid, “Barak: Steinitz, Ya'alon Thwarted Iran Strike in 2011,” *Ha'aretz*, Aug 23, 2015.

¹³⁰ See also Sobelman, “Restraining an Ally: Israel, the United States, and Iran's Nuclear Program, 2011-2012,” (2018).

¹³¹ Reid Pauly interview with Colin Kahl, Stanford, CA, November 2, 2018.

¹³² Jim Zanotti, et al., “Israel: Possible Military Strike Against Iran's Nuclear Facilities” (2012), p. 35.

facility, the Esfahan uranium conversion facility, and the heavy water reactor and heavy water production facility at Arak.¹³³ These targets are 1,000 miles from Israel. The 1981 strike on Iraq's Osirak reactor was only about 600 miles from Israel; the jets made it to Baghdad and back without refueling. For an Iran mission, however, Israeli jets would have to refuel once or twice, depending on the availability of tanker support. To get to Iran, Israeli aircraft would also have to fly over foreign air space—a combination of Jordan, Saudi Arabia, Syria, Turkey, or Iraq (air space controlled by the United States at the time)—round trip. Doing so undetected would be difficult without American support.

According to the 2013 IISS Military Balance, the Israeli Air Force had 252 ground-attack fighter aircraft—25 F-15Is and 227 F-16 variants—and 143 other fighter aircraft of F-15 and F-16 varieties.¹³⁴ None of these aircraft are capable of ranging 1,000-mile targets without refueling. As for tankers, in 2012 Israel had available two KC-130s and seven KC-707s. In 2011, Israel had five KC-130s and only four 707-based tankers.¹³⁵ A 2009 CSIS analysis, conducted even before the deeply buried Fordow facility was revealed, assessed that Israel would need twelve tankers to carry out a mission against Iran.¹³⁶ Israel's tanker fleet fell short of this requirement.¹³⁷

Second, and an even more challenging military problem, Natanz and Fordow are difficult targets to destroy because they are hardened. Natanz's commercial facility is reportedly

¹³³ The light-water reactor at Bushehr and the research reactor in Tehran could have been added to the target list; perhaps also certain suspicious buildings at Parchin, in addition to various other air defense sites.

¹³⁴ "Chapter Seven: Middle East and North Africa," *The Military Balance 2013*, 113, 1 (2013), p. 385.

¹³⁵ Jim Zanotti, et al., "Israel: Possible Military Strike Against Iran's Nuclear Facilities" (2012), p. 37.

¹³⁶ Abdullah Toukan and Anthony H. Cordesman, "Study on a Possible Israeli Strike on Iran's Nuclear Development Facilities," Center for Strategic and International Studies, Washington, DC, March 8, 2009.

¹³⁷ It is possible that Israel developed work arounds to this problem of range—e.g. buddy refueling, or forward basing—but such planning is not public and, regardless, would not have overcome the greater challenge of weaponizing.

“hardened by steel-reinforced concrete, buried underground, and covered by earth.”¹³⁸ Fordow is dug into the side of a mountain, up to 220 feet deep.¹³⁹

Considering available Israeli munitions, these hardened structures would be difficult to penetrate. In 2012, Israel ordinance included GBU-27 2000-pound bombs that can penetrate more than six feet of reinforced concrete and GBU-28 5000-pound bombs that can penetrate 20 feet of concrete and 100 feet of earth.¹⁴⁰ For deeply buried targets, like Fordow, Israel could destroy the entrances, but unlikely the facility itself.¹⁴¹

Influencing the Israeli Debate about an Independent Strike

Externally, the Obama administration weighed in heavily to Israel’s deliberations. The United States and Israel had the same goal—an Iran without nuclear weapons—but their risk tolerances were different. Israel’s security was more threatened by an Iranian bomb. Thus, the United States and Israel had different thresholds for the use of military force. Aptly summed up by former head of Israeli military intelligence Amos Yadlin in March 2012, “The U.S. has promised not to allow Iran to have the bomb, but can Israel rely on this promise? That is the key to what Israel may decide to do.”¹⁴²

In this section, I assess American efforts at restraint according to terms laid out by Israeli policymakers themselves. In a January 2012 interview, Ehud Barak listed three criteria that Israel

¹³⁸ Jim Zanotti, et al., “Israel: Possible Military Strike Against Iran’s Nuclear Facilities” (2012), p. 14.

¹³⁹ The 220 feet depth was reported in the New York Times, sourced to Israeli intelligence. See Bergman, “Will Israel Attack Iran?” 2012. Lindeman and Webster report that Fordow is buried below 295 feet of rock. Todd Lindeman and Bill Webster, “Hardened Targets,” *Washington Post*, March 1, 2012. Diagram reprinted in Jim Zanotti, et al., “Israel: Possible Military Strike Against Iran’s Nuclear Facilities” (2012), p. 40.

¹⁴⁰ Jim Zanotti, et al., “Israel: Possible Military Strike Against Iran’s Nuclear Facilities” (2012), p. 38.

¹⁴¹ These munitions would likely be sufficient to destroy the buried facilities at Natanz. For a weaponeering assessment of the munitions against a facility such as Natanz, see Whitney Raas and Austin Long, “Osirak Redux?: Assessing Israeli Capabilities to Destroy Iranian Nuclear Facilities,” *International Security*, Vol. 31, No. 4 (Spring 2007), pp. 15-20.

¹⁴² Quoted in Jim Zanotti, et al., “Israel: Possible Military Strike Against Iran’s Nuclear Facilities” (2012), p. 21.

would need to consider in launching a strike: 1) Israel's ability (to cause severe damage and ride out counterattack), 2) international legitimacy (overt or tacit support, particularly from the United States), and 3) exhaustion of other alternatives (force as a last resort).¹⁴³ Criteria 2 and 3 are obviously related. Washington tried to influence all three. And, perhaps, none of these criteria were met.

Capabilities. Colin Kahl described Washington's strategy to restrain Israel as a policy of "big hugs, little punches." "The Israeli threat to strike was highest in 2010-2012," said Kahl, during which time "the hugs were: shared intelligence, generous military aid, emphasizing that the US goal was 'prevention and not containment' (Obama said this explicitly at an AIPAC event as a message to the Israelis¹⁴⁴), insight into our military planning, sharing details on the MOPs ['Massive Ordnance Penetrator' bunker-busting bombs]—which Israel could not deliver and they knew we could. The little punches were: we've got this, not you; don't strike; if you do, Americans could die, and we won't help you."¹⁴⁵

Note the emphasis on capabilities. First, the United States attempted to influence Israeli debate about its own capabilities. It did so by withholding critical assistance (tankers, bunker busters) for the Iran mission while bolstering American capabilities to carry out the mission and sharing military plans with Israel.

Second, the Obama administration sought to reassure Israel of its commitment to its defense. Generous military assistance to help Israel maintain its qualitative edge in the region

¹⁴³ Bergman, "Will Israel Attack Iran?" 2012.

¹⁴⁴ In President Obama's speech to AIPAC on March 4, 2012, he summed up what had long been his direct message to reassure the Israelis: "I understand the profound historical obligation that weighs on the shoulders of Bibi Netanyahu and Ehud Barak," said Obama, "A nuclear-armed Iran is completely counter to Israel's security interests. But it is also counter to the national security interests of the United States ... I will not hesitate to use force when it is necessary to defend the United States and its interests." Remarks by the President at AIPAC Policy Conference, Washington, DC, March 4, 2012, <<https://obamawhitehouse.archives.gov/the-press-office/2012/03/04/remarks-president-aipac-policy-conference-0>>.

¹⁴⁵ Reid Pauly interview with Colin Kahl, Stanford, CA, November 2, 2018.

increased, perhaps in an effort to buy off the Israeli security establishment. The U.S. military aid package announced a few months after the conclusion of the JCPOA totaled \$38 billion over ten years, a more than 25% increase.¹⁴⁶ Assets critical to the mission of striking Iran, such as tankers and advanced penetrating munitions, were still withheld.

The United States also bolstered its own military footprint in the region. The United States sent an additional aircraft carrier to the Gulf in late 2011, amid heightened visible Israeli military preparations.¹⁴⁷ Such movements were meant to signal resolve to both the Iranians and the Israelis. “Obama had to signal to both the Iranians and the Israelis that he was willing to take military action,” said Kahl, “We put an extra aircraft carrier in the gulf; more fighter aircraft in Bahrain and the UAE; more advanced aircraft, F-22s on essentially permanent rotation in the region; more Patriot batteries in the region; and we publicized our exercises.”¹⁴⁸

Additionally, in a January 2012 report, Pentagon officials stated that the United States was working to improve the 30,000 pound “Massive Ordnance Penetrator,” in an effort to “ensure the weapon would be more effective against the deepest bunkers, including Iran’s Fordow enrichment plant facility.”¹⁴⁹ Leon Panetta said directly in an interview that the bunker

¹⁴⁶ Ehud Barak felt Israel could have used the moment as leverage to secure even more military support from the United States. Instead, Netanyahu tried to fight the Iran deal and involve himself in American domestic politics as though he were a member of the Republican party. In Barak’s assessment, the US military aid package announced a few months after the JCPOA, which totaled \$38 billion over ten years, “could have been worth up to an additional seven billion dollars” if Netanyahu had used his leverage right. Barak, *My Country, My Life* (2018), p. 448.

¹⁴⁷ Sobelman, “Restraining an Ally: Israel, the United States, and Iran’s Nuclear Program, 2011-2012,” (2018).

¹⁴⁸ Reid Pauly interview with Colin Kahl, Stanford, CA, November 2, 2018. Interestingly, there was some internal discussion in the Obama administration about the necessary publicity of military deployments. “There was some disagreement between the Pentagon and the White House about how much to publicize our military presence. The Pentagon wanted to publicize a lot but the White House wanted to signal without boxing Iran in. We wanted to say ‘we are serious about a military option but we’re not going to wag it in your face,’ because if we did then backing down would look like weakness in front of their people,” Colin Kahl recalled. Reid Pauly interview with Colin Kahl, Stanford, CA, November 2, 2018.

¹⁴⁹ Adam Entous and Julian E. Barnes, “Pentagon Seeks Mightier Bomb vs. Iran,” *Wall Street Journal*, January 28, 2012.

buster munitions were meant to reassure and rein in the Israelis.¹⁵⁰ “They can’t do it right without us,” an anonymous former Obama advisor said tersely.¹⁵¹

In the eyes of the Israelis, what changed over time was their perception of the degree of concerted American operational planning for a strike. This increase in capability and focused attention reassured the Israeli’s of their reliance on the United States. “During the first couple of years that Israel worked on acquiring the capability for a military strike against Iran,” writes Barak, “the Americans had been no more ready than we were. They had tanker aircraft and heavy bombs, but their *plan* was so obviously prone to lead to a wider conflict that it would never have received the go-ahead.” However, Barak continues, “by the time I met the president in 2012, that had changed. ... The Americans now had high precision heavy munitions we couldn’t dream of, and stealth air-attack capabilities we also lacked.” His final assessment was that the United States “had the operational capability to launch an attack that, within a period of hours, could push the Iranian nuclear program back by years, and that, even if the Iranians knew the strike was coming, they’d be powerless to stop.”¹⁵²

Israeli policymakers indeed received American signals. By some accounts, Israeli security chiefs were “talking to their U.S. counterparts ‘on a daily basis.’”¹⁵³ Moreover, former Israeli national security advisor Major General (ret.) Yaakov Amidror recalled to me that, “the Obama administration was the first administration to take seriously military planning for a strike on Iran. Before Obama, no president asked for an Iran military solution plan. The Obama administration came up with a military plan and exercised it. Israel was satisfied by the plan.”¹⁵⁴

¹⁵⁰ Sobelman, “Restraining an Ally: Israel, the United States, and Iran’s Nuclear Program, 2011-2012” (2018).

¹⁵¹ Quoted in Jodi Rudoren and David E. Sanger, “Report on Iran Puts Israel in a Box,” *New York Times*, August 30, 2012.

¹⁵² Barak, *My Country, My Life* (2018), p. 433.

¹⁵³ Sobelman, “Restraining an Ally: Israel, the United States, and Iran’s Nuclear Program, 2011-2012” (2018).

¹⁵⁴ Amidror further noted that the Obama administration’s credibility was diminished after it failed to enforce its red line over chemical weapons use in Syria in 2013. Importantly, the Syria red line issue arose only after Israel had

Legitimacy. As for Israel's criteria of "international legitimacy," the Obama administration made no secret of the fact that it opposed unilateral Israeli action, hoping to dispel any notion of even tacit support for an independent strike. Barak knew at the time of becoming defense minister to Netanyahu that Obama wished to prevent an Israeli attack.¹⁵⁵ Many private and public messages from "Obama, Panetta, and other top officials" warned of the "dire consequences of a strike."¹⁵⁶ American intelligence also monitored Israeli military bases and airwaves for signs of mobilization, watching extra close on tactically-advantageous moonless nights.¹⁵⁷

The Obama administration also attempted to amplify the voices of Israeli leaders who opposed a strike. For instance, in June 2012, President Obama awarded Shimon Peres the Presidential Medal of Freedom. Shortly thereafter, Peres publicly opposed a unilateral attack and said that he was "convinced...after having had talks with him [Obama]" that "we are not alone."¹⁵⁸

Finally, the Obama administration used high-level visits to Israel as a means of forcing delays. It would be even more of a thumb in the eye of Washington to conduct an uncoordinated strike while a senior member of the American government was visiting and in harm's way for Iranian retaliation. In 2012, Chairman of the Joint Chiefs Martin Dempsey, Secretary of State

closed the door on an independent strike. Reid Pauly interview with Major General (Res.) Yaakov Amidror. Harvard Kennedy School, December 6, 2017.

¹⁵⁵ Barak, *My Country, My Life* (2018), p. 424.

¹⁵⁶ Sobelman, "Restraining an Ally: Israel, the United States, and Iran's Nuclear Program, 2011-2012" (2018).

¹⁵⁷ *Ibid.*. Sobelman cites Adam Entous, Julian E. Barnes, and Jay Solomon, "U.S. Warns Israel on Strike," *Wall Street Journal*, Jan. 14, 2012; Adam Entous, "Spy vs. Spy: Inside the Fraying U.S.-Israel Ties," *Wall Street Journal*, Oct. 22, 2015; and Adam Entous and Danny Yadron, "U.S. Spy Net on Israel Snares Congress," *Wall Street Journal*, Dec. 29, 2015.

¹⁵⁸ Jeffrey Heller, "Israel's Peres against any solo Iran attack, trusts Obama," *Reuters*, August 16, 2012, <<https://www.reuters.com/article/us-israel-iran/israels-peres-against-any-solo-iran-attack-trusts-obama-idUSBRE87F0M620120816>>. Also cited in Daniel Sobelman, "Restraining an Ally: Israel, the United States, and Iran's Nuclear Program, 2011-2012," *Texas National Security Review* (August 14, 2018).

Hillary Clinton, Secretary of Defense Leon Panetta, and National Security Advisor Tom Donilon all visited Israel.¹⁵⁹ The administration “figured that Israel couldn’t launch an attack when the vice president was on his way, or Tom Donilon was on his way, or Gen. Dempsey was on his way,” Gary Samore told Sobelman. Visits were “a very conscious, deliberate strategy to stop the Israelis from attacking.”¹⁶⁰ With high-level visits, “You buy yourself three weeks at a time. The week or two before the visit, the week or two after the visit. ... it was definitely part of our strategy,” concurred former U.S. ambassador Shapiro.¹⁶¹

Overall, the Obama administration made it difficult for Israeli leaders to pull the trigger independently. Many officials, attuned to Israel’s historical reliance on American power patronage, perceived the necessity of American support or “at least their *understanding*” for an attack strike.¹⁶² None was provided.

Alternatives to Force. Finally, preventing the “exhaustion of other alternatives,” the Obama administration made the case for diplomacy and sought to coordinate details of the coercive diplomacy with Israel. Israeli intelligence especially found productive partners in the Treasury Department, where Israeli intelligence helped to enforce and tighten sanctions. Keeping the coercive diplomacy route open removed the imperative of an immediate strike in the minds of some Israelis; especially since a strike would eliminate the prospect of a negotiated solution. “We’re trying to persuade them [Israel] that a strike that just drives the program more underground isn’t a solution; it’s a bigger problem,” said a former Obama advisor anonymously.¹⁶³

¹⁵⁹ Jim Zanotti, et al., “Israel: Possible Military Strike Against Iran’s Nuclear Facilities” (2012), p. 1.

¹⁶⁰ Sobelman, “Restraining an Ally: Israel, the United States, and Iran’s Nuclear Program, 2011-2012” (2018).

¹⁶¹ Ibid.

¹⁶² Barak, *My Country, My Life* (2018), p. 428.

¹⁶³ Quoted in Jodi Rudoren and David E. Sanger, “Report on Iran Puts Israel in a Box,” *New York Times*, August 30, 2012. President Obama articulated this logic in a 2013 press briefing as well—striking Iran preventively would push the Iranian regime to pursue a nuclear weapon “even more vigorously.” “Statement by the President on the

These sentiments did not, however, prevent the United States from working with Israel to covertly sabotage the Iranian nuclear program. Although few details are public, it is widely understood that the United States assisted in the Stuxnet cyberattack, possibly motivated by a desire to reassure Israel.¹⁶⁴ This kinetic action did not significantly impede the progress of Iranian centrifuge program (LEU production at Natanz continued to increase during Stuxnet's deployment).¹⁶⁵ The Iran case remained, therefore, a coercive effort and not a brute force one.

Israel Closes the Door on an Independent Strike

As Coercive Assurance Theory would predict, Israel closed the door to acting independently before Iran came to the negotiating table. Israeli deliberation over whether to strike Iran peaked in late 2011 and early-to-mid 2012. In November 2011, Barak began assessing that Iran would reach a zone of immunity within a year, "probably three-quarters."¹⁶⁶ And a "very senior Israeli" told a reporter in January 2012 that Iran would reach the zone of immunity within 6-9 months.¹⁶⁷ Secretary of Defense Panetta assessed in February 2012 that there was a "strong likelihood that Israel would strike Iran in April, May, or June."¹⁶⁸

Facing what Ehud Barak called Israel's "decisive session" and "final decision" on whether to strike, Israel rescheduled a joint military exercise with the United States from April to October 2012.¹⁶⁹ This gave Israeli leadership an intense spring and summer to consider striking

Affordable Care Act," November 14, 2013. <<http://www.whitehouse.gov/the-press-office/2013/11/14/statement-president-affordable-care-act>>. And Robert Gates agreed in his memoir that he was "convinced that a foreign military attack would... rally the Iranian people behind their government." Robert Gates, *Duty: Memoirs of a Secretary at War* (New York: Alfred A Knopf, 2014), 389.

¹⁶⁴ Sobelman, "Restraining an Ally: Israel, the United States, and Iran's Nuclear Program, 2011-2012" (2018).

¹⁶⁵ Jon R. Lindsay, "Stuxnet and the Limits of Cyber Warfare," *Security Studies* 22, 3 (2013), pp. 365-404.

¹⁶⁶ Sobelman, "Restraining an Ally: Israel, the United States, and Iran's Nuclear Program, 2011-2012" (2018).

¹⁶⁷ Bergman, "Will Israel Attack Iran?" (2012).

¹⁶⁸ David Ignatius, "Of a Mind to Attack Iran," *Washington Post*, February 3, 2012.

¹⁶⁹ Barak calls it a "final decision" and Sobelman calls it a "decisive session." Sobelman shows that Barak intimated to Panetta that the possibility of an Iran strike was the reason for the cancellation. Sobelman, "Restraining an Ally:

before U.S. military personnel arrived and were in harm's way for retaliation. "The logical time for us to consider an attack was the summer of 2012," Barak writes.¹⁷⁰ As discussed above, the Obama administration took action and the Chairman of the Joint Chiefs was sent to Israel almost immediately.¹⁷¹

Barak took this time to consult with U.S. leaders.¹⁷² All of his interlocutors attempted to dissuade him from striking. Barak recalls especially that Panetta, who urged him to "think twice, three times" before pulling the trigger, said a strike would undermine months of building economic pressure on Iran.¹⁷³ And Obama analogized Iran to a schoolyard bully, whom Israel could only give a black eye, but the United States could knock out cold. "The only problem is that your friend won't be there until the afternoon," the President said seeking a delay.¹⁷⁴

Benjamin Netanyahu also met with President Obama in the White House on March 5, 2012. Just prior to their meeting, an anonymous senior official told the press of the agenda: "We're trying to make the decision to attack as hard as possible for Israel."¹⁷⁵ Netanyahu reportedly told the president in the Oval Office that no decision had yet been made on whether to strike.¹⁷⁶

The flurry of activity ended not with a bang, but a whimper. Barak and Netanyahu still had not secured the support the Group of Eight and Security Cabinet. Dan Meridor and Benny

Israel, the United States, and Iran's Nuclear Program, 2011-2012" (2018). Sobelman also clarifies that "Domestically, the cancellation was falsely portrayed as a joint decision resulting from U.S. budgetary constraints and a mutual desire to avoid sending a bellicose signal to Iran."

¹⁷⁰ Barak, *My Country, My Life* (2018), p. 435.

¹⁷¹ Sobelman suggests that this delay was aimed at scaring Washington. I am more interested in it as a culmination of Israeli decisionmaking: would they, or wouldn't they? Coercion is counterintuitively given more room to succeed if the spoiler opts against independent action. Sobelman, "Restraining an Ally: Israel, the United States, and Iran's Nuclear Program, 2011-2012" (2018).

¹⁷² He met with Panetta, Donilon, Clinton, and Obama. Barak, *My Country, My Life* (2018), p. 430.

¹⁷³ Barak, *My Country, My Life* (2018), p. 431.

¹⁷⁴ *Ibid.*, p. 433.

¹⁷⁵ Scott Wilson, "In Meeting, Obama to Warn Netanyahu Against Military Strikes on Iran," *Washington Post*, March 2, 2012.

¹⁷⁶ Barak Ravid, "Netanyahu Tells Obama: I have yet to decide whether to attack Iran," *Ha'aretz*, March 6, 2012.

Begin “seemed more strongly opposed,” while “several senior members of the military and security establishment...also retained political reservations.”¹⁷⁷ Ultimately, there was no culminating moment. The plan fizzled out.¹⁷⁸

The preceding discussion has taken many first-hand accounts at face value. Naturally, these reports are self-serving and selective. It is too soon in the history to corroborate these perspectives with primary documents. I note, however, inconsistencies that must be considered. First, I have shown that Israel was both incapable of conducting an effective independent strike against Iran and that it considered it carefully until closing the door in 2012. The former speaks to capability and latter to intent, which interact. Target perceptions of threat are informed by both; therefore, both must be considered by scholars of coercion. Nevertheless, the inconsistency suggests that Israeli leaders who advocated for a strike saw value in the military option beyond its kinetic effects. This leads to a second alternative interpretation: that the target of an Israeli strike would not have been the Iranian facilities themselves but the whole diplomatic route. P5+1 negotiations would not have survived an Israeli use of force. If true, the assessment of Israeli intent should take precedence over the analysis of its capabilities. Yet the results for Coercive Assurance Theory would be the same—coercers must signal control over spoilers, whether those

¹⁷⁷ Barak, *My Country, My Life* (2018), p. 435.

¹⁷⁸ As Barak tells it, “as we neared our final, formal decision ... we were forced into another delay.” Soon, “as more American soldiers and sailors arrived [for upcoming joint exercises],” he writes, “I finally realized that an Israeli strike would not be possible.” “No matter how we might explain our attack,” Barak writes, “with joint exercises about to begin, it would come across as a deliberate attempt to implicate our most important ally in a potential conflict with Iran, against the explicit wishes and policy of President Obama and the U.S. government.” In Barak’s words, an Israeli strike was “now in effect off the agenda.” Barak, *My Country, My Life* (2018), pp. 435-436. In August 2012, Netanyahu appointed Avi Dichter, a former head of Shin Bet, as Home Front Defense Minister and reportedly invited him to participate in Group of Eight meetings. This was potentially a last ditch effort to have another voice supporting an Iran strike. Yet, by this point, Ehud Barak had reportedly changed his mind and now opposed a strike on Iran. See Yossi Verter, “Reshuffling the deck: Barak now opposes Israeli strike on Iran, sources say,” *Ha’aretz*, September 7, 2012; and Jim Zanotti, et al., “Israel: Possible Military Strike Against Iran’s Nuclear Facilities,” *Congressional Research Service*, September 28, 2012, p. 3. In September 2012, Ehud Barak met with (then mayor of Chicago) Rahm Emanuel and told him that he no longer wanted to strike Iran; supposedly without telling Netanyahu. Sobelman, “Restraining an Ally: Israel, the United States, and Iran’s Nuclear Program, 2011-2012” (2018). Barak resigned as Defense Minister on November 26, 2012.

spoilers are capable of full military solutions or merely capable of upending coercive diplomacy with incomplete brute force.

Publicizing Israeli Involvement in Negotiations

Importantly, the United States recognized that the ultimate receivers of its signals to Israel were in Tehran. Indeed, I find evidence of American efforts to make these signals of “coercive control” unmistakable. For instance, Tom Donilon and Susan Rice, national security advisors to President Obama, established a US-Israeli consultation group that met on a regular basis to discuss the Iran portfolio. As JCPOA negotiations deepened, the United States also welcomed Israeli technical experts to consult on the details. Washington then publicized its consultations with Israelis. In the words of Brigadier General (ret.) Yaacov Nagel, former national security advisor to Benjamin Netanyahu, “Israel and Washington could keep the consultations secret, but the U.S. decided not to do so. Maybe the U.S. did it in order to ‘hug’ Israel publicly so that they could claim Israel was part of the deal.” (Nagel was clear to add that, “Israel was never part of the talks or the deal and insisted on saying it during the consultations. The deal came out very bad, but the consultations made it a little bit less bad.”)¹⁷⁹

The Outcome

Ultimately, Israel chose not to act as a spoiler to the JCPOA coercive bargain. To the Iranians, U.S.-Israeli coordination communicated that Israel was unlikely to act independently.

¹⁷⁹ Reid Pauly interview with BG (Res.) Yaacov Nagel at MIT on December 5, 2017.

The United States demonstrated coercive control,¹⁸⁰ and only afterwards did Iran come to the table willing to make concessions.

Obama administration officials believe that their strategy succeeded. “Iranians made no distinction between the US and Israel,” said Colin Kahl, “They assumed that if Israel attacked it would be with American permission.”¹⁸¹

IAEA Board of Governors records also show that Iranian officials were well aware of Israeli threats to strike. During the Bush administration, Iranian representative Soltanieh often mentioned Israeli threats in conjunction with American threats in his remarks. “The threat of armed attack against Iran’s peaceful nuclear installations by the United States of America and Israel had increased,” Soltanieh complained in November 2006.¹⁸² “The United States and Israel had been making daily high-level threats to attack,” he said in 2007, noting “Israel’s current and past behavior in making threats against safeguarded nuclear facilities,” a reference to the 1981 bombing of Osiraq.¹⁸³ And in March 2012, he condemned an attack by either the United States or Israel.¹⁸⁴ However, when Soltanieh spoke about the prospect of military attack in November 2012, he did not make any distinction between the United States and Israel, mentioned neither by

¹⁸⁰ Some might also suggest that Saudi Arabia could have been a potential spoiler in coercive bargaining. I do not treat it as such, since the Saudis were not capable of independent military operations to destroy Iranian nuclear facilities. As a wealthy regional power and Iran’s traditional nemesis, Saudi Arabia rather needed to be mollified by the United States. Saudi incentives to proliferate, for instance, were an issue. The Obama administration mollified Saudi opposition to the Iran negotiations with generous arms sales and by turning a blind eye to its brutal war in Yemen. The policy continued under the Trump administration with the signing of a \$110 billion arms deal in May 2017, and the re-inclusion of precision-guided munitions that the Obama administration had put on hold for fear of their use in the Yemeni civil war. The Trump arms package also included maritime assets for policing the Persian Gulf and a THAAD missile defense radar system. Mark Landler, Eric Schmitt, and Matt Apuzzo, “\$110 Billion Weapons Sale to Saudis Has Jared Kushner’s Personal Touch,” *New York Times*, May 18, 2017.

¹⁸¹ Reid Pauly interview with Colin Kahl, Stanford, CA, November 2, 2018.

¹⁸² IAEA Board of Governors, “Record of the 1174th Meeting,” November 23, 2006, GOV/OR.1174, p. 10. IAEA Archives, Vienna, Austria.

¹⁸³ IAEA Board of Governors, “Record of the 1180th Meeting,” March 7, 2007, GOV/OR.1180, p. 13. IAEA Archives, Vienna, Austria.

¹⁸⁴ IAEA Board of Governors, “Record of the 1324th Meeting,” March 8, 2012, GOV/OR.1324, p. 11. IAEA Archives, Vienna, Austria.

name, only that “a military attack would not stop enrichment in Iran.”¹⁸⁵ Discussion of military strikes waned at meetings thereafter as negotiations progressed. The fading in the records of explicit references to Israeli military action is weak evidence that Iran perceived this American coercive control—any strike would be American and not Israeli.

It also likely helped for the perception of control that Tehran tends to see American puppeteering behind every Israeli action. As Jake Sullivan diagnosed, “Israel is perceived by many, entirely incorrectly, to be a pawn of the United States. In terms of our ability to conduct coercive diplomacy, I think we actually benefitted from this perception in the Iran case.”¹⁸⁶

Reducing Visibility (Especially PMD)

Once direct coercive bargaining with Iran began, coercers also had to navigate the contentious issue of Iran’s past nuclear weaponization activities. This issue was manifest most intensely in the IAEA’s open file on the ‘Possible Military Dimensions’ (PMD) of Iran’s nuclear program. Multiple American administrations had demanded that Iran “come clean.”¹⁸⁷ The issue imperiled negotiations.

Consistent with Coercive Assurance Theory, the United States pursued the matter strategically. Washington purposely focused on gathering enough intelligence for verification in the future while carving out deniable space for Iran to save face—reducing visibility.

To evaluate these propositions, I seek to answer three questions about Iran’s nuclear weapons program: How much did coercers know? How much did Iran (im)plausibly deny? Did

¹⁸⁵ IAEA Board of Governors, “Record of the 1341st Meeting,” November 30, 2012, GOV/OR.1341, p. 14. IAEA Archives, Vienna, Austria.

¹⁸⁶ Reid Pauly telephone interview with Jake Sullivan, March 27, 2018.

¹⁸⁷ “Bush says Iran must ‘come clean’ on nuclear program,” *Reuters*, December 5, 2007, <<http://www.reuters.com/article/us-iran-usa-bush-speech-idUSWAT00853220071205>>.

coercers intentionally withhold information to allow Iran to save face? Interviews help to answer these questions, but scholars also have an opportunity to evaluate the empirics of this case because of the post-JCPOA revelations of a tranche of Iranian documents stolen by Israel. I compare the post-JCPOA revelations of empirical data on the Iranian nuclear program to pre-JCPOA IAEA documents.

This exercise establishes with fair confidence that coercers' knowledge of the Iranian nuclear weapons program exceeded that which they pushed Iran to admit. For the purpose of striking a coercive bargain, therefore, Iran was allowed to save face and hide its past nuclear sins. In other words, Iran denied a lot of nuclear activity that other sources can confirm.¹⁸⁸ Iran's coercers and even the IAEA knew much of this at the time of the JCPOA negotiations. The evidence available as of the time of this writing suggests that coercers knew three things: Iran had a nuclear weapons program before 2003, it continued to harbor weapons ambitions after 2003, and that left unchecked Iran would acquire a weapon. As Colin Kahl told me, "While there were new details in the 'Atomic Archive,' such as their idea of making five warheads, there is nothing about Iran's activities that we did not already know. We knew they were working on an implosion warhead to fit on top of a Shahab-3 missile; we knew the program was led by Fakhrizadeh; we knew it ended in 2003 but that other work continued; we knew everything and it was even discussed in the 2011 IAEA annex."¹⁸⁹ The following sections evaluate whether Kahl's statement is accurate.

¹⁸⁸ Iran did not fully deny contacts with AQ Khan. The 2011 IAEA Report states that "Iran acknowledged that it had had contacts with intermediaries of a clandestine nuclear supply network in 1987 and the early 1990s." GOV/2011/65, Annex, p. 2.

¹⁸⁹ Reid Pauly interview with Colin Kahl, Stanford, CA, November 2, 2018.

I consider carefully the bias of my sources and use those biases to my advantage in theory testing. The directions of bias in my sources leans against my findings—that coercers allowed Iran to cover up much of its past wrongdoing. I discuss how I use the sources below.

I rely on interviews with Obama administration officials to understand American strategy in negotiations with Iran. This data is useful to determine what policymakers were thinking. However, I do not rely on interviews to establish what coercers knew and when about Iran’s nuclear program. Instead, to establish a baseline of pre-JCPOA knowledge, I rely on declassified U.S. intelligence reporting and IAEA inspections reports. These sources are biased against finding deep knowledge on the part of coercers. By revealing what the United States (and other coercers) knew publicly about Iran’s nuclear program, they are a proxy for what coercers knew privately. Indeed, information available in IAEA records has past through two filters: what information U.S. and other intelligence agencies were willing to share with the IAEA, and then what the IAEA was willing to make public. One should assume private knowledge was greater than public knowledge. Still, I use this public knowledge as the baseline to prove tacit coerced collusion.

I then compare this pre-JCPOA baseline to the post-JCPOA evidence from Iranian documents stolen by Israel in 2018. I have seen only part of this tranche of documents myself, having been granted access to files passed from Israeli intelligence to Harvard University researchers. Several documents have also been published by other journalists and analysts.¹⁹⁰ I reference their work, but as much as possible I corroborate the published details with my own reading of the documents and discussions with Harvard University Belfer Center researchers

¹⁹⁰ For a journalistic account, see Ronen Bergman, “Iran’s Great Nuclear Deception,” *Ynetnews Magazine*, November 23, 2018, <<https://www.ynetnews.com/articles/0,7340,L-5412157,00.html>>. See also Institute for Science and International Security, Reports on Iran, <<http://isis-online.org/countries/category/iran>>.

who also saw documents first-hand and received high-level Israeli intelligence briefings in January 2019.

These purloined Iranian documents are again biased against my findings. The evidence has passed through an Israeli intelligence filter, which has held back much material.¹⁹¹ Israeli intelligence and the analysts or organizations they have briefed have agendas to push in their publicity of these documents. They have focused on publishing the most alarming findings first, hoping to turn policymakers toward disapproval of the JCPOA. These filters bias against finding that coercers reduced the visibility of Iranian concessions. If the most touted revelations about the Iranian nuclear program are still shown to be consistent with what intelligence organizations knew before the conclusion of the JCPOA, then my theory of intentional face-saving is more valid. Naturally, this research and theory testing should be updated as more records become available.

Possible Military Dimensions: What did coercers know?

To establish a baseline of pre-JCPOA knowledge held by coercers, this section relies on IAEA records. The IAEA opened a file on the “possible military dimensions” of the Iranian nuclear program in 2003. After years of inspections, demands, stonewalling, and breakthroughs, the IAEA summarized its consistent suspicions in a thorough report in November 2011.

As a proxy for what coercers knew, IAEA records are biased, but in a helpful direction. This information has passed through two filters: first, what the U.S. government and other foreign capitals were willing to share with the IAEA (an organization known to leak); second, what of that data the IAEA was willing to put in a public report. These empirics are therefore

¹⁹¹ Israel acknowledges that it has held back some material due to proliferation sensitivity. One should also assume that they could have held back exculpatory evidence in order to cast Iran in the worst light.

biased against the conclusion that Iran's coercers granted it plausible deniability (as opposed to being hoodwinked).

Substantively, the 2011 Report contained a wealth of knowledge about Iran's alleged weaponization activities, consistent with an organization fully soaked in intelligence shared by member states. "Since 2002," the report began, "the Agency has become increasingly concerned about the possible existence in Iran of undisclosed nuclear related activities involving military related organizations, including activities related to the development of a nuclear payload for a missile."¹⁹² It expressed concern about activities of the following types "relevant to the development of a nuclear explosive device": procurement of nuclear-related and dual-use equipment by the military, "efforts to develop undeclared pathways" to production of fissile material, acquisition of nuclear warhead designs and indigenous refinement thereof, including "testing of components."¹⁹³

The IAEA had knowledge that these activities had taken place as part of "a structured programme" prior to the end of 2003; as well as "indications that some activities relevant to the development of a nuclear explosive device continued after 2003, and that some may still be ongoing."¹⁹⁴ The IAEA in 2011 understood the Iranian weaponization program to have been "managed through a programme structure, assisted by advisory bodies, and that, owing to the importance of these efforts, senior Iranian figures featured within this command structure."¹⁹⁵ The IAEA knew that after contact with AQ Khan in 1987, "organizational structures and administrative arrangements for an undeclared nuclear programme were established and managed through the Physics Research Centre (PHRC), and were overseen, through a Scientific

¹⁹² GOV/2011/65, Annex, p. 7.

¹⁹³ *Ibid.*, p. 8.

¹⁹⁴ *Ibid.*, p. 8.

¹⁹⁵ *Ibid.*, p. 4.

Committee, by the Defence Industries Education Research Institute (ERI), established to coordinate defence R&D for the Ministry of Defence Armed Forces Logistics (MODAFL).”¹⁹⁶

It mentions the “AMAD Plan” specifically, sourcing the American intelligence of the “alleged studies documentation:” “by the late 1990s or early 2000s, the PHRC activities were consolidated under the ‘AMAD Plan.’ Mohsen Fakhrizadeh (Mahabadi) was the Executive Officer of the AMAD Plan, the executive affairs of which were performed by the ‘Orchid Office.’”¹⁹⁷ The AMAD Plan was known to have been in full operation in 2002 and 2003.¹⁹⁸

Even after 2003, when the halt order came down from above, the IAEA knew that aspects of nuclear weapons research had continued.¹⁹⁹ The IAEA reported that “staff remained in place to record and document the achievements of their respective projects.”²⁰⁰ The cover up of AMAD began—“equipment and work places were either cleaned or disposed of so that there would be little to identify the sensitive nature of the work which had been undertaken.” And the IAEA knew that work had continued in more covert or deniable ways, as “...some activities previously carried out under the AMAD Plan were resumed later.”²⁰¹

As for specific research and development of concern, the IAEA (citing the “alleged studies documentation”) pointed to Iranian activity related to detonators (bridge wires for exact timing), high explosives, hydrodynamic tests, neutron initiators, fusing for air- and ground-bursts, indicators of preparation for a nuclear test,²⁰² and other projects relevant to

¹⁹⁶ Ibid., p. 5.

¹⁹⁷ Ibid.

¹⁹⁸ Ibid.

¹⁹⁹ See the previous chapter for more detail on why some research stopped in late 2003 and what work continued.

²⁰⁰ GOV/2011/65, Annex, p. 5.

²⁰¹ Ibid.

²⁰² The final PMD Report also mentions knowledge of Iran’s preparation for a nuclear test before halting the program in 2003. “Information provided to the Agency by a Member State prior to November 2011 indicated that in 2002–2003 Iran may have planned and undertaken preparatory experimentation relevant to testing a nuclear explosive device. The Agency also had information that Iran had conducted a number of practical tests to see whether its EBW detonator firing component would function satisfactorily over a long distance between the firing

weaponization. Research on projects like neutron initiators allegedly continued beyond 2004.²⁰³ Project 110 on the design of a payload is mentioned, although without details.²⁰⁴ And Project 111 worked to fit a “new payload into the re-entry vehicle of the Shahab 3 missile.”²⁰⁵

The 2011 IAEA Report also zeroed in on the military facilities at Parchin. Specifically of concern at Parchin, “Iran constructed a large explosives containment vessel in which to conduct hydrodynamic experiments” likely in 2000.²⁰⁶ Two IAEA visits to Parchin in 2005 “did not uncover anything of relevance,” as inspectors were not provided access to the building allegedly housing the containment vessel.²⁰⁷

Evidence contained in the 2011 IAEA Report came from three sources: the United States, which provided the “alleged studies documentation” (aka the laptop documents or the laptop of death); intelligence provided by at least ten other member states; and IAEA inspections themselves.

The American intelligence dubbed the “alleged studies documentation” was a trove of intelligence that was passed to the IAEA in July 2005 (officially by an unnamed Member State). The documents came from a laptop reportedly acquired by the CIA from an Iranian informant.²⁰⁸ The cache consisted of over one thousand pages of documentation, including “correspondence, reports, view graphs from presentations, videos and engineering drawing” and “working level

point and a test device located down a deep shaft.” “Final Assessment on Past and Present Outstanding Issues regarding Iran’s Nuclear Programme,” GOV/2015/68, December 2, 2015, p. 12.

²⁰³ GOV/2011/65, Annex, p. 11.

²⁰⁴ GOV/2011/65, Attachment 1.

²⁰⁵ GOV/2011/65, Annex, p. 12.

²⁰⁶ *Ibid.*, p. 10.

²⁰⁷ *Ibid.*

²⁰⁸ A “walk-in defector at an embassy in the Middle East,” see Mark Fitzpatrick, “Lessons Learned from Iran’s Pursuit of Nuclear Weapons,” *Nonproliferation Review* 13, 3 (November 2006), p. 529. See also Dafna Linzer, “Strong Leads and Dead Ends in Nuclear Case Against Iran,” *Washington Post*, February 8, 2006; and William Broad and David Sanger, “Relying on Computer, U.S. Seeks to Prove Iran’s Nuclear Aims,” *New York Times*, November 13, 2015.

correspondence consistent with the day to day implementation of a formal programme.”²⁰⁹ The IAEA reported that it had close contact with the United States to verify this intelligence, including “several meetings with the Member State to clarify the information it had provided, to question the Member State about the forensics it had carried out on the documentation and the information reflected in it, and to obtain more information on the underlying sources.”²¹⁰ The majority of information on the AMAD Plan came from this American source.²¹¹

Additional intelligence was shared with the IAEA by “more than ten Member States” about the Iranian program, including “procurement information, information on international travel by individuals said to have been involved in the alleged activities, financial records, documents reflecting health and safety arrangements, and other documents demonstrating manufacturing techniques for certain high explosive components.”²¹² According to the 2011 Report, this additional information overall corroborated the American intelligence as well as shedding light on “activities substantially beyond those identified in that [alleged studies] documentation.”²¹³

These myriad sources, plus information acquired through “the Agency’s own efforts” which corroborated key details, and “notwithstanding Iran’s lack of engagement,” allowed the IAEA to assess the contents of its 2011 Report to be “overall, credible.”²¹⁴

One other source that can shed light on the U.S. government’s knowledge, albeit from an earlier time, is the November 2007 National Intelligence Estimate on Iran’s Nuclear Intentions and Capabilities. The NIC judged with “high confidence that in fall 2003, Tehran halted its

²⁰⁹ GOV/2011/65, Annex, p. 3.

²¹⁰ Ibid.

²¹¹ Ibid., p. 5.

²¹² Ibid., p. 3.

²¹³ Ibid.

²¹⁴ Ibid., pp. 3, 8.

nuclear weapons program,” defined as its “nuclear weapon design and weaponization work and covert uranium conversion-related and uranium enrichment-related work.” The NIC also assessed with “moderate-to-high confidence that Tehran at a minimum is keeping open the option to develop nuclear weapons.”²¹⁵

The next section describes in more detail what Iran’s coercers decided to do with this knowledge.

What strategy did coercers pursue? Why?

On July 14, 2015, in conjunction with the conclusion of the JCPOA with the P5+1, Iran signed with the IAEA a “Road-map for the Clarification of Past and Present Outstanding Issues regarding Iran’s Nuclear Program.”²¹⁶ Iran had to resolve its issues with the IAEA if the JCPOA were to be implemented. The plan had five steps: 1) Iran would submit written explanations for the concerning activities, 2) the IAEA would respond with questions about any ambiguities, 3) IAEA and Iranian technical experts would meet in Tehran to discuss the ambiguities, 4) the Director General would provide a final report to the Board of Governors.²¹⁷ A fifth step pertained to granting the IAEA managed access to the controversial Parchin site to take environmental samples.²¹⁸ All of this was to be completed within a shocking five months.

The final report submitted to the Board on December 2, 2015 make clear the Roadmap agreement was as rushed as it sounds—essentially, an agreement to meet formally for you to

²¹⁵ National Intelligence Council, “Iran: Nuclear Intentions and Capabilities,” National Intelligence Estimate, November 2007,

<https://www.dni.gov/files/documents/Newsroom/Reports%20and%20Pubs/20071203_release.pdf>.

²¹⁶ IAEA, “Road-map for the Clarification of Past and Present Outstanding Issues regarding Iran’s Nuclear Program,” GOV/INF/2015/14, July 14, 2015.

²¹⁷ *Ibid.*, p. 2.

²¹⁸ *Ibid.*

deny it one more time before we close the file. In the language of the final PMD report, with the Roadmap the parties had agreed to “accelerate” the resolution of the file.²¹⁹

The final report reads as a restatement of the IAEA’s concerns, followed by Iranian denials. Iran “denied the existence of a coordinated programme aimed at the development of a nuclear explosive device,” the report reads, “and specifically denied the existence of the AMAD Plan and the ‘Orchid Office’ as elements of such a programme.”²²⁰ Iran merely pointed to the alternate purposes of any suspicious dual-use technology. Detonators were, for instance, explained by the Ministry of Defense’s desire to “improve safety requirements for certain operations involving conventional explosives by developing safer detonators;”²²¹ and “Iran referred to the applicability of hydrodynamic modelling to conventional military applications and stated that such applications were of no relevance to the Agency’s concern.”²²²

IAEA access to Parchin seems to have been the only positive step in the resolution of the PMD portfolio. Iran had long been stonewalling requests for access to Parchin²²³ and satellite imagery showed that the facility had since been renovated.²²⁴ The negotiated solution was to provide “managed access” to the facility and allow IAEA inspectors to watch as Iranians took environmental samples themselves. So long as the chain of custody could be verified, the IAEA was content with the arrangement.²²⁵ When the IAEA visited on September 20, 2015, they observed “recent signs of internal refurbishment” and the explosive testing chamber was no

²¹⁹ “Final Assessment on Past and Present Outstanding Issues regarding Iran’s Nuclear Programme,” GOV/2015/68, December 2, 2015, p. 3.

²²⁰ *Ibid.*, p. 5.

²²¹ *Ibid.*, p. 8.

²²² *Ibid.*, p. 11.

²²³ The specific location of interest at Parchin was the building that allegedly housed the explosive testing chamber. The IAEA had visited Parchin twice in 2005, but not this location.

²²⁴ GOV/2015/68, p. 10.

²²⁵ *Ibid.*

longer visible.²²⁶ The IAEA's last word was only that environmental samples had disputed the Iranian assertion that the building had been used for "long-term storage of chemicals for explosives."²²⁷ And the report moved on.

Overall, the IAEA concluded what it had long known—"a range of activities relevant to the development of a nuclear explosive device were conducted in Iran prior to the end of 2003 as a coordinated effort, and some activities took place after 2003" and, indicating its focus on future verification, that it had found "no credible indications of the diversion of nuclear material."²²⁸ In one of its most accommodating sentences, which had not appeared in the 2011 Annex, the final report stated that "these activities did not advance beyond feasibility and scientific studies, and the acquisition of certain relevant technical competences and capabilities."²²⁹

Laid bare, PMD was an agreed upon lie. Very little was resolved after the conclusion of the JCPOA. As long as they could verify the limits of the nuclear program going forward, Iran's coercers tacitly colluded to allow it to (im)plausibly deny that it had been up to no good. As long as Tehran conceded, it could deny the extent of its concessions.

The statements of American policymakers make this strategy plain. "We know what they did. We have no doubt. We have absolute knowledge with respect to the certain military activities they were engaged in," said Secretary of State John Kerry in a June 2015 speech, "What we're concerned about is going forward. It's critical to us to know that going forward, those activities have been stopped, and that we can account for that in a legitimate way."²³⁰ Other administration officials described the strategy similarly. "It was never an issue for the United

²²⁶ Ibid.

²²⁷ Ibid., p. 11.

²²⁸ Ibid., p. 15.

²²⁹ Ibid., p. 14.

²³⁰ Nahal Toosi, "Kerry: Iran doesn't have to account for past nuclear weapons research," *Politico*, June 16, 2015, <<http://www.politico.com/story/2015/06/kerry-iran-doesnt-have-to-account-for-past-nuclear-weapons-research-119074>>.

States about whether there were possible military dimensions. We knew there were,” said Ambassador Wendy Sherman. “The [PMD] agreement, which was very difficult to get, was brought to the P5+1 for affirmation. But it was not a central part of the actual negotiation around the JCPOA. JCPOA was leverage to help the IAEA get to closure.”²³¹ And Jake Sullivan recalled, “We knew Iran had been conducting weaponization activities. The whole point of us having these negotiations to begin with was that they were doing this.”²³² The acceptable level of Iranian admission was determined by the requirements of future verification, not admitting concessions, which would have imperiled the deal.

Further evidence of coercers’ focus on the future at the expense of the past also appears in the novelty of responsibilities granted to the IAEA. As part of the Iran portfolio, the IAEA was tasked with inspections and monitoring above and beyond what they had ever done before. The IAEA had never before been asked to verify enrichment levels. They developed a tool called OLEM (online enrichment monitoring) with Oakridge to do so. Neither had the IAEA ever been asked to monitor heavy water plants or uranium mines in such detail. To help solve these technical challenges, the IAEA set up a special Iran team that received an additional five million dollars of funding.

Intelligence was crucial to enabling this American strategy. In 2007, at the insistence of a frustrated President Bush, the CIA established an Iranian Operations Division to improve intelligence collection on Iranian nuclear intentions.²³³ The efforts appear to have borne fruit. Indeed, the very fact that Israeli intelligence was aware enough of the disposition and location of Iranian files to steal some of them suggests that the Iranian nuclear program is heavily

²³¹ Reid Pauly interview with Ambassador Wendy Sherman, Cambridge, MA, May 18, 2019.

²³² Reid Pauly telephone interview with Jake Sullivan, March 27, 2018.

²³³ Michael V. Hayden, *Playing to the Edge* (New York: Penguin, 2016), pp. 290-301.

penetrated. As Jon Wolfsthal reflected, “On PMD we said, look, we don’t want to do anything to prevent the IAEA from doing their work well. But we already knew everything we needed to know about the past military dimensions of Iran’s nuclear program from our intelligence agencies. So we decided there was not much to be gained by pushing PMD. What could have been lost was the deal itself. If there had been insufficient intelligence, then we might have pushed it.”²³⁴ Colin Kahl concurs: “We didn’t think that the PMD investigation was actually going to get us any new information. And we knew that forcing the regime to admit that they had been lying would have been a deal killer. We felt this out. Our demands on PMD were more maximalist at the beginning and then we felt out how much to back off.”²³⁵ The United States had indeed changed its mind or at least backed off on demands to come fully clean; U.S. representatives to the IAEA demanded a full and transparent resolution to the PMD issues at the June and September 2014 Board of Governors meetings.²³⁶ Later they were less demanding. The United States consciously allowed Iran’s leaders to save face.

There was also some strategic deferral to the IAEA on the matter of Parchin. “We got access to Parchin at a level acceptable to the IAEA,” John Wolfsthal believed.²³⁷ Jake Sullivan recalled that “there was a lot of conversation about whether the access provided to Parchin was enough. But everyone ultimately deferred to the nuclear experts to determine whether the IAEA access was sufficient.”²³⁸ And Ambassador Wendy Sherman also writes that since PMD “wasn’t pertinent to Iran’s capabilities going forward and the United States had already made a

²³⁴ Reid Pauly telephone interview with Jon Wolfsthal, March 21, 2018.

²³⁵ Reid Pauly interview with Colin Kahl, Stanford, CA, November 2, 2018.

²³⁶ IAEA Board of Governors, “Record of the 1381st Meeting,” June 4, 2014, GOV/OR.1381, p. 20. IAEA Archives, Vienna, Austria; and IAEA Board of Governors, “Record of the 1382nd Meeting,” September 18, 2014, GOV/OR.1382, p. 24. IAEA Archives, Vienna, Austria.

²³⁷ Reid Pauly telephone interview with Jon Wolfsthal, March 21, 2018.

²³⁸ Reid Pauly telephone interview with Jake Sullivan, March 27, 2018.

judgement, we left it to the IAEA to decide and deal with, not the P5+1. We made sure, however, that the IAEA could use the leverage of the P5+1 talks on nuclear weaponry by negotiating their access to resolve this issue at the same time.”²³⁹

Overall, Washington sensed the game and played its strong hand strategically. As Jake Sullivan remarked, “The Iranians asserted from start to finish that all of this was a bunch of bunk that they had never attempted to weaponize. But we knew, and they knew that we knew, and we knew that they knew we knew.”²⁴⁰

Did Iran Care about Deniability?

On the surface, Iranian denials of known nuclear activity itself suggests a concern for saving face. Tehran was receptive to the offer of tacit collusion. Compromises such as granting “managed access” to Parchin are further evidence of Iranian awareness of the game.

Furthermore, Iran’s leaders drove a hard bargain on limiting access to dig up the past. The Ayatollah in a speech on March 20, 2015, for instance, said that the IAEA would not be allowed to interview Iranian scientists.²⁴¹ In the end, the IAEA did not get such access.

Iranian leaders may also have sought face-saving deniability because the regime is revolutionary and steeped in a history of resistance to external pressure. Alireza Nader calls Iran’s “raison d’être and sense of mission: resistance to the West and the United States in particular.”²⁴² Wendy Sherman, a primary JCPOA negotiator, observed the barrier of “Iran’s culture of resistance. ... Bowing to the wishes of these world powers betrayed their sense of who

²³⁹ Sherman, *Not for the Faint of Heart* (2018), p. 195.

²⁴⁰ Reid Pauly telephone interview with Jake Sullivan, March 27, 2018.

²⁴¹ Tabatabai, “Negotiating the ‘Iran talks’ in Tehran” (2017), pp. 237, 241.

²⁴² Nader, “Influencing Iran’s Nuclear Decisions,” in Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (2012), p. 214.

they were.”²⁴³ And Colin Kahl declared that, “there was not a single Iran specialist—i.e. in the intelligence community—I worked with who thought that the Iranians would be willing to come clean and admit their nuclear weapons work because the Ayatollah had made denials and Fatwahs. He couldn’t admit to lying.”²⁴⁴

That Iran’s coercers were willing to cover up past transgressions may also have been a signal that the United States was not seeking a pretext for aggression. Earlier Iranian ambassadors to the IAEA had feared as much.

Comparing Pre-JCPOA Coercer Knowledge to Post-JCPOA Iranian Records

On January 31, 2018, Israeli Mossad conducted a raid on a nondescript warehouse on the outskirts of Tehran. Working through the night, they torched open safes and stole ~55,000 pages and 163 CDs of documents and videos—by their estimate about 20% of the files in storage. All pertained to the Iranian nuclear weapons program. Benjamin Netanyahu did not announce the theft until April 2018, when he delivered a press conference excoriating Iran’s duplicity and demanding an end to the JCPOA. Assuming their veracity,²⁴⁵ these Iranian documents provides scholars the rare opportunity to compare documentary evidence with the public record of coercive bargaining to evaluate a modern strategic cover up. With the aid of these records,

²⁴³ Sherman, *Not for the Faint of Heart* (2018), p. 40. Sherman recalls that this outlook led to odd positions, such as “when we offered them relief from sanctions, they claimed that the sanctions weren’t hurting them. It was a preposterous pose, but one that was vital to their self-regard.” Ibid., p. 41.

²⁴⁴ Reid Pauly interview with Colin Kahl, Stanford, CA, November 2, 2018.

²⁴⁵ Iran maintains that the documents are forgeries. Israel has shared the Atomic Archive with other intelligence services, including the United States, and the documents have been given to the IAEA. There has been no indication yet whether the IAEA has been able to verify the authenticity of the documents. Neither has any agency confirmed Iran’s claims of fraud. For longstanding Iranian denials, see IAEA “Communication dated 28 September 2008 received from the Permanent Mission of the Islamic Republic of Iran to the Agency,” INFCIRC/737, October 1, 2008.

scholars can make more educated assessments of what coercers knew, and more importantly, what they allowed Iran to cover up, versus what Iran simply got away with.

Three revelations of the so-called “Atomic Archives” are said to be the most alarming: (1) the sophistication of the weapons program and how close Iran came to a weapon in 2003, (2) the late 2003 ‘halt’ order was also a ‘hide’ order, and (3) Iran’s strategic intent in 2015. I discuss each in order, comparing the Iranian records to the established baseline of what coercers knew.

Sophistication. The records reveal that in 1999 or early 2000 very senior Iranian leaders made a political decision to acquire and test a nuclear device by 2003.²⁴⁶ The effort, which was known as the AMAD Plan, was overseen by the “Supreme Council for Advanced Technologies,” which consisted of President Mohammad Khatami, Supreme National Security Council Secretary General Hassan Rouhani (now President), Minister of Defense Ali Shamkhani, and the Head of AEOI Gholamreza Aghazadeh. A senior representative of the Foreign Ministry may also have sat on the Council.²⁴⁷ The Council approved a budget of \$100 million (in 1999 dollars)²⁴⁸ to build five nuclear warheads of 10 kilotons each.²⁴⁹ The scale of foreign assistance was large—over a dozen foreign experts and four foreign bomb designs (from which the Iranians innovated their own design). And the program was intended to have a “parallel fuel cycle to produce HEU for nuclear weapons,” including use of the Fordow enrichment plant.²⁵⁰

Additionally, the new documents point to a facility previously unknown in public: a tunnel complex underneath Parchin intended to house metallurgy equipment for uranium casting

²⁴⁶ Arnold, Bunn, Chase, Miller, Mowatt-Larssen, and Tobey, “The Iran Nuclear Archive: Impressions and Implications,” (2019).

²⁴⁷ Ibid.

²⁴⁸ Aaron Arnold notes from Israeli intelligence briefing, January 2019. Money was also allocated for the acquisition of HEU from abroad. There is no evidence HEU was acquired from abroad.

²⁴⁹ Arnold, Bunn, Chase, Miller, Mowatt-Larssen, and Tobey, “The Iran Nuclear Archive: Impressions and Implications,” (2019).

²⁵⁰ Material to feed this cascade was to come from the Gchine uranium mine.

of a nuclear core (Project 110 of the AMAD Plan).²⁵¹ Construction of the tunnel complex was nearly completed in 2003 but the halt order came down before equipment was installed.

The Iranian nuclear weapons program described in the Iranian files indeed went beyond “feasibility and scientific studies, and the acquisition of certain relevant technical competences and capabilities,” as stated in the IAEA’s 2015 PMD report.²⁵² However, this “feasibility and scientific studies” language appears in the final PMD report, not the 2011 Annex. Such language suggesting a program of limited scope is not surprising in a compromise document and is in fact inconsistent with the scope of the 2011 Annex.²⁵³ Overall, evidence from the Atomic Archives is consistent with the thrust of, and several hints within, the IAEA’s 2011 Annex. First, Iran’s planning to carry out an underground nuclear test,²⁵⁴ while much more specific in the stolen Iranian files, are consistent with language in the 2011 Annex that “in 2002-2003 Iran may have planned and undertaken preparatory experimentation relevant to testing a nuclear explosive device,” including preparing explosive bridge wiring to reliably detonate in “a test device located down a deep shaft.”²⁵⁵ As early as 2006, experts had been writing publicly about Iran’s “sophisticated drawings of a 400-meter-deep subterranean shaft with remote-controlled sensors to measure pressure and heat,” more than suggestive of preparations for a test.²⁵⁶ Second, the IAEA did indeed not mention Iranian activities in uranium metallurgy in the 2011 Annex. It did, however, mention knowledge of Project 110, which aimed to produce nuclear cores. Curiously,

²⁵¹ Arnold, Bunn, Chase, Miller, Mowatt-Larssen, and Tobey, “The Iran Nuclear Archive: Impressions and Implications,” (2019).

²⁵² GOV/2015/68, p. 14.

²⁵³ I consider this to be a flaw in the analysis of the Belfer Center Report. The authors use the 2015 PMD Agreement as a baseline for what coercers knew about Iran’s program prior to the JCPOA. Instead, that PMD document should be considered the agreed upon lie; earlier IAEA documents, such as the 2011 Annex, should be much more heavily weighted to understand what the IAEA and coercers knew of the Iranian nuclear program.

²⁵⁴ Arnold, Bunn, Chase, Miller, Mowatt-Larssen, and Tobey, “The Iran Nuclear Archive: Impressions and Implications,” (2019).

²⁵⁵ GOV/2015/68, p. 12.

²⁵⁶ Fitzpatrick, “Lessons Learned from Iran’s Pursuit of Nuclear Weapons,” (2006), p. 530.

the report does not mention any specifics on Project 110, suggesting that unverifiable or unpublishable claims were behind it. Israeli intelligence officials say that both Israeli and U.S. intelligence agencies knew about the site during its construction but were not aware of its connection to the AMAD Plan.²⁵⁷ To be unaware of the tunnel complex's purpose in 2003 was understandable, however, since none of the uranium metallurgy equipment had been moved in. Instead, the tunnel complex was empty at the time of the 2003 halt order.²⁵⁸ It is therefore plausible that western intelligence agencies would have detected uranium metallurgy activity if the facility had even been completed and the equipment moved in.

More Hide than Halt. Stolen Iranian documents also illuminate the nature of Tehran's high level 2003 decision to halt the nuclear weapons program. The late 2003 order, described as a "halt" by the 2007 NIE, "did not stop all the work."²⁵⁹ Instead, it divided the research program into overt and clandestine parts intended to "fill in technical gaps."²⁶⁰ Overt research continued "openly under civilian rationales," for example, on neutron generator development.²⁶¹

Some analysts assert that this information shows that the 2007 NIE assessment was incorrect.²⁶² On the contrary, a 'hide' and 'preserve' order would be consistent with the 2007 NIE's "moderate-to-high confidence" assessment that "Tehran at a minimum is keeping open the option to develop nuclear weapons."²⁶³ In addition, the IAEA reported that it was aware that

²⁵⁷ Arnold, Bunn, Chase, Miller, Mowatt-Larssen, and Tobey, "The Iran Nuclear Archive: Impressions and Implications," (2019).

²⁵⁸ Ibid.

²⁵⁹ Ibid.

²⁶⁰ Ibid.

²⁶¹ See also the last chapter for a detailed discussion of nuclear research that continued after 2003. Ibid.

²⁶² David Albright, Olli Heinonen, and Andrea Stricker, "Breaking Up and Reorienting Iran's Nuclear Weapons Program - Iran's Nuclear Archive Shows the 2003 Restructuring of its Nuclear Weapons Program, then called the AMAD Program, into Covert and Overt Parts," ISIS, October 29, 2018.

²⁶³ National Intelligence Council, "Iran: Nuclear Intentions and Capabilities," National Intelligence Estimate, November 2007,

<https://www.dni.gov/files/documents/Newsroom/Reports%20and%20Pubs/20071203_release.pdf>.

even after the halt order in 2003, “staff remained in place to record and document the achievements of their respective projects,”²⁶⁴ while “equipment and work places were either cleaned or disposed of so that there would be little to identify the sensitive nature of the work which had been undertaken.” Moreover, the IAEA remained interested in Fakrizadeh as he moved to university settings and knew that “...some activities previously carried out under the AMAD Plan were resumed later.”²⁶⁵ Obama administration officials additionally told reporters in 2010 that “in contrast to the 2007 NIE finding,” they and U.S. key allies believed Iran’s nuclear weapons design work was “continuing on a smaller scale.”²⁶⁶

Strategic Intent. Perhaps the most concerning behavior revealed by the stolen Iranian files is the fact that a warehouse of documents relating to nuclear weapons existed at all. We know much less about this decision, but Israeli intelligence suggests that sometime around the conclusion of the JCPOA (at least once it was known there was going to be a JCPOA), someone gave the order to aggregate all of the files related to nuclear weapons work and store them in safes on mobile flatbed trailers.²⁶⁷ Many binders were carefully organized (the CDs were not), as though the information would one day again be useful.

Most likely Iran sought to retain nuclear know-how, much in the way that roughly 70% of the staff on the AMAD Plan still work for Fakrizadeh at SPND.²⁶⁸ In terms of bargaining, Tehran may have felt that they were conceding less in the JCPOA if they could preserve the knowledge already gained. The preservation of scientific knowledge is consistent with a nuclear hedging strategy, even though Iran conceded to accepting verifiable limits on its production of

²⁶⁴ GOV/2011/65, Annex, p. 5.

²⁶⁵ Ibid.

²⁶⁶ Miller, *Stopping the Bomb* (2018), p. 236. See also, David Sanger and William Broad, “U.S. Sees Window to Pressure Iran on Nuclear Fuel,” *New York Times*, January 3, 2010.

²⁶⁷ Aaron Arnold notes on Israeli intelligence briefing, January 2019.

²⁶⁸ This estimate is attributed to Israeli intelligence officials. Arnold, Bunn, Chase, Miller, Mowatt-Larsen, and Tobey, “The Iran Nuclear Archive: Impressions and Implications,” (2019).

fissile material. Nonetheless, one misperception hypothesis should be considered: that the purpose of the warehouse was to consolidate the information such that no inspectors could come across it.²⁶⁹ We do not yet know the full story of Iranian intentions.

It is unclear whether the United States or other coercers knew about the warehouse of nuclear documents before the Israeli operation in 2018. Some evidence suggests it may have. One anonymous U.S. intelligence official told *Reuters* after Prime Minister Netanyahu's UN speech on the Iranian warehouse and stolen files, "we have known about this facility for some time, and it's full of file cabinets and paper, not aluminum tubes for centrifuges...so far as anyone knows, there is nothing in it that would allow Iran to break out of the JCPOA any faster than it otherwise could."²⁷⁰ Moreover, the fact that western sources now have access to these purloined documents at all is suggestive evidence that the Iranian nuclear program was very heavily penetrated.

I do not mean to overlook the scale and scope of 2018 Israeli intelligence coup. The information contained in the stolen Iranian files is valuable and by all accounts improves our understanding of Iran's nuclear weapons activities. Indeed, one of the most useful aspects of the

²⁶⁹ This explanation would be comparable to Saddam Hussein's efforts to send military personnel to old WMD production and storage sites to ensure that no stores of chemical agents remained, only to have American intelligence perceive satellite images of trucks at those facilities to evidence of renewed activity. Scott D. Sagan, "Deterring Rogue Regimes: Rethinking Deterrence Theory and Practice," Naval Postgraduate School Center for Contemporary Conflict, July 8, 2013, <<https://calhoun.nps.edu/bitstream/handle/10945/34336/Sagan%20-%20Deterring%20Rogue%20Regimes%20-%20NPS%20PASCC%20Final%20Report%20edits.pdf?sequence=1&isAllowed=y>>. See also Kevin Woods, James Lacey, and Williamson Murray, "Saddam's Delusions: The View from the Inside," *Foreign Affairs*, May/June 2006. They recount an instance of U.S. signals intelligence collection on Iraqi chatter about "nerve agents" and "chemical containers," which the U.S. incorrectly interpreted to be evidence of an ongoing WMD program. Its actual intent was to ensure compliance with UN resolutions.

²⁷⁰ John Irish and Arshad Mohammed, "Netanyahu, in U.N. speech, claims secret Iranian nuclear site," *Reuters*, September 27, 2018, <<https://www.reuters.com/article/us-un-assembly-israel-iran/israel-accuses-iran-of-concealing-nuclear-material-for-weapons-program-idUSKCN1M72FZ>>.

purloined records is that they confirm the quality of earlier intelligence once debated by experts, such as the “alleged studies documentation.”²⁷¹

It is worth considering what details could emerge about Iran’s nuclear program that would change the finding of this research. Coercive Assurance Theory prescribes that targets should be allowed to deny the extent of their concessions; however, CAT is not operating in a case if the target is merely pulling the wool over the eyes of a coercer. If, in conjunction with signing the JCPOA, Iran successfully hid from the P5+1 a clandestine nuclear weapons design program or parallel fuel cycle for the production of fissile material, we could no longer say that Tehran had plausibly denied concessions.

Overall, when compared to what coercers knew about the Iranian nuclear weapons program pre-JCPOA, the post-JCPOA stolen Iranian files reveals little that is new. Instead, the records show that the P5+1 allowed Iran to reduce the visibility of its concessions in 2015. This coercive strategy bolstered the assurance of the coercive bargain—Iran’s coercers were willing to tacitly collude, reduce the amount of information available to other potential coercers to draw inferences about Iran’s coercibility, and help Tehran avoid acquiring a reputation for making concessions. As seems typical of targets of coercion, Iran valued the face-saving. Moreover, its coercers used the cover up as a signal that they did not seek a pretext for further aggression.

XI. Post-JCPOA and the Trump Administration

After a stark political transition, the United States reneged on its coercive bargain with Iran. President Trump assumed office in January 2017, having pledged to tear up what he often

²⁷¹ Iran long said that the “Alleged Studies Documentation” (aka laptop of death) were all forgeries. Some analysts agreed, pointing the finger at Israel. See Gareth Porter, “The Iran Nuclear “Alleged Studies” Documents: The Evidence of Fraud,” *Middle East Policy* XVII, 4 (Winter 2010).

decried as the “worst deal ever.” Initially, however, he did not withdraw. The White House recertified Iranian compliance and sanctions waivers as required by the INARA compromise legislation. The president reportedly did so reluctantly, bowing to the “consensus recommendation” of his advisors and granting them time to recommend a new strategy for Iran.²⁷²

The Trump strategy, for a time, was one of threatening to withdraw from the JCPOA in order to compel Tehran to renegotiate.²⁷³ New sanctions imposed over human rights and ballistic missiles complemented the coercive strategy.²⁷⁴ This coercive strategy lacked assurance for three reasons.²⁷⁵ First, the president himself, in public and through reporting on his deliberations,²⁷⁶ had made clear that he wished to withdraw from the JCPOA regardless of Iran’s behavior. Some analysts speculate that this commitment to withdrawal stemmed from the president’s ideological commitment to undoing the legacy of the Obama administration. Second, with the imposition of new demands on Iran, especially in the form of new sanctions for human rights violations and ballistic missile development, the Trump administration re-entangled demands that the Obama administration had sought to disentangle.²⁷⁷ Third, while the Trump administration strategy was

²⁷² Peter Baker, “Trump Recertifies Iran Nuclear Deal, but Only Reluctantly,” *New York Times*, July 17, 2017, <<https://www.nytimes.com/2017/07/17/us/politics/trump-iran-nuclear-deal-recertify.html?smprod=nytcore-iphone&smid=nytcore-iphone-share>>.

²⁷³ “Statement by the President on the Iran Nuclear Deal,” White House, January 12, 2018, <<https://www.whitehouse.gov/briefings-statements/statement-president-iran-nuclear-deal/>>.

²⁷⁴ David E. Sanger, “U.S. Imposes New Sanctions on Iran Over Missile Test,” *New York Times*, February 3, 2017, <<https://www.nytimes.com/2017/02/03/us/politics/iran-sanctions-trump.html>>; David E. Sanger and Rick Gladstone, “As Relations Worsen, Iran Says U.S. Sanctions May Violate Nuclear Deal,” *New York Times*, July 18, 2017, <<https://www.nytimes.com/2017/07/18/world/middleeast/iran-deal-trump.html>>.

²⁷⁵ For a similar argument, see Sahar Nowrouzadeh, Reid Pauly, and Mahsa Rouhi, “This Is Why Trump’s Strategy for Iran Will Fail,” *The National Interest*, December 21, 2017.

²⁷⁶ See, for example, reporting that the White House sought ways to declare that Iran was in violation of the JCPOA. David E. Sanger, “Trump Seeks Way to Declare Iran in Violation of Nuclear Deal,” *New York Times*, July 27, 2017, <<https://www.nytimes.com/2017/07/27/world/middleeast/trump-iran-nuclear-agreement.html>>.

²⁷⁷ Iran has long refused to engage in negotiations over its ballistic missile development. The reason is that Iran relies on its conventional missiles for deterrence—it believes it must maintain the capacity to strike Israel and American bases in the region, directly or through proxies. Referring to ballistic missiles as Iran’s “defensive power”, Iranian leaders consistently place them off limits to talks. “We have repeatedly announced and declared once more

still under development, Secretary of State Rex Tillerson testified before Congress that the United States sought a “peaceful transition” of the Iranian government, which many heard as a call for regime change,²⁷⁸ including the Supreme Leader himself.²⁷⁹ And in April 2018, President Trump hired as National Security Advisor John Bolton, who only a couple of months earlier had penned an op-ed advising “America’s declared policy should be ending Iran’s 1979 Islamic Revolution before its 40th anniversary.”²⁸⁰

Ultimately, in May 2018, the Trump administration announced its decision to withdraw from the JCPOA and reimpose nuclear sanctions on Iran. The administration also threatened to impose so-called “secondary sanctions” against foreign firms that continued to conduct business with Iranian firms. The administration then created an Iran Action Group, led by Special Representative for Iran Brian Hook, to coordinate a new coercive strategy to compel major

that the country’s defensive means and power are not up for negotiation and bargaining,” said Khamenei. “Iranian leader refuses any negotiation over ballistic missiles,” *Al-Monitor*, October 25, 2017; “Our nation and our officials, for their defensive capabilities, do not need to negotiate with anyone nor reach an agreement with any power,” said Rouhani. “Rouhani: Iran has no need to negotiate over its defense,” *Al-Monitor*, February 5, 2018. One reason for this is that Iran see missiles as part of its deterrent against invasion. Indeed, Iran’s possession of conventional missiles may have given policymakers in Tehran sufficient confidence in their deterrent capacity to be comfortable accepting limits on their nuclear development. Iranian proxies in the Middle East viewed seen similarly in Tehran. On January 17, 2018 Khamenei tweeted a video of himself explaining why Iran would not permit negotiations over its missiles. Of Iran’s coercers, he said, “It is clear what their ultimate goal is: overthrowing the Islamic Republic of Iran.” He continued, “their ploy includes taking away the means of the Islamic Republic’s national power ... one of our means, that supports national power, is our presence in the region. The powerful presence of the Islamic Republic, within the region, is a crucial element of national power. ... Another means of national power is the country’s defensive power; they yearn to strip this away too from the Islamic Republic. The reason why you see them create such uproar, striking up such fuss over the issue of Iran’s missiles, is due to this. If a nation manages to send a proper response to one who launches a missile from a distance, well this is power. Today, the Islamic Republic has this power, but they want the Islamic Republic not to have it.” See @khamenei.ir, Tweet from January 17, 2018, <https://twitter.com/khamenei_ir/status/953654085672161280/video/1>.

²⁷⁸ “Iran Accuses U.S. of Brazen Plan to Change its Government,” *CNBC*, June 28, 2017, <<https://www.cnn.com/2017/06/28/iran-accuses-us-of-brazen-plan-to-change-its-government.html>>.

²⁷⁹ See @khamenei.ir, Tweet from January 17, 2018, <https://twitter.com/khamenei_ir/status/953654085672161280/video/1>.

²⁸⁰ John Bolton, “Beyond the Iran Nuclear Deal,” *Wall Street Journal*, January 15, 2018, <<https://www.wsj.com/articles/beyond-the-iran-nuclear-deal-1516044178>>.

concession from Iran.²⁸¹ Again re-entangling demands, the Group intends to “pursue the entire range of Iran’s threats,” listing twelve demands.²⁸² Invoking multiple previously disentangled demands, John Bolton complained that the JCPOA “didn’t end [Iran’s] nuclear ambitions, missile tests, support for terrorism or regional expansionism.”²⁸³ And to do so, it seeks “the broadest level of international support” for economic coercion.²⁸⁴ Other members of the P5+1, partner coercers during the JCPOA negotiations, refused to go along with the new American strategy.²⁸⁵

Having failed to apply any of the tenets of Coercive Assurance Theory contained in this book, the Trump administration’s coercive strategy is likely to fail to compel any concessions from Iran.²⁸⁶

XII. Case-Specific Alternative Explanations

I consider five case-specific alternative explanations relevant to the conclusion of a coercive bargain in 2015. The first two speak to the opening of bargaining space.²⁸⁷

First, perhaps Iranian domestic politics explain the timing of the bargain. Moderate candidate Hassan Rouhani won the Iranian presidential election in 2013 and thus the window

²⁸¹ Caitlin Oprysko, “Pompeo Announces New Team for Iran Strategy,” *Politico*, August 16, 2018, <<https://www.politico.com/story/2018/08/16/mike-pompeo-iran-action-group-780110>>; David E. Sanger, “A New U.S. Post to Pressure Iran, and a Stark Challenge Ahead,” *New York Times*, August 16, 2018, <<https://www.nytimes.com/2018/08/16/us/politics/iran-nuclear-envoy-.html>>.

²⁸² Oprysko, “Pompeo Announces New Team for Iran Strategy,” 2018.

²⁸³ John Bolton tweet, January 16, 2019, <<https://twitter.com/ambjohnbolton/status/1085547855446720512>>.

²⁸⁴ Oprysko, “Pompeo Announces New Team for Iran Strategy,” 2018.

²⁸⁵ The EU has imposed new sanctions on Iran, related to support for terrorism, since the conclusion of the JCPOA, but none related to nuclear proliferation. Laurence Norman, “EU Imposes Fresh Sanctions on Iran Over Assassination Plots,” *Wall Street Journal*, January 8, 2019, <<https://www.wsj.com/articles/eu-agrees-fresh-sanctions-on-iran-over-assassination-plots-11546950347>>.

²⁸⁶ For a similar assessment of the Trump administration’s Iran strategy, see Nicholas Miller, “The Trump administration’s new ‘Iran Action Group’ won’t work — for these 3 reasons,” *Washington Post*, August 29, 2018, <<https://www.washingtonpost.com/news/monkey-cage/wp/2018/08/29/the-trump-administrations-new-iran-action-group-wont-work-for-these-3-reasons/>>.

²⁸⁷ This is consistent with a Phil Haun or Todd Sechser alternative theoretical framework.

opened for a deal. A generalizable domestic politics explanation would predict that bargains will be struck when domestic political struggles shake out in favor of factions against proliferation. This is a common popular narrative of the case,²⁸⁸ yet it overlooks an important detail. The secret US-Iran diplomatic channel via Oman had already been opened a year prior to Rouhani's election. Rouhani's election spurred progress on the terms of an interim agreement, but the prior administration came to the table seeking sanctions relief first.

A second alternative explanation says that inducements (carrots) brought Iran to the deal in 2015. Such a theory points to the Obama administration's willingness to allow Iran to keep some limited enrichment capacity. Yet the broad outlines of a coercive bargain were clear to all parties by 2006 when the option of limited enrichment was on the table in negotiations that included Secretary of State Condoleezza Rice representing the United States. While "the United States and the other parties have opposed any Iranian domestic centrifuge facilities," a summary of the June 6, 2006 P5+1 offer states, "they have now agreed that a final agreement would include a provision for reviewing the program's suspension and permitting Iran to have a uranium-enrichment facility on its own territory."²⁸⁹ The U.S. representative at the IAEA Board

²⁸⁸ In a related argument, Tabatabai argues that Iranian domestic politics shaped the terms of the JCPOA. (i.e. the important things that varied were within Iran.) Ariane Tabatabai, "Negotiating the 'Iran Talks' in Tehran: the Iranian drivers that shaped the Joint Comprehensive Plan of Action," *Nonproliferation Review*, Vol. 24, No 3-4 (2017), pp. 225-242. The four Iranian domestic constraints she identifies are: public opinion, the legislative branch, the Supreme Leader, and the security establishment. Rouhani also took actions to remove bureaucratic roadblocks within Iran: "he stacked his cabinet with many of the individuals who had supported his efforts to reach a deal with the E3 in 2003-2005," including Zarif, and "he moved the nuclear file from the SNSC to the Foreign Ministry and placed it under Zarif's supervision...as Rouhani had authority over the composition of the Foreign Ministry, but not that of the SNSC, which includes members of the legislative and judiciary branches, the supreme leader's office, and the armed forces." Tabatabai, "Negotiating the 'Iran talks' in Tehran" (2017), p. 230. A more extreme view of the case, which some maintain, is that it was not a coercive bargain at all—that sanctions were not effective in compelling any concessions from Iran. Hossein Mousavian, "It Was Not Sanctions that Brought Iran to the Table," *Financial Times*, November 19, 2013. Trita Parsi, "No, Sanctions Didn't Force Iran to Make a Deal," *Foreign Policy*, May 14, 2014. Tabatabai reviews these arguments, including a similar assertion by Zarif, but she concludes that sanctions did play a role in making Iran return to the negotiating table in 2012. Tabatabai, "Negotiating the 'Iran talks' in Tehran" (2017), p. 226.

²⁸⁹ Paul Kerr, "U.S., Allies Await Iran's Response to Nuclear Offer," *Arms Control Today*, July 1, 2006, <https://www.armscontrol.org/act/2006_07-08/IranResponse>. See also Robert J. Reardon, *Containing Iran: Strategies for Addressing the Iranian Nuclear Challenge* (RAND, 2012), pp. 17-18.

of Governors meeting in February 2006 also spoke about needing to “find a way” to allow Iran to have peaceful nuclear energy without proliferation risk.²⁹⁰ Without specifics, the outline of a final agreement that left Iran with some residual enrichment capacity was clear to all parties. It was other impediments that remained. Obama administration officials recalled the same understanding as they considered their own negotiation strategies years later. “Iran pocketed that they were going to have an enrichment program long before the JCPOA negotiations,” reflected Richard Nephew, “so the Obama enrichment offer was less of a big deal inside of Iran than we think. In 2008 we said that the resolution would result in Iran being treated as any other NPT state (thus right to enrichment). It didn’t change things for five years. So it was not as big a deal to offer enrichment [in 2013] as we think.”²⁹¹ Finally, Nicholas Miller agrees that inducements had little role to play in Iran’s decision to sign the JCPOA “unless we define the lifting of sanctions as an inducement, a definition which would make it very difficult to distinguish the effect of sanctions versus rewards in changing state behavior.”²⁹² As should be clear by now, I consider the lifting of sanctions as a coercive assurance, not an inducement.

A third alternative explanation might consider the case of Iran as more brute force than coercion. The Stuxnet cyberattack and the assassination of Iranian nuclear scientists could be considered brute force rather than coercive strategies chosen by states attempting to prevent Iranian proliferation.²⁹³ These efforts, however, were not all that effective.²⁹⁴ They certainly did

²⁹⁰ IAEA Board of Governors, “Record of the 1148th Meeting,” February 2, 2006, GOV/OR.1148, p. 8. IAEA Archives, Vienna, Austria.

²⁹¹ Reid Pauly interview with Richard Nephew, Harvard Kennedy School, Cambridge, MA, April 16, 2018.

²⁹² Miller, *Stopping the Bomb* (2018), p. 242. Miller does not, however, consider maintaining a limited enrichment capacity as an inducement. Miller, *Stopping the Bomb* (2018), pp. 242-243.

²⁹³ The United States and Israel are jointly believed to have carried out the Stuxnet attack. Israel alone is believed to be behind the assassination campaign. Israel has never admitted it. Ehud Barak opaquely writes that “certain steps were taken to delay them [Iran].” Barak, *My Country, My Life* (2018), p. 417. Earlier in the timeframe Iraq also carried out a brute force attack against Iranian nuclear facilities in 1984, during the Iran-Iraq War.

²⁹⁴ Jon R. Lindsay, “Stuxnet and the Limits of Cyber Warfare,” *Security Studies*, 22, 3 (2013), pp. 365-404.

not result in degrading the Iranian nuclear program to a level anywhere close to the limits that were enforced as part of the JCPOA. We can confidently say that Iran made concessions as part of a coercive bargain and was not made to limit its program by force. It had a choice. If anything, these brute force actions should be considered as part of a coercive campaign—threats of more punishment to come if Iran did not comply.

A fourth alternative explanation is specific to the role of Israel as spoiler. Some contend that Israel was never serious about striking Iran; that it was a bluff, directed at reducing the Obama administration's freedom of action.²⁹⁵ It is nearly impossible to know whether Israel was bluffing in 2011-2012. Israeli leaders themselves may disagree. Nonetheless, for the purposes my theory of coercive assurance, a bluffing Israel is perfectly consistent. Whether or not Israel was bluffing, it was attempting to signal that it was not bluffing. Therefore, as far as the primary coercer (the United States) is concerned, the signal to Iran is the same: Israel is incapable of independent coercive operations, the U.S. has coercive control and the risk of spoilers is minimized.

Finally, some experts have argued over the course of the extended Iranian nuclear crisis that Tehran never had the intent to pursue nuclear weapons. Or, at least, that nuclear weapons research was limited to a rogue IRGC operation and compartmentalized without the support or knowledge of civilian leadership.²⁹⁶ Through such a lens, the case is best understood as a spiral, a tragic misunderstanding. But this theory of the case has been decimated by the documentary evidence in the tranche of Iranian files stolen by Israel. If the records are bona fide, there can

²⁹⁵ Sobelman, "Restraining an Ally: Israel, the United States, and Iran's Nuclear Program, 2011-2012," (2018).

²⁹⁶ For instance, Nader notes that the Khatami government "may not have had full knowledge of the actual status of the nuclear program," as "national security decision-making was shared between pro-Khatami institutions such as the Ministry of Foreign Affairs and anti-Khatami organizations such as the Revolutionary Guards, which has had a large role in setting the direction of the nuclear program." Nader, "Influencing Iran's Nuclear Decisions," in Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (2012), p. 220.

now be no doubt that Iran pursued a nuclear weapon prior to 2003 with the express knowledge and approval of high-level civilian leaders in Tehran.

XIII. Conclusion

The long saga of coercing Iran over its nuclear weapons program reveals mixed results for Coercive Assurance Theory. When Tehran finally agreed to verifiable limits on its nuclear program as part of the 2015 JCPOA, it did so both because it faced credible and painful punishments and because it perceived an opportunity to avoid that pain with concessions. It was coercively assured. Nevertheless, a credible threat of extreme pain (invasion) in the wake of the 2003 American invasion of Iraq caused Iran to make concessions absent coercive assurance.

Both concessions were substantial. On balance, however, the 2015 concessions may have been more significant. In 2003, Iran tacitly conceded to coercion by secretly scaling back a weaponization effort that had already settled on a nuclear warhead design and made preparations for a test. At the time, however, Iran lacked the fissile material for a weapon and accepted no additional verification while some overt and covert research programs continued. In 2015, Iran acceded to coercion in a formal agreement and scaled back an advanced fissile material production capability, redesigned the core of a reactor, and accepted an intrusive verification regime to enforce research and production limits and detect violations. Moreover, considering the cumulatively to its knowledge of nuclear weapons production, Iran was closer to the bomb in 2015 than in 2003.

Iran's primary coercer, the United States, signaled assurance between 2012 and 2015 in three ways. First, Washington disentangled its nuclear demands from demands over ballistic missiles, terrorism, and human rights (confirming H6_{D1} and H6_{D2}). In the trenches of negotiating

over sanctions relief, entanglement proved a sticking point as the parties devised specific compromises to suspend only nuclear-related punishments while offering enough relief. Second, Washington demonstrated coercive control domestically and internationally; communicating that the White House, not Congress or Israel, would get to decide when to impose or withhold punishments (confirming H7_{C1} and H7_{C2}). Third, in collaboration with the IAEA, Iran's coercers allowed it to plausibly deny its nuclear sins by reducing the visibility of concessions both sides privately understood (confirming H8_{V1} and H8_{V2}). Furthermore, the existence of coercer partners (the Europeans, Russia, and China) helped to (loosely) tie American hands, reduce incentives to renege, and diversify Iran's portfolio of sanctions relief.

None of these assurance signals sent in 2012-2015 undermined the credibility or severity of threats. Iran remained under consistently intense sanctions pain and the assurance signals were sent simultaneous to threat signals, such as the visible rehearsal of military strike plans. Threat Independence Theory (H5a and H5b) would seem a better framework for the relationship between threat and assurance in this case than Tradeoff theory (H4b and H4c). On the other hand, spikes in threat credibility—after the 2003 invasion of Iraq and the 2006 referral of Iran to the UNSC—were associated with greater demand for coercive assurance, affirming one Tradeoff hypothesis (H4a).

The JCPOA negotiations, the longest sustained international deliberations of their kind,²⁹⁷ included several attempts to communicate coercive assurance. Officials in the Obama administration speak as if they understood the concept. For instance, Richard Nephew writes in his lessons learned from the Iran deal that a sanctioner must “present the target state with a clear

²⁹⁷ Sherman writes that they were also “the longest an American secretary of state (or an Iranian one for that matter) had spent in one place [Vienna].” Sherman, *Not for the Faint of Heart* (2018), p. x.

statement of the conditions necessary for the removal of pain.”²⁹⁸ And Gary Samore writes that, “sanctions as a tool of coercive diplomacy are only as effective as the prospect of relieving them in exchange for policy shifts is real.”²⁹⁹

Of course, the JCPOA was not an unalloyed good. The JCPOA did not “solve” the Iranian nuclear issue. It merely kept a verifiable lid on Iran’s nuclear weapons hedge and bought time. It also came with foreign policy tradeoffs that may or may not have been strictly speaking worth it. The tacit approval of Saudi Arabia, for instance, seems to have been indirectly purchased by the Obama administration’s overlooking of Riyadh’s catastrophic war (and humanitarian disaster) in Yemen.³⁰⁰ It further remains to be seen how much the United States will pay for renegeing on its JCPOA commitments.

As of this writing, the fact that Iran continues to abide by the terms of the coercive bargain³⁰¹ is essentially an indication that the more assuring aspects of the deal have so far worked by design—Iran may yet see benefits to continuing to abide by the limits on its nuclear program, so long as other parties to the agreement remain committed. These benefits may be both economic³⁰² and security-related—if the United States wants to attack Iran today it would

²⁹⁸ Nephew, *The Art of Sanctions* (2018). Nephew’s theory of sanctions in the Iran case implies a Tradeoff of Threat and Assurance. He writes that there is a “goldilocks’ inflection point of effective sanctions,” which was reached in the Iran case. Sanctions can, therefore, fail by “over-reaching” because they are too onerous and cause the target to double down. Nephew, *The Art of Sanctions* (2018), p. 124.

²⁹⁹ Vaez, “Spider Web: The Making and Unmaking of Iran Sanctions,” (2013).

³⁰⁰ Micah Zenko, “Happy Anniversary to America’s Shameful Travesty of a War in Yemen,” *Foreign Policy*, March 27, 2017, <<https://foreignpolicy.com/2017/03/27/happy-anniversary-to-americas-shameful-travesty-of-a-war-in-yemen/>>.

³⁰¹ President Rouhani threatened in a May 2019 speech to breach the caps on low enriched uranium production and cease conversion of the Arak reactor core. David E. Sanger, Edward Wong, Steven Erlanger, and Eric Schmitt, “U.S. Issues New Sanctions as Iran Warns It Will Step Back From Nuclear Deal,” *New York Times*, May 8, 2019, <<https://www.nytimes.com/2019/05/08/us/politics/iran-nuclear-deal.html>>. As of this writing, however, according to IAEA verification reports, Iran has not abrogated its commitments in the JCPOA. See IAEA Board of Governors, “Verification and monitoring in the Islamic Republic of Iran in light of United Nations Security Council resolution 2231 (2015),” GOV/2018/47, November 12, 2018, <<https://www.iaea.org/sites/default/files/18/11/gov2018-47.pdf>>.

³⁰² As these other countries continue to engage with Iran, they diminish the pain that American economic leverage could cause. For instance, in an attempt to keep the deal afloat by salvaging economic engagement with Iran, the governments of France and Germany have agreed to host a special trade channel, called the Special Purpose Vehicle, that would shield firms from secondary sanctions and allow European firms to continue to import Iranian

have to do so without the support or even approval of other major powers, a less “legitimate” use of force.

Iranian leaders seem to perceive their position this way. Even before the United States formally withdrew, Iranian President Rouhani asserted that “We will stay in the JCPOA as long as our interests are observed. The US staying in or out of [the accord] will not be the main criteria for our decision.”³⁰³ Rouhani seemingly alluded to the concept of coercive control by elaborating that “a mistake made by Mr. Trump is that he thinks the nuclear agreement is an agreement with the Democratic Party.”³⁰⁴ It is an open question, however, whether the benefits of compliance continue to be worth it to Tehran. Foreign Minister Zarif has suggested that Iran is keeping its options open. “We have the possibility of a partial reduction of our commitment [under the JCPOA],” Zarif has said, adding, “We will have to make that decision when the time comes.”³⁰⁵ President Rouhani escalated these statements in a May 2019 speech, threatening to

oil and other trade. It would function by establishing “a system of credits to facilitate compensation for goods traded between Iran and Europe—allowing some trade to proceed without the need for European commercial banks to make or receive payments to Iran.” Laurence Norman, “France and Germany Step in to Circumvent Iran Sanctions,” *Wall Street Journal*, November 26, 2018, <<https://www.wsj.com/articles/france-and-germany-step-in-to-circumvent-iran-sanctions-1543251650>>. The UK is considering helping. “[The special trade channel] is a clear, practical demonstration that we remain firmly committed to the historic 2015 nuclear deal struck with Iran... for as long as Iran keeps implementing it fully,” said UK Foreign Secretary Jeremy Hunt. “European countries open Iran trade channel to bypass US sanctions,” *Financial Times*, <<https://www.ft.com/content/5bc4cbbe-2581-11e9-8ce6-5db4543da632>>. On Europe’s “narrow path between what Iran expects and what the United States can tolerate,” see Naysan Rafati and Ali Vaez, “Europe Tests the Boundaries on Iran,” *Foreign Affairs*, February 4, 2019. Even if European trade is insufficient to keep Iran in the JCPOA, supporters hope that foreign banks and oil purchases by countries such as China, India, and Turkey will allow Tehran to perceive benefits to sticking within the limits of the deal. Trump administration officials have travelled to at least thirty-two capitals attempting to curtail foreign banking access to Iranian firms, but some analysts expect countries like Russia, China, Oman, and Iraq to continue their engagement with Iran. Ian Talley, “After Iran Sanctions, U.S. Faces a Huge Task: Compliance,” *Wall Street Journal*, November 6, 2018, <<https://www.wsj.com/articles/after-iran-sanctions-u-s-faces-a-huge-task-compliance-1541545300>>.

³⁰³ “Iran pledges commitment to nuclear accord even if US withdraws,” *Financial Times*, February 6, 2018.

³⁰⁴ “Iranian government must listen to demands of the people: Rouhani,” *Reuters*, February 6, 2018.

³⁰⁵ Michael R. Gordon, “Trump Digs in for a Long, Cold War With Iran,” *Wall Street Journal*, November 4, 2018, <https://www.wsj.com/articles/trump-digs-in-for-a-long-cold-war-with-iran-1541329200?mod=article_inline>.

breach the cap set on low enriched uranium production unless European leaders helped to alleviate the pain of U.S. sanctions.³⁰⁶

For his part, the Supreme Leader seems to have learned not to negotiate with the United States. “I made a mistake in permitting our foreign minister to speak with them. It was a loss for us,” said the Ayatollah.³⁰⁷ “The Islamic Republic cannot deal with a government that easily violates an international treaty, withdraws its signature and in a theatrical show brags about its withdrawal on television.”³⁰⁸ And noting Iran’s relative power position, the ultimate source of the dilemma of coercive assurance, Khamenei declared, “The Islamic Republic can negotiate with America whenever it achieves the power to resist America’s pressure and blackmail. Today this is not the case.”³⁰⁹

Summary of Evidence for the Mechanisms

This section restates the key evidence in the Iran case and specifies how each supports a theorized mechanism. It also evaluates the strength of the evidence (Strong, Fair, Weak). Stronger evidence is well-sourced and is challenged by fewer potential confounding explanations. I walk through the below chart from top to bottom.

³⁰⁶ David E. Sanger, Edward Wong, Steven Erlanger, and Eric Schmitt, “U.S. Issues New Sanctions as Iran Warns It Will Step Back From Nuclear Deal,” *New York Times*, May 8, 2019, <<https://www.nytimes.com/2019/05/08/us/politics/iran-nuclear-deal.html>>.

³⁰⁷ “Iran Supreme Leader admits mistake over nuclear talks,” *Reuters*, August 15, 2018, <<https://www.reuters.com/article/us-iran-usa-vice-president/iran-supreme-leader-admits-mistake-over-nuclear-talks-idUSKBN1L00U8>>.

³⁰⁸ Bozorgmehr Sharafedin, “Iran leader: Europe must protect trade with Tehran to save nuclear deal,” *Reuters*, May 23, 2018, <<https://www.reuters.com/article/us-iran-nuclear/iran-leader-europe-must-protect-trade-with-tehran-to-save-nuclear-deal-idUSKCN11O17Q>>.

³⁰⁹ “Mike Pompeo forms ‘Iran Action Group’ for post-nuclear deal policy,” *CBS News*, August 16, 2018, <<https://www.cbsnews.com/news/mike-pompeo-forms-iran-action-group-for-post-nuclear-deal-policy/>>.

Iran Mechanisms	Direct Effect	Signaling Effect
<i>Disentangling Demands</i>	2015 UN resolution (Strong evidence)	CBI sanctions; Business outreach (Fair evidence)
<i>Coercive Control</i> (Domestic and International)	P5+1 Partners (Weak evidence)	Discouraging Israel (Weak evidence) 2015 INARA (Fair evidence)
<i>Reducing Visibility</i> (Domestic and International)	--	2015 PMD (Strong evidence)

First, in negotiating the coercive bargain of the JCPOA the United States and its partners disentangled demands in two distinct ways. The Obama administration first communicated that it was willing to lift nuclear-related sanctions in exchange for concessions on Iran’s nuclear program. More concretely, this meant that UN resolutions sanctioning Iran needed to be amended to separate demands over its ballistic missiles program from demands over its nuclear program. Doing so had a direct effect, because nuclear-related sanctions could now be lifted without running afoul of UN resolutions. It removed the UN as an impediment to sanctions relief. This is strong evidence in favor of the mechanism. Memoirs and interviews with negotiation participants show that this disentanglement was critical to reaching an agreement; it was the last piece of the puzzle to fall into place before Iran agreed to the deal. Moreover, in the details of negotiations over sanctions relief, Iran and the United States negotiated over which sanctions would count as “nuclear-related.” For instance, sanctions on the Central Bank of Iran, put in place by the Treasury Department for money-laundering but meant to bring leverage on Iran over its nuclear program, required lifting. The fact that Iranian negotiators latched on to these entanglement problems and negotiators recount the compromises they struck to relieve these sanctions is “fair” evidence in favor of the mechanism at work. The willingness of

American negotiators to find compromises to disentangle such sanctions and then explain them to businesses sent a signal that Washington was not intent on reimposing nuclear sanctions after a deal.³¹⁰ Still, the evidence is not as strong as it could be. We do not know whether Iran would have agreed to make concessions even in the absence of such disentanglement.

Second, coercers did try to communicate coercive control. Iran may have perceived that striking a bargain with a multilateral coalition would insulate it against the costs of one coercer reneging. This one-sided evidence is weak, however, as it is based on American negotiators' perceptions of Iranian beliefs. The evidence for the signaling effects of coercive control is better. Iran clearly worried about Israel as a potential spoiler who could strike the Iranian nuclear program; diplomatic communications including IAEA Board of Governors meetings show such concerns. U.S. policymaker memoirs and interviews reveal that the United States attempted to signal that it was restraining Israel. And these efforts did appear to restrain the Israeli security establishment from supporting a strike. I still code this evidence as weak, however. We have no evidence of internal Iranian perceptions of these signals. The best available evidence for the impact of Israel on coercive bargaining is correlative: Israeli leaders decided against conducting an independent strike in mid-2012 just as Iran agreed to secret initial talks with the United States in Oman.

The Obama administration's efforts to exert coercive control domestically, by securing Congress' tacit support for sanctions relief, were likely even more important. Iran was well aware of Congress' role as a potential spoiler; a public letter from Republican senators especially raised its profile in negotiations. And Iran's negotiators asked about the possibility of Republican opposition as they observed the Obama administration negotiate the compromise Iran Nuclear

³¹⁰ However, this is quite apart from whether a subsequent administration would renege. See discussion of coercive control.

Agreement Review Act (INARA) to bound congressional oversight. U.S. negotiators report that they discussed this with their Iranian counterparts, including how the president would use his executive powers to waive sanctions. In the end, INARA passed the Congress two months before the conclusion of the JCPOA. This evidence is the strongest for the coercive control mechanism, but it is still only “fair” evidence. The Obama administration was trying to send the Iranians a signal of the durability of a bargain despite internal political polarization. It counts as a signaling mechanism especially because the White House already had the ability to waive certain sanctions by executive order, but it wished to show that it could use that authority without provoking congressional intervention. At the very least, the administration and its (slim) bipartisan support on this issue signaled that they did not intend to be duplicitous and reimpose sanctions themselves. In the end, however, without records of Iranian decisionmaking we do not know how well they thought the United States had solved this problem. Perhaps it was imperfect but enough.

Third, Iran’s coercer sent a signal that they were not seeking cause for further aggression by demonstrating their willingness to forget Iran’s past misdeeds. With the aid of coercers, the IAEA accelerated and closed the file in the “possible military dimension” of Iran’s nuclear program. This way Iran did not have to admit that it pursued nuclear weapons or admit that it had abandoned the program under pressure. The evidence for this coercer strategy is strong. IAEA reports and Iranian documents stolen by Israel reveal a clear gap between what coercers knew privately with what they pushed for Iran to admit publicly. They kept their eyes instead on future verification. Iran’s communications with the IAEA show that it appreciated this deniability and played along; although without records of internal deliberation we do not know whether Iran would have agreed to a bargain with less deniability.

Finally, the summary chart does not include evidence that is disconfirming of Coercive Assurance Theory and the mechanisms. The strongest evidence of this kind comes from Iran's decision to abandon significant parts of its weaponization program in 2003, absent any coercer manipulation of the mechanisms. The evidence of these concessions is strong, including declassified American intelligence and stolen Iranian government records. But these records do not explain Iranian leaders' decisionmaking at the time. We do not know whether they considered coercive assurance in any way.

CHAPTER 7: COERCIVE PROSPECTS FOR NORTH KOREA

This chapter applies the theory of the book to the case of North Korea (the Democratic People's Republic of Korea, or DPRK) today. In many ways, it begins in medias res, minimizing the deep history of US-DPRK relations in favor of focusing on recent events. This is a policy evaluative chapter, not a theory testing chapter. Good theoretical insights should illuminate contemporary policy challenges.

The analysis is based on broad reading and a research trip to South Korea (the Republic of Korea, or ROK). In September 2018, I travelled to Seoul to interview officials from the progressive administration of President Moon Jae-in in the Ministry of Foreign Affairs, the Ministry of Unification, and the Ministry of National Defense. I also met with Korean experts and academics at the Asan Institute, the Institute of Foreign Affairs and National Security at the Korean National Defense Academy, and Seoul National University. To gather an American perspective, I interviewed officials from and advisors to United States Forces Korea (USFK). Given the relevance of officials' remarks to ongoing negotiations, most interviewees have been kept anonymous.

According to Coercive Assurance Theory, coercers must convince targets that punishments will not be carried out if they comply. Credible and severe threats alone are insufficient to successfully compel. Moreover, coercers can bolster their assurances while making threats by: (1) disentangling multiple demands and tying each to separable punishments;

(2) demonstrating coercive control by reining in potential spoilers who could punish independently, and (3) allowing the target to save face by reducing the visibility of its concessions.

While much is uncertain about the future of US-ROK-DPRK relations, the theoretical framework of Coercive Assurance Theory yields pessimistic conclusions when passed over the case of coercion on this peninsula. Yet, pessimism in this case is overdetermined, as it is not clear that threats are sufficiently credible to coerce North Korean concessions either, regardless of the credibility of coercive assurance. I therefore recommend that, in light of the serious impediments to successful coercion in this case, the Trump administration should abandon denuclearization and adopt new strategic aims, such as verifiable limits on fissile material and ballistic missile production. But as long as compellence remains the American strategy of choice, policymakers in Washington should recognize that their threats of sanctions and military force are not yet perceived in Pyongyang as contingent upon North Korean behavior.

Section one evaluates how the Trump White House thinks in terms of threat credibility—the Maximum Pressure campaign, maintaining tight sanctions, the possibility of a bloody nose strike. Section two turns to evaluating the, mostly absent, necessary conditions for coercive assurance on the peninsula. Washington faces the problem of entangled demands, as a nuclear weapons program is one of many issues dividing the United States, the international community and North Korea. It is reasonable for Pyongyang to wonder whether nuclear sanctions will not just be relabeled missile or CBW or human rights sanctions after any bargain. In terms of controlling punishments, the U.S. president seems to think that there is strategic value in being unpredictable, which will undermine his leverage. Moreover, coordination between the two primary coercers, the United States and South Korea, remains fitful—Seoul is inclined to move

forward with economic links to the North regardless of progress on denuclearization. Coercers will also struggle to reduce the visibility of any concessions. High profile missile and nuclear tests have all but eliminated the possibility of discretion. Denuclearization may now be akin to public humiliation. And the intelligence channel that was established when Secretary Pompeo was at the CIA has now become a means of communication that surfaces on the front page of the newspaper. Section three concludes that the prospects of a coercive denuclearization bargain are not good. Given the stated alternative is brute force, soon we might be more concerned with helping Washington save face than Pyongyang.

I. Threats and Threat Credibility

As of this writing, North Korea has conducted six nuclear tests, including one with a thermonuclear device in September 2017. It has also tested ballistic missiles with intercontinental range. Its Hwasong-14 and Hwasong-15 missile tests in July and November 2017, respectively, demonstrated the ability to reach the U.S. mainland. Kim Jong Un subsequently declared his nuclear arsenal “complete” and warmed to new negotiations. The hermit leader has now met with President Moon Jae In at five Inter-Korean Summits and President Trump at two US-DPRK Summits (Singapore in June 2018 and Hanoi in February 2019).

The Trump administration calls its strategy to confront North Korea “Maximum Pressure”—a mixture of economic sanctions, diplomatic isolation, and threats of military force. Now matched with summit diplomacy, the goal is ostensibly North Korean “denuclearization.” When devising this strategy, the Trump White House thinks in terms of threat credibility.

“Maximum Pressure” Sanctions

Amid the slow-moving crisis of high-profile North Korean missile and nuclear tests, the Trump administration succeeded in rallying UN Security Council support for tighter sanctions in 2017.¹ Especially significant were Resolutions 2371 (August 2017) and 2374 (September 2017), which banned the export of coal, iron, lead, and seafood and imposed limits on the import of crude oil and refined petroleum products, respectively. These sanctions were important because of the cooperation of China, particularly to curtail the export of coal in 2017.² Ninety percent of North Korean trade is with China. Pyongyang just does not rely on anyone else the way it does on China.

Nevertheless, maintaining tight economic pressure has been difficult. First, Washington blames China for loosening the restrictions on the northern border and letting air out of the sanctions balloon. President Xi met with Kim Jong Un three times in 2018 and once in 2019, so far. Their May 2018 meeting in Dalian reportedly laid plans to bolster long-term economic links.³ Official Chinese sanctions enforcement indeed papers over a grey market of activity, which rebounded after the June 2018 Trump-Kim Singapore Summit. Truck traffic on bridges between North Korea and China returned to normal volumes, Chinese tourism increased, and gas prices in North Korea fell—all suggesting a looser northern border.⁴ An ongoing trade dispute between Washington and Beijing has impede further coordination.

¹ Unilateral American sanctions have, of course, been imposed. For instance, the DPRK was put on the State Sponsor of Terrorism list in 1988 after it shot down a civilian airliner. Bush removed them in 2008. Trump added them back on. But multilateral sanctions are necessary to bring pressure on North Korea, as the country simply does not rely on the United States or the international financial system for very much.

² Simon Denyer, “China suspends North Korean coal imports, striking at regime's financial lifeline,” *Washington Post*, February 18, 2017.

³ Jane Perlez, “A Trump-Kim Deal Could Send China’s Trade With North Korea Soaring,” *New York Times*, June 5, 2018.

⁴ Benjamin Katzeff Silberstein, “Further indications that China’s sanctions pressure on North Korea is decreasing,” *38 North*, July 27, 2018, <<https://www.38north.org/articles/affiliates/north-korean-economy-watch/15911/>>.

Second, North Korea is very good at evading sanctions in creative ways. Facing a decline in fuel shipments from China, for instance, North Korea adapted to sanctions by making synthetic fuels from coal.⁵ And domestic factories have increased production to make up for the drop off of imported Chinese processed foods.⁶

It is, therefore, unlikely that economic strangulation is sufficiently painful to outweigh the benefits of Pyongyang's nuclear program. The prices of staple goods in North Korean markets remained quite stable in 2018.⁷ The North Korean currency (the won) remains steady against the dollar.⁸

Military Threats and a "Bloody Nose" Option

American military threats complement the coercive sanctions regime. Regular exercises from 2015-2017 were designed to support the Maximum Pressure campaign as shows of force. For instance, the United States conducted its first ever naval exercise with three aircraft carriers.⁹ It has also rotated strategic assets into the theater.

South Korean forces are also making investments to threaten North Korean nuclear weapons with conventional counterforce capabilities. The ROK military calls this effort the "Massive Punishment and Retaliation Program."

⁵ Jeremy Page, "North Korea Turns Coal into Gas to Weather Sanctions," *Wall Street Journal*, December 17, 2018, <<https://www.wsj.com/articles/north-korea-squeezes-its-coal-to-outlast-sanctions-11545067376>>.

⁶ Eun-Young Jeong and Dasl Yoon, "The New Look of North Korea's Economy: 'It's All Capitalism There Now,'" *Wall Street Journal*, February 25, 2019, <<https://www.wsj.com/articles/sanctions-were-supposed-to-cripple-north-koreas-economy-theyre-not-working-11551116032>>.

⁷ This could have been because of government intervention to stabilize prices. Benjamin Katzeff Silberstein, "The calm throughout the storm: North Korean market prices in May 2018," *38 North*, May 31, 2018, <<https://www.38north.org/articles/affiliates/north-korean-economy-watch/15413/>>.

⁸ Eun-Young Jeong and Dasl Yoon, "Sanctions Were Supposed to Cripple North Korea's Economy. They're Not Working.," *Wall Street Journal*, February 25, 2019, <https://www.wsj.com/articles/sanctions-were-supposed-to-cripple-north-koreas-economy-theyre-not-working-11551116032?mod=hp_lead_pos1>.

⁹ Lisa Ferdinando, "Three-Carrier Strike Force Conducts Exercise in Western Pacific," Department of Defense News, November 13, 2017, <<https://dod.defense.gov/News/Article/Article/1370807/three-carrier-strike-force-conducts-exercise-in-western-pacific/>>.

Occasional leaks to the press of plans for a war on the Korean Peninsula appear to have complemented the coercive military strategy.¹⁰ In 2017, South Korea made public threats of leadership targeting and described plans to establish a “decapitation unit” in the ROK forces.¹¹ North Korea also reportedly stole through cyber espionage US-ROK military contingency plans for North Korea, including a “decapitation” plan.¹²

Trump administration officials also publicly considered a so-called “bloody-nose” option for limited military strikes on North Korean nuclear targets.¹³ The unspecified target set, the logic goes, would be significant enough to compel Kim to reconsider his nuclear program, but so limited as to not provoke retaliation. Whether or not there has been any serious deliberation about a strike in the White House, the administration sees coercive value in keeping the threat on the table. The nomination of Victor Cha as U.S. ambassador to South Korea, for instance, was rescinded in January 2018 after he penned an op-ed expressing grave reservations about a “bloody nose” strike.¹⁴ Speaking in the context of the bloody nose option, National Security Advisor H.R. McMaster said in December 2017, “We want the resolution to be peaceful, but as the president has said, all options are on the table and we have to be prepared, if necessary, to compel the denuclearization of North Korea without the cooperation of that regime.”¹⁵ (Notably, this is not what compellence means. If you “compel” successfully, the target has cooperated.)

¹⁰ Helene Cooper and Eric Schmitt, “U.S. Banks on Diplomacy with North Korea, but Moves Ahead on Military Plans,” *New York Times*, February 28, 2018.

¹¹ Choe Sang-hun, “South Korea Plans ‘Decapitation Unit’ to Try to Scare North’s Leaders,” *New York Times*, September 12, 2017, <<https://www.nytimes.com/2017/09/12/world/asia/north-south-korea-decapitation-.html>>.

¹² Choe Sang-hun, “North Korean Hackers Stole U.S.-South Korean Military Plans, Lawmaker Says,” *New York Times*, October 10, 2017, <<https://www.nytimes.com/2017/10/10/world/asia/north-korea-hack-war-plans.html>>.

¹³ Gerald F. Seib, “Amid Signs of a Thaw in North Korea, Tensions Bubble Up,” *Wall Street Journal*, January 9, 2018.

¹⁴ Victor Cha, “Giving North Korea a ‘Bloody Nose’ Carries a Huge Risk to Americans,” *Washington Post*, January 30, 2018.

¹⁵ Jon Sharman, “US prepared to ‘compel the denuclearisation’ of North Korea, says Trump national security adviser HR McMaster,” *Independent*, December 19, 2017.

The specter of North Korean retaliation raises doubts about the credibility of American military threats. While the North is incapable of conquering the South, it could inflict massive damage on the South Korean capital, Seoul. The sprawling city of 10 million people (25 million in the greater metropolitan area), nearly 20 percent of South Korea's population of 51 million, is a mere 35 miles from the Demilitarized Zone. North Korean long-range conventional artillery and rockets, dug into fortified mountain positions, could shell the city without much difficulty. North Korea has more than once threatened to turn Seoul into "a sea of fire."

Objective military analyses foresee tens of thousands civilian casualties before an artillery barrage on Seoul could be neutralized or suppressed.¹⁶ Many of the 150,000 Americans living in Seoul would die in a rocket or artillery barrage, too. And these estimates do not even consider chemical or nuclear weapons.¹⁷ USFK is on the record in congressional testimony with concerns about the vulnerability of Seoul.¹⁸ "At the end of the day, we can't pull the trigger," said Steve Tharp, retired USFK Assistant Secretary for the Military Armistice Commission.¹⁹

Scaring Seoul into Action

The threat of a limited military strike against North Korea was indeed very scary to at least one audience on the Peninsula: leaders in Seoul. Reflecting on military tensions in 2017, "Bloody nose, left of launch, these scared us," one MOFA official said.²⁰ Moon Chung-In,

¹⁶ Michael J. Mazarr, Gian Gentile, Dan Madden, Stacie L. Pettyjohn, and Yvonne K. Crane, "The Korean Peninsula: Three Dangerous Scenarios," RAND, <https://www.rand.org/content/dam/rand/pubs/perspectives/PE200/PE262/RAND_PE262.pdf>; Michael O'Hanlon, "Stopping a North Korean Invasion: Why Defending South Korea is Easier Than the Pentagon Thinks," *International Security*, Vol. 2, No. 4 (Spring 1998), pp. 147-148.

¹⁷ Anthony Cordesman, "South Korea's Civilian Vulnerabilities in War," CSIS, March 22, 2018.

¹⁸ "Statement of General Vincent K. Brooks," Testimony before the Senate Armed Services Committee, March 14, 2018, <https://www.armed-services.senate.gov/imo/media/doc/Brooks_03-15-18.pdf>.

¹⁹ Author's interview with Steve Tharp, Seoul, September 2018.

²⁰ Author's interview with a South Korean official in Seoul, September 2018.

widely regarded as President Moon Jae-In's chief intellectual advisor, reported that the president was "really scared" by the language from Washington.²¹ And President Moon Jae-in publicly promised Koreans in 2017 that he would not allow unilateral American action without South Korean approval.²² This crisis experience kicked the Moon government into high gear to broker US-DPRK diplomatic engagement and organize a series of inter-Korean summits.

Some still think that talks were renewed in 2018 because Kim was cowed by pressure. President Trump himself has reportedly asked Moon to credit him publicly with forcing North Korea to the table.²³ Yet there is little evidence to suggest that this is true. Rather, since assuming office in May 2017, Moon's government sent a "consistent message to North Korea that it was open to dialogue any time, any place."²⁴ But Kim Jong Un did not respond until after the North's successful November 2017 ICBM test, after which he declared his arsenal "complete." Only then did he reach out and engage, sending a delegation to the 2018 Winter Olympics. Kim may want some sanctions relief, but he is negotiating from a position of strength.

II. Coercive Assurance

It should be no surprise that American threats of military force are not perceived in Pyongyang as contingent upon North Korean behavior—Washington's threats lack coercive assurance.²⁵ The day after meeting with Chairman Kim in Panmunjom in May 2018, President

²¹ Uri Friedman, "How South Korea Pulled Trump and Kim Back from the Brink," *The Atlantic*, May 27, 2018.

²² John Delury, "Take Preventive War with North Korea Off the Table," *Foreign Affairs*, August 22, 2017, <<https://www.foreignaffairs.com/articles/north-korea/2017-08-22/take-preventive-war-north-korea-table>>.

²³ Uri Friedman, "How South Korea Pulled Trump and Kim Back from the Brink," *The Atlantic*, May 27, 2018.

²⁴ *Ibid.*

²⁵ Some scholars have made similar arguments in their analyses of US-ROK-DPRK relations. See Robert Jervis and Mira Rapp-Hooper, "Perception and Misperception on the Korean Peninsula," *Foreign Affairs* (May/June 2018), <<https://www.foreignaffairs.com/articles/north-korea/2018-04-05/perception-and-misperception-korean-peninsula>>. Andrew Kydd writes about the deficit of trust between the US and North Korea. As I spell out in the theory chapter, I intentionally do not use the word "trust." But Kydd points to fundamentally incompatible interests, i.e. regime change versus regime survival as the source of mistrust. Andrew Kydd, "Promises on North Korea are easy to make

Moon relayed that Kim was eager to meet President Trump, but that “what is not so clear to him is how firmly he can trust the United States’ commitment to ending hostile relations and providing security guarantees for his government, should it denuclearize.”²⁶ North Korean officials have reiterated this message themselves in international fora. “Without any trust in the U.S. there will be no confidence in our national security and under such circumstances there is no way we will unilaterally disarm ourselves first,” said North Korean Foreign Minister Ri Yong ho at the UN in September 2018. “The perception that sanctions can bring us on our knees is a pipe-dream of the people who are ignorant about us,” Ri also said, hoping to have sanctions removed.²⁷ And, for an internal audience, a May 2018 editorial in *Rodong Sinmun*, the official newspaper of the Korean Workers’ Party, is worth quoting at length:

In the international arena, oppressive actions by imperialists [i.e., the United States] are becoming more and more domineering. ... Imperialists are obsequious before the powerful and commit atrocities against the weak. Yielding to imperialists and choosing to make compromises with them is essentially a death sentence. ... Libya continued down the path to make concessions to the U.S., not knowing that it would have to strip all the way down to its underwear. These concessions led to misery.²⁸

but hard to keep. Here’s why.” *Washington Post*, June 7, 2018, <<https://www.washingtonpost.com/news/monkey-cage/wp/2018/06/07/promises-on-north-korea-are-easy-to-make-but-hard-to-keep-heres-why/>>.

²⁶ Michael D. Shear and David E. Sanger, “U.S. and North Korean Officials Race to Resurrect Trump-Kim Meeting,” *New York Times*, May 27, 2018, <<https://www.nytimes.com/2018/05/27/us/politics/us-north-korea-trump-summit-meeting.html>>.

²⁷ David Brunnstrom and Michelle Nichols, “North Korea says ‘no way’ will disarm unilaterally without trust,” *Reuters*, September 29, 2018.

²⁸ “We must confront the imperialist front,” *Rodong Sinmun*, May 29, 2018. Translated by Grace Liu. Reprinted in Joshua Pollack, “Friendship without Benefits: North Korea Doesn’t Want Uncle Sam’s Dollar,” *Arms Control Wonk*, May 30, 2018.

American threats without complementary coercive assurance will not compel Pyongyang to abandon its nuclear weapons. Indeed, the threat of American invasion was motivation for the North Korean nuclear weapons program to begin with.²⁹

Some in the U.S. government acknowledge this coercive assurance deficit. Commander of USFK until the end of 2018, General Brooks, assessed that “without trust we’ll find it difficult to move forward.”³⁰ USFK, therefore, was and remains explicitly in a “low key” mode, holding off on the kinds of exercises it conducted from 2015-2017 to demonstrate resolve. Additional means of assuring the North could include: a wider DMZ, removal of guard posts along the DMZ,³¹ and repatriation of UN command. USFK has already established a North-South Hotline.³²

There are also military-to-military talks happening at the general officers’ level between North and South Korea.³³ In October 2018 these talks produced an agreement to de-mine the Joint Security Area (JSA) and to pull troops and firearms from JSA guard posts.³⁴ The UN Command participates in these mil-to-mil talks.³⁵

²⁹ Jeffrey Lewis, “How the US turned North Korea into a nuclear power,” *Prospect Magazine*, October 10, 2017.

³⁰ Emily Birnbaum, “US commander: Challenge with North Korea is making progress despite lack of trust,” *The Hill*, July 22, 2018, <<https://thehill.com/policy/defense/398272-us-commander-challenge-with-north-korea-is-making-progress-despite-lack-of>>.

³¹ Steve Tharp says that discussing the removal of guard posts in the DMZ is actually an infringement on the UNC’s authority and responsibility, since it is in charge of the DMZ. ROK cannot technically negotiate their removal.

³² One major change of U.S. posture, which was already underway before “maximum pressure” and was never designed to be a reassuring signal, is the ongoing movement of all U.S. military forces in Korea south of the Han river. These decisions were made ten years ago.

³³ Hyonhee Shin and Joyce Lee, “Two Koreas discuss reducing military tension amid reports of North Korea missile activity,” *Reuters*, July 30, 2018, <<https://www.reuters.com/article/us-northkorea-southkorea-military/two-koreas-discuss-reducing-military-tension-amid-reports-of-north-korea-missile-activity-idUSKBNIK09V>>.

³⁴ This was in fulfillment of Annex II of the Third Inter-Korean Summit declaration from September 19, 2018. Ankit Panda, “Koreas Successfully Implement September 2018 Comprehensive Military Agreement,” *The Diplomat*, November 2, 2018, <<https://thediplomat.com/2018/11/koreas-successfully-implement-september-2018-comprehensive-military-agreement/>>.

³⁵ “Two Koreas, U.N. Command to discuss disarming Joint Security Area in DMZ,” *Yonhap News*, October 16, 2018, <<https://en.yna.co.kr/view/AEN20181016001951315>>.

Two U.S. Secretaries of State have also paid lip service to the logic of coercive assurance. Rex Tillerson, for instance, tried to communicate to North Korea that the United States was interested in giving them “the security they seek”—assurance—as we as “future economic prosperity”—carrots.³⁶ Tillerson specified, “We do not seek a regime change, we do not seek the collapse of the regime, we do not seek an accelerated reunification of the peninsula, we do not seek an excuse to send our military north of the 38th parallel.”³⁷ Encouragingly, Pompeo has also said that he has read the CIA’s history of negotiating with North Korea and avowed a desire to learn from past mistakes.³⁸ Just prior to the Singapore Trump-Kim Summit, Pompeo expressed the concept of coercive assurance: “We’re prepared to take actions that will provide them sufficient certainty that they can be comfortable that denuclearization isn’t something that ends badly for them — indeed, just the opposite, that it leads to a better, brighter future for the North Korean people.”³⁹

But this is cheap talk. Many impediments to coercive assurance remain. The rest of this section considers each of the coercive assurance mechanisms proposed in this book—disentangling demands, coercive control, and reducing visibility—and assesses their prospects in the US-ROK-DPRK case. Each has a scant chance of being implemented effectively.

³⁶ “U.S. Secretary of State Rex Tillerson’s Remarks at a Press Availability,” State Department, Washington, DC, August 1, 2017, <<https://useu.usmission.gov/u-s-secretary-state-rex-tillersons-remarks-press-availability/>>.

³⁷ “North Korea: US not seeking regime change, says Rex Tillerson,” *BBC News*, August 2, 2017, <<https://www.bbc.com/news/world-us-canada-40797613>>.

³⁸ Patrick McEachern, “Marching Toward a U.S.-North Korea Summit: The Historical Case for Optimism, Pessimism, and Caution,” *Texas National Security Review* 1, 3 (May 2018).

³⁹ Mark Landler, “As Trump-Kim Summit Nears, President Is Confident, but Wide Gaps Remain,” *New York Times*, June 11, 2018, <<https://www.nytimes.com/2018/06/11/world/asia/trump-kim-summit.html>>.

Entangled Demands

North Korea's nuclear weapons program is one of many issues dividing the United States, the international community, and North Korea. Pyongyang may reasonably wonder whether nuclear sanctions will not just be relabeled missile or CBW or human rights sanctions after any nuclear bargain.

When non-nuclear issues have come to the fore, North Korea has bristled. For example, when the UN Human Rights Committee passed a resolution in November 2018 condemning North Korea's "longstanding and ongoing systematic, widespread and gross violations of human rights," Pyongyang accused the United States of weaponizing human rights to "justify their racket for sanctions and pressure."⁴⁰ North Korea explicitly sees the nuclear and human rights issues as entangled. A North Korean Foreign Ministry statement, for instance, said that it would be the "greatest miscalculation" if Washington believed it could compel nuclear concessions from Pyongyang by ratcheting up the "human rights racket to an unprecedented level." Rather, the Foreign Ministry warned, such a strategy "will block the path to denuclearization on the Korean Peninsula forever."⁴¹

It is possible that the North sees President Trump, who is a rare U.S. leader to not express much care for human rights, as an opportunity for a bargain on the nuclear issue alone. Perhaps the issues are temporarily separable. On the other hand, North Korea might just as easily understand that future administrations will care about human rights again and reconstitute any relieved pressure.

⁴⁰ Choe Sang-Hun, "North Korea Accuses Washington of Weaponizing Human Rights as Nuclear Talks Stall," *New York Times*, November 29, 2018, <<https://www.nytimes.com/2018/11/29/world/asia/north-korea-human-rights.html>>.

⁴¹ Choe Sang-Hun, "Hard-Line U.S. Tactics Will 'Block' Path to Denuclearization, North Korea Warns," *New York Times*, December 16, 2018, <<https://www.nytimes.com/2018/12/16/world/asia/north-korea-nuclear-talks-us.html>>.

Coercive Control

There are significant domestic and international reasons why the Trump administration has struggled to demonstrate coercive control in its campaign to compel Pyongyang. That is, many spoilers lurk with independent capacity to punish North Korea economically, and the North knows it.

Lack of Domestic Control

Domestically, the Trump administration faces meagre odds of getting Congress to provide sanctions relief to the North under any foreseeable circumstances. As in the past, any sanctions relief or economic carrots that are part of a coercive bargain with North Korea will have to come from partners in the region, such as South Korea, Japan, China, or Russia.⁴² Some South Korean officials already see the U.S. Congress as a barrier to eventual necessary sanctions relief.

North Korea perceives Congress' spoiler role as well. In September 2018, for example, Foreign Minister Ri blamed "U.S. domestic politics" for pessimism about the implementation of the US-DPRK Singapore Joint Statement. "Those in the political opposition in the U.S.," he declared, "make it their daily business to slander the DPRK claiming that we cannot be trusted." These same actors were "enforcing [sic] the administration to make unreasonable unilateral

⁴² The Agreed Framework, for instance, did not require Congress to appropriate funds for the KEDO light water reactor project in North Korea.

demand to our side ... only relying on coercive method is not helpful at all in building trust; on the contrary it only increases mistrust.”⁴³

A second domestic reason to question the Trump administration’s signals of coercive control is the conspicuous division of the White House against itself.⁴⁴ Even American allies perceive different signals coming out of the White House. When Trump’s advisors speak, many Koreans do not know whether they speak for Washington. Some just wait for the president to tweet.

North Korean officials seem to perceive this internal division as well. For example, DPRK officials complain not about President Trump but his “gangster-like advisors.”⁴⁵ And the North Korean media concurred in September 2018 that “conservative politicians of the US are taking the lead in persisting in such gangster logic” as demanding unilateral disarmament.⁴⁶

Similarly, reacting to a contradiction between the President Trump’s hawkish tweets⁴⁷ and a softer op-ed coauthored by two U.S. cabinet officials that expressed “no interest in regime change or accelerated reunification of Korea,”⁴⁸ a North Korean official described the United

⁴³ “Statement by H.E. RI YongHo, Minister for Foreign Affairs of the Democratic People's Republic of Korea at the General Debate of the 73rd Session of the General Assembly of the United Nations,” September 29, 2018, <https://gadebate.un.org/sites/default/files/gastatements/73/kp_en.pdf>

⁴⁴ For instance, I was in Seoul when the *New York Times* published an anonymous op-ed by a “senior official” claiming to be “part of the resistance inside the Trump administration.” Many South Korean interviewees were wrapped by the drama of a president out of control within his own White House. Anonymous, “I Am Part of the Resistance Inside the Trump Administration,” *New York Times*, September 5, 2018, <<https://www.nytimes.com/2018/09/05/opinion/trump-white-house-anonymous-resistance.html>>.

⁴⁵ Ankit Panda and Vipin Narang, “North Korea’s Nuclear Program Isn’t Going Anywhere,” *Foreign Affairs*, August 13, 2018, <<https://www.foreignaffairs.com/articles/north-korea/2018-08-13/north-koreas-nuclear-program-isnt-going-anywhere>>

⁴⁶ KCNA, “U.S. Is to Blame for Stalemate in Dialogue,” September 19, 2018, <<http://www.rodong.rep.kp/en/index.php>>.

⁴⁷ The offending tweet described the United States as “locked and loaded.”

⁴⁸ Jim Mattis and Rex Tillerson, “We’re Holding Pyongyang to Account,” *Wall Street Journal*, August 13, 2017.

States as “a divided country.” He “could not understand how the two Cabinet members could so clearly contradict the President.”⁴⁹

Perhaps no example is more emblematic of the confused signaling of this divided White House than National Security Advisor John Bolton’s invocation of the “Libya Model” in May 2018 in his first television interview since assuming his post.⁵⁰ Bolton was referring to the case (covered in chapter 4 of this book) in which the United States had struck a coercive bargain to eliminate Muammar Qaddafi’s nuclear program only to aid in his overthrow and gruesome death eight years later.⁵¹

The White House tried to walk it back, but the signal was sent.⁵² North Korean state media responded with a statement that in the case of Libya, the United States had “coaxed” Libya to “disarm itself and then swallowed it up by force.”⁵³ North Korea’s Vice Foreign Minister Choe Son Hui further emphasized the point, tying it to their pursuit of nuclear weapons: “in order not to follow in Libya’s footsteps, we paid a heavy price to build up our powerful and

⁴⁹ Evan Osnos, “The Risk of Nuclear War with North Korea,” *The New Yorker*, September 18, 2017. Thank you to Tyler Jost for bringing this example to my attention.

⁵⁰ There are other examples of internal division as well. A more recent one came in March 2019, when President Trump contravened by tweet the actions of his own Treasury Department to sanction two Chinese shipping companies. Michael R. Gordon and Ian Talley, “Trump Blocks Large-Scale Sanctions Planned Against North Korea,” *Wall Street Journal*, March 22, 2019, <<https://www.wsj.com/articles/trump-reverses-additional-north-korea-sanctions-announced-a-day-ago-11553282228>>. The White House also seems to have attempted a cover up for this chaos. Saleha Mohsin, Jennifer Jacobs, and Nick Wadhams, “Trump Tried to Undo North Korea Penalty, Contrary to U.S. Account,” *Bloomberg*, March 26, 2019, <<https://www.bloomberg.com/news/articles/2019-03-26/trump-tried-to-undo-n-korea-penalty-contrary-to-u-s-account>>.

⁵¹ Megan Specia and David E. Sanger, “How the ‘Libya Model’ Became a Sticking Point in North Korea Nuclear Talks,” *New York Times*, May 16, 2018, <<https://www.nytimes.com/2018/05/16/world/asia/north-korea-libya-model.html>>.

⁵² “The Libya model is not a model we have at all with North Korea...,” said Donald Trump, “with Kim Jong Un, he’d be there, running his country.”

⁵³ Jeffrey Lewis, “John Bolton to Kim Jong Un: Give Up Your Nukes Like Gaddafi Did—Before We Killed Him,” *Daily Beast*, March 29, 2018, <<https://www.thedailybeast.com/john-bolton-to-kim-jong-un-give-up-your-nukes-like-gaddafi-didbefore-we-killed-him>>.

reliable strength that can defend ourselves.”⁵⁴ In the “Libya Model” fallout, President Trump withdrew from scheduled talks.⁵⁵ (The summit was later rescheduled.)

Hawks like Bolton participating in the policymaking process undermine coercive diplomacy. Prior to assuming his role as National Security Advisor, John Bolton made no secret of his preference for dealing with North Korea: to “eliminate the regime by reunifying the peninsula under South Korean control,” something he wished to accomplish in coordination with China.⁵⁶ North Korea has to assume that these threats are real, even if others in the administration are interested in such threats only for the purpose of coercing Pyongyang. U.S. Special Representative for North Korea Stephen Biegun is still reportedly fending off hawks in the administration who want him to tow a harder-line.⁵⁷

Finally, Trump is a rare case of a U.S. president who sees strategic value in being unpredictable. “We must as a nation be more unpredictable,” candidate Trump declared in a speech on foreign policy in April 2016.⁵⁸ And in office he has told aides to portray him as “crazy” for the purpose of negotiating leverage.⁵⁹ Trump has applied this Madman Theory to the

⁵⁴ “Full statement by North Korea’s vice-foreign minister and nuclear negotiator Choe Son Hui,” *Strait Times*, May 24, 2018, <<https://www.straittimes.com/asia/east-asia/full-statement-by-north-koreas-vice-foreign-minister-and-nuclear-negotiator-choe-son>>.

⁵⁵ Megan Specia and David E. Sanger, “How the ‘Libya Model’ Became a Sticking Point in North Korea Nuclear Talks,” *New York Times*, May 16, 2018, <<https://www.nytimes.com/2018/05/16/world/asia/north-korea-libya-model.html>>.

⁵⁶ Carol Morello and Anne Gearan, “Pompeo says U.S. assuring Kim that it does not seek his overthrow,” *Washington Post*, May 13, 2018, <https://www.washingtonpost.com/politics/pompeo-says-us-has-assured-kim-that-it-does-not-seek-his-overthrow/2018/05/13/f6f7e8a8-56b2-11e8-858f-12becb4d6067_story.html?utm_term=.bf0a4937162d>.

⁵⁷ Bolton, for instance, reportedly told Biegun in an inter-agency meeting not to move too quickly on an end of war declaration. John Hudson and David Nakamura, “Stephen Biegun tutored Sarah Palin on foreign policy. Now he’s trying to clinch a North Korea deal for Trump,” *Washington Post*, February 20, 2019.

⁵⁸ “Transcript: Donald Trump’s Foreign Policy Speech,” *New York Times*, April 27, 2016.

⁵⁹ Jonathan Swan, “Scoop: Trump urges staff to portray him as ‘crazy guy,’” *Axios*, October 1, 2017, <<https://www.axios.com/scoop-trump-urges-staff-to-portray-him-as-crazy-guy-1513305888-c1cbdb89-6370-4e13-98ed-28c414e62a35.html>>.

DPRK case.⁶⁰ This will actually undermine his leverage by limiting his coercive assurance—a madman may punish capriciously.

The Alliance and South Korean Independence

Internationally, the United States must demonstrate its coercive control over South Korea. South Korean armed forces are certainly capable of acting independently to punish North Korea, and it has made moves toward acquiring greater independence from the United States, but for now Washington maintains coercive control over Seoul.

On the one hand, ROK military operational adjustments suggest that in terms of capabilities the trend is not favorable (i.e. United States is losing more coercive control over time). As a legacy of the Korean War, there are four overlapping military commands in South Korea: United Nations Command (UNC), Combined Forces Command (CFC), U.S. Forces Korea (USFK), and ROK Joint Chiefs of Staff (ROKJCS). UNC has remained on the peninsula since the 1953 armistice. The United States kept its own forces as well, organized under USFK. South Korea maintains its own sovereign military under the command of the ROKJCS (which actually has operational control despite sharing its name with the U.S. advisory body). And CFC was established in 1978 to coordinate joint U.S. and ROK operations in wartime.⁶¹

For the purpose of assessing coercive control, I consider the organization of CFC, the body meant to coordinate the joint use of force. The CFC does not ‘own’ any forces, it just has a staff. However, at DEFCON 3 (the detection of a direct threat, as declared by the U.S. J2 for

⁶⁰ Jonathan Stevenson, “The Madness Behind Trump’s ‘Madman’ Strategy,” *New York Times*, October 26, 2017, <<https://www.nytimes.com/2017/10/26/opinion/the-madness-behind-trumps-madman-strategy.html>>.

⁶¹ Earlier organizational efforts still coordinated between the United States and South Korea, but CFC became a senior command in 1978. “Combined Forces Command,” USFK, <<http://www.usfk.mil/About/Combined-Forces-Command/>>.

intelligence based on ‘indicators of warning’ and agreed to by the ROKJCS), the South Korean president may place specific forces under the operational control of CFC.⁶² Warplan 5027 Annex 1 projects that about 60-70% of all ROK forces will be handed over to the command of CFC in wartime.

CFC is a binational command with an American commander and a South Korean deputy. Since assuming the presidency, however, Moon has expressed a desire to get ROK wartime operational control back within his term. In practice, this means to flip the commanders of CFC, to make a Korean the Commander and an American the Deputy. There are two “conditions” set for this eventual repatriation of CFC command: (1) the purchasing of more lethal conventional capabilities (includes conventional missiles, in part to make up for the declining force size from 650,000 to 500,000 because of South Korea’s low birth rate⁶³), and (2) political conditions—broad language that is interpretable. On the first condition, the United States regulates the range and payload of ROK conventional missiles. South Korea has continually asked and received over the years approval to expand the scope of its allowable conventional missile arsenal.⁶⁴ On the second condition, the level of U.S. coercive control may depend on whether these political conditions could be met with or without a denuclearized North Korea.

On the other hand, South Korea and the United States have a uniquely tight alliance in terms of joint consultation, which suggests that South Korean independent military action is very unlikely. The United States and South Korea, for instance, maintain a combined infantry

⁶² The word “control” here is important. As CFC is a binational command, technically neither side gives up “command” of its forces in wartime.

⁶³ As part of ROK military reform, the roles of the Services are changing as well. There are now more Air Force and Navy officers in the Ministry of National Defense, and fewer Army officers and graduates of the Korean Military Academy. Moon wants to make these changes, so he is putting fewer KMA and Army officers in charge, who would resist changes more. Author’s interview with a USFK officer, Seoul, September 2018.

⁶⁴ Choe Sang-Hun and David E. Sanger, “After North Korea Test, South Korea Pushes to Build Up Its Own Missiles,” *New York Times*, July 29, 2017 <<https://www.nytimes.com/2017/07/29/world/asia/us-south-korea-north-korea-missile-test.html>>.

division, a collocated naval headquarters, and a shared intelligence facility. Another USFK official concurred that, “the ROK-US alliance is more combined than NATO. It is unique in the world. There are standing joint consultative bodies. All joint planning and intelligence.”⁶⁵

There is deep integration for responses in crisis. ROK forces are allowed to carry out their own immediate response if attacked, according to the rules of engagement and the right to self-defense under the UN charter, Article 51. They fired back with artillery, for instance, when the North shelled Yeonpyeong in 2010. After the initial response, the United States and South Korea consult in a working group and make recommendations for courses of action that get passed up the chain, through two rounds of flag officers and then to four-star generals. “Security Consultative Meetings” include the JCS chairmen of both countries. And because of the rapid pace of North Korean ‘provocations’ (e.g. missile or nuclear tests) in recent years, U.S. and ROK forces have practiced this coordination over and over again. While the two allies used to write provocation responses separately, now they develop them together.

Overall, the US-ROK alliance is uniquely integrated. The US likely has coercive control in terms of the use of force. Indeed, one interviewee observed, “in general, the United States has wanted to be more forward leaning/stronger in response to provocations than the ROK. The ROK pulls us back in the process of consultations.”⁶⁶

In terms of perceptions in Pyongyang, one USFK official assessed, “ROK is understood to be a puppet of the United States.”⁶⁷ But also that “the North knows that the ROK is sympathetic to them. They are not concerned about ROK independent use of force.”⁶⁸ This is a rare bright spot for coercive assurance in this case.

⁶⁵ Author’s interview with Carl McGowan, USFK, Seoul, September 2018.

⁶⁶ Author’s interview with a USFK officer, Seoul, September 2018.

⁶⁷ Author’s interview with a USFK officer, Seoul, September 2018.

⁶⁸ Author’s interview with a USFK officer, Seoul, September 2018.

Two Wheels on a Bicycle?

Far from South Korea punishing the North independent of Washington, a more pressing problem as I see it is one of coordinating the assurance of sanctions relief or the carrot of a peace treaty with Seoul. This is a problem especially on display in the latest round of US-ROK-DPRK engagement. Instead of having all parties at the table (Six Party Talks, Four Party Talks, etc.), there are two parallel bilateral negotiations in need of coordination.⁶⁹

Coordination over Peace. Indeed, two aims—peace and denuclearization—are prioritized differently by the two coercers. The problem with these two aims is the sequencing. The United States officially wants denuclearization (or at least major progress) first, before peace. North Korea officially wants it the other way around: peace first, then denuclearization. South Korea officially wants progress on both at the same time.⁷⁰ But what intentions lie behind these official bargaining positions?

Words are important in this case. South Korean officials speak of holding off on a peace treaty until denuclearization is complete, but they may not feel the same way about an “end of war declaration,” which could come sooner. This is why Moon government officials speak of establishing a “peace regime,” not a “treaty” per se.⁷¹ Moon has openly encouraged the United States to declare an end to the Korean War.⁷²

⁶⁹ After the failure of the Hanoi Summit, however, the Moon administration indicated its intention to participate in three-way talks in the future.

⁷⁰ Uri Friedman, “Inside the Dispute Derailing Nuclear Talks with North Korea,” *The Atlantic*, August 29, 2018.

⁷¹ On “peace regime,” see Joshua Pollack, “The Trump-Kim summit was far from ‘epochal’ but at least it’s a return to diplomacy,” *Los Angeles Times*, June 12, 2018, <<https://www.latimes.com/opinion/op-ed/la-oe-pollack-north-korea-20180612-story.html>>.

⁷² Choe Sang-Hun, “Declare End to Korean War, South’s Leader Urges U.S.,” *New York Times*, September 20, 2018, <<https://www.nytimes.com/2018/09/20/world/asia/north-south-korea-baekdusan-paekdu-kim-moon.html>>.

The South Korean government also sees real economic value in officially ending the war. The Moon administration has a plan for growth with the North and through the North—links to China and Russia. They want to sell commodities and technology both to and through North Korea. “We need to think about our economic frontier,” one official told me,⁷³ envisioning rail links to China through the DPRK, but also beyond China to other Asian countries and up to the trans-Siberian railroad and on to the European market. The aspirational railway map in Dorason Station, the last station and abrupt end of the railroad that South Korea has built to the DMZ, envisions the same railroad network (photo below). The same official envisioned the possibility of a “South Korea-North Korea Free Trade Agreement...eventually.”⁷⁴ President Moon likely also sees the prospect of peace as a way of delivering on his promises to bring jobs to younger South Koreans.



Aspirational railway map displayed in Dorason Station, South Korea. Photo by Reid Pauly.

⁷³ Author's interview with a South Korean official in Seoul, September 2018

⁷⁴ Author's interview with a South Korean official in Seoul, September 2018

It is also possible that the United States will abandon its hardline position against ending the war. Some see President Trump as tempted to agree to an end of war declaration as a means of angling for the Nobel Peace Prize, regardless of progress on denuclearization.⁷⁵ Trump reportedly promised Kim at their first summit that he would agree to an end of war declaration.⁷⁶ Others, such as Bolton, in the administration are reportedly against such a declaration.⁷⁷ As of this writing, none has yet been signed.

Coordination over Sanctions Relief. Coordinating any sanctions relief is equally problematic. Both the United States and South Korea could relieve sanctions independently. South Korean officials and some firms are champing at the bit for sanctions relief. In September 2018, for instance, just after the Third Inter-Korean summit, the U.S. Treasury Department had to warn South Korean banks that it was “deeply concerned” about planned financial cooperation between North and South.⁷⁸ U.S. officials directly warned banking executives about their observed activities “preparing to re-open branches within North Korea or task forces and working groups to support inter-Korean economic cooperation.”⁷⁹ A report on the warning noted that, “While maintaining that it remains in lockstep with Washington, the administration of South Korea’s Moon Jae-in has forged ahead with efforts to engage with the North, drawing U.S. concern over a range of issues, from sanctions enforcement to plans for a no-fly zone between

⁷⁵ Mark Landler, “Peace Treaty, and Peace Prize, for North Korea Appear to Tempt Trump,” *New York Times*, February 21, 2019, <<https://www.nytimes.com/2019/02/21/us/politics/trump-kim-north-korea.html>>.

⁷⁶ Alex Ward, “Trump promised Kim Jong Un he’d sign an agreement to end the Korean War,” *Vox*, August 29, 2018, <<https://www.vox.com/2018/8/29/17795452/trump-north-korea-war-summit-singapore-promise>>.

⁷⁷ *Ibid.*

⁷⁸ Joyce Lee, “U.S. Treasury calls reveal ‘deep concern’ over South Korea banks’ North Korea plans: document,” *Reuters*, October 22, 2018, <<https://www.reuters.com/article/us-us-northkorea-southkorea-banks/u-s-treasury-calls-reveal-deep-concern-over-south-korea-banks-north-korea-plans-document-idUSKCN1MW19O>>.

⁷⁹ *Ibid.*

the two Koreas.”⁸⁰ Moon’s office chalked the lack of coordination up to “procedural differences.”⁸¹

While South Korea is unlikely to defy UN resolutions by lifting sanctions on its own, its Unification Ministry continues to lay the groundwork for economic links with the North.⁸² South Korean engineers are conducting inspections of roads and railways in the DPRK, with the hope of putting them to productive use. There has been no direct investment in the DPRK because of sanctions, but on-site surveys and planning have continued.⁸³

Washington, for its part, remains confident in its coercive control. “They won’t do it without our approval,” Trump told the press in October 2018, “They do nothing without our approval.”⁸⁴

At the end of the day, however, it is the United States that has in the past failed to coordinate with Seoul. Consider, for example, President Trump’s suspension of joint military exercises at the Singapore Summit, which officials confirmed to me occurred unilaterally without consultation. “We were caught by surprise,” a South Korean official told me, “There was

⁸⁰ Ibid.

⁸¹ Ibid.

⁸² It is worth considering whether South Korea’s maintenance of a Ministry of Unification is a threat to the North. A hopeful video at a DMZ tourist site, for instance, shows the Blue south taking over the Red northern half of the peninsula. Under such a future, the Kim family would not likely remain in power. The existence of a Unification Ministry may also complicate the message of American coercive assurance to the North. The North wants a security guarantee from the United States, but if Washington provides it, does that mean it is not in support of unification? Let alone Chinese fears of a unified peninsula allied to the United States. Overall, this is likely not a source of threat to the North. The Unification Ministry is honest with themselves about getting confederation instead of true unification at first, allowing Kim to remain in power in the North. Neither does it dictate the agenda of the South Korean government.

⁸³ “South Koreans go to North for railway reconnection survey,” *Strait Times*, November 30, 2018, <<https://www.straitstimes.com/asia/east-asia/south-koreans-go-to-north-for-railway-reconnection-survey>>.

⁸⁴ David Brunnstrom and Joyce Lee, “Trump says S. Korea will not lift N. Korea sanctions without U.S. approval,” *Reuters*, October 10, 2018, <<https://www.reuters.com/article/usa-northkorea-southkorea-sanctions/trump-says-skorea-will-not-lift-nkorea-sanctions-without-us-approval-idUSL4N1WQ5YB>>.

no coordination with US or ROK to make concessions in Singapore.”⁸⁵ Trump did not even coordinate it with his own Pentagon.

Some Koreans diplomatically express hope for better coordination in the future. Others, however, worry about the signals from Washington. “The US is all hawks today,” said an official, expressing skepticism about American desire to coordinate.⁸⁶ Compared with past efforts, today’s coordination is notably lacking. As one long-serving official told me, “During the Six Party talks, we shared everything. Bolton shared a memo, a concept paper on what we sought to achieve and how on CVID. There was good coordination. But today there is not much sharing. No concept paper.”⁸⁷

Other Impediments to Coercive Control

Seoul has domestic constraints as well. South Korea’s legislature failed to ratify the Panmunjom Declaration, a bilateral agreement reached at the April 27 Inter-Korean Summit, as conservatives pointed to a lack of North Korean progress on denuclearization. For now, Moon’s office asserted that the declaration did not need ratification by the National Assembly and moved forward; but it will need lawmakers if and when they wish to spend money in the North. As reporters observed, “the failure to ratify the declaration will work against Mr. Moon’s efforts to deepen engagement with Pyongyang, as the declaration contained promises to provide economic aid to the North and ease inter-Korean military tensions.”⁸⁸

⁸⁵ Author’s interview with a USFK officer, Seoul, September 2018.

⁸⁶ Author’s interview with a South Korean official in Seoul, September 2018

⁸⁷ Author’s interview with a South Korean official in Seoul, September 2018

⁸⁸ Andrew Jeong and Chun Han Won, “U.S., North Korea Meet to Try to Salvage Summit,” *Wall Street Journal*, May 28, 2018, <<https://www.wsj.com/articles/u-s-north-korea-meet-to-try-to-salvage-summit-1527500643>>.

The conservative opposition in South Korea is highly skeptical of the current talks with Pyongyang, and is concerned about the future of the ROK-US alliance. They are trying not to let Moon off the hook for North Korean denuclearization. “Moon doesn’t understand how much the US cares about denuclearization. Moon never visited the US before becoming president. The Moon government thinks more about inter-Korean politics than about being a member of the international community,” said Shin Beomchol of the conservative Asan Institute. Shin further believes that “Moon does not fear North Korean nuclear weapons. They are okay with long-term denuclearization. Secretly it is not a priority.”⁸⁹

Reducing Visibility

The odds are also long of visibility reduction bolstering coercive assurance to compel the denuclearization of North Korea. Denuclearization diplomacy is now front-page news whenever the Trump administration makes a move. The visibility of these interactions is not conducive to compelling concessions, as the North has little opportunity to save face.

There are several reasons for this. First, the barbs traded back and forth during 2017’s high profile missile and nuclear tests have all but eliminated the possibility of public discretion. Second, Trump has decided to elevate North Korea relations to made-for-TV summitry. His reality TV instincts are to have everything in public and very loud. This is not good for coercive bargaining.

Third, while the United States and North Korea have communicated via secret intelligence channels since at least 2009,⁹⁰ and Pompeo as CIA Director revived this channel to

⁸⁹ Author’s interview with Shin Beomchul, ASAN Institute, Seoul, September 2018.

⁹⁰ Through this channel, Deputy Directors of the CIA Michael Morell and Avril Haines both went to Pyongyang in 2012. Former head of the Reconnaissance General Bureau Gen. Kim Yong Chol was a point of contact in North Korea; now he is the Pyongyang’s chief negotiator. Michael R. Gordon and Warren P. Strobel, “U.S. and North

help set up the first Trump-Kim summit in June 2018, this quiet corridor has since become a high profile means of communication with Pompeo's posting as U.S. Secretary of State. With such publicity, denuclearization may now be akin to public humiliation.

Also unfortunate for reducing the visibility of coercive bargaining let alone concessions is the United States' concern that the North cannot perceive its signals without media attention.⁹¹ USFK advisors confirmed that they can be confident that the North perceives signals from the South and the United States through the press. "They have people that scour the internet and distill what they find into intelligence briefings."⁹² Another USFK official confirmed, "The North receives signals primarily through the media."⁹³ "We always go with the press/media publicizing our military signals because the DPRK can pick up the signals that way. Otherwise we can't be sure the DPRK got the message," said Steve Tharp.⁹⁴ Open signaling channels frustrate the prospect of reducing visibility.

III. Future Prospects

The North is a state whose gross domestic product is a fraction of the annual U.S. defense budget. Pyongyang knows and fears American power. Yet it defies Washington's coercive demands over its nuclear program. American threats are not complemented by coercive assurance.

Korean Spies Have Held Secret Talks for a Decade," *Wall Street Journal*, January 21, 2019,

<<https://www.wsj.com/articles/u-s-and-north-korean-spies-have-held-secret-talks-for-a-decade-11548091335>>.

⁹¹ Consider, for instance, that in 2000, F-18s strayed into DPRK airspace north of the DMZ. DPRK radars did not pick them up until they were back on the Southern side. Perhaps the North is less prepared for surprise attack than some think. Author's interview with Steve Tharp, Seoul, September 2018.

⁹² Author's interview with Carl McGowan, USFK, Seoul, September 2018.

⁹³ Author's interview with a USFK officer, Seoul, September 2018.

⁹⁴ Author's interview with Steve Tharp, Seoul, September 2018.

When the Trump administration held a second face-to-face summit with Kim Jong Un in Hanoi, Vietnam in February 2019, the talks ended in failure.⁹⁵ The administration asked for unilateral disarmament before any sanctions relief. Kim Jong Un refused.

While it is tempting to see such an interaction as a mere failure to agree on the price of concessions, the fundamental issue at play is one of coercive assurance. One actor is making threats and the other defying. Without coercive assurance, the target has no incentive to comply, no matter the price.

While Trump administration officials, such as John Bolton, believe that “the combination of the potential use of military force against North Korea and the maximum pressure campaign that the president waged on the economic front is what has brought Kim Jong Un to the table,”⁹⁶ Pyongyang is actually negotiating from a position of strength. It has not been successfully coerced and has made no concessions.⁹⁷

The North’s successful ICBM tests in 2017 changed Kim’s calculus. A lofted test of a Hwasong-14 in July demonstrated the ability to reach the U.S. mainland,⁹⁸ and a Hwaseong-15 test in November confidently put the East Coast of the United States in range. Kim subsequently declared his nuclear arsenal “complete” and opened to negotiations. He likely has no plans to get rid of his “treasured sword” to which he has already constructed monuments.⁹⁹ While the high-

⁹⁵ For a good summary, see Ankit Panda and Vipin Narang, “The Hanoi Summit Was Doomed From the Start,” *Foreign Affairs*, March 5, 2019, <<https://www.foreignaffairs.com/articles/north-korea/2019-03-05/hanoi-summit-was-doomed-start>>.

⁹⁶ “National Security Advisor John Bolton on His Trip to Russia, the Missing Saudi Jamal Khashoggi, Iran, China and Big Tech,” Hugh Hewitt Interview, October 12, 2018, <<http://www.hughhewitt.com/national-security-advisor-john-bolton-on-his-trip-to-russia-the-missing-saudi-jamal-khashoggi-iran-china-and-big-tech/>>.

⁹⁷ It is notable that the United States already tried to *deter* North Korea from acquiring nuclear weapons, and now that it has failed it is trying to *compel* North Korea to abandon its nuclear weapons. Having failed with the easier goal, Washington is pursuing the harder goal.

⁹⁸ Elisabeth Eaves, “Hecker: Talk to North Korea to avert a nuclear disaster,” *Bulletin of the Atomic Scientists*, August 7, 2017, <<https://cisac.fsi.stanford.edu/news/hecker-how-deal-north-korea>>.

⁹⁹ David Schmerler, “A Monumental Success,” *Arms Control Wonk*, March 10, 2018, <<https://www.armscontrolwonk.com/archive/1204857/a-monumental-success/>>.

level summitry goes on, the DPRK continues its work to “mass produce nuclear warheads and ballistic missiles,” as Kim pledged to do in his 2018 New Year’s Day address.¹⁰⁰ The arsenal is not in check.¹⁰¹

The Moon administration in South Korea seems to have recognized this reality. Seoul rightly wishes to avoid a war that its people would pay for dearly. It also wants to move forward on economic links to the North, preferably with the United States’ blessing, but it is a narrow path to navigate. Moon is under pressure domestically to broker progress in bilateral US-DPRK talks. Just how long this window for détente and diplomacy will remain open is unclear.

Meanwhile, a tacit freeze-for-freeze suspension of North Korean long-range missile and nuclear tests in exchange for suspended ROK-US military exercises keeps the window for bargaining open. But only temporarily.¹⁰² Kim seems to have tested the boundaries of this freeze-for-freeze by restarting short-range missile tests in May 2019.

¹⁰⁰ KJU January 1, 2018: we will “mass produce nuclear warheads and ballistic missiles, the power and reliability of which have already been proved to the full, to give a to the efforts for deploying them for action.” Ankit Panda and Vipin Narang, “North Korea’s Nuclear Program Isn’t Going Anywhere,” *Foreign Affairs*, August 13, 2018, <<https://www.foreignaffairs.com/articles/north-korea/2018-08-13/north-koreas-nuclear-program-isnt-going-anywhere>>. “Mass production” is perhaps an exaggeration; “serial production” may be a more accurate term.

¹⁰¹ Ankit Panda even claims that at least one Hwasong-15 ICBM was begun after the Singapore Summit. Ankit Panda, “US Intelligence: North Korea Is Continuing to Produce ICBMs,” *The Diplomat*, July 31, 2018, <<https://thediplomat.com/2018/07/us-intelligence-north-korea-is-continuing-to-produce-icbms/>>.

¹⁰² While a temporary exercise suspension is virtually costless and opens a window to diplomacy, military bureaucracies think that what seems to now be a longer-term exercise suspension threatens joint readiness. USFK has reservations about maintaining the suspension, because of the short deployment schedules of USFK troops. American personnel are stationed in South Korea for one- or two-year deployments; ROK officers change out in December and US officers change out in June. Skipping joint exercises drains institutional knowledge. The trained personnel simply rotate out. Joint exercises happen in August and March, but both the August 2018 and March 2019 exercises have been cancelled. As one USFK officer told me, “missing one exercise means 50% are trained; missing two exercises means single digits are trained in their battlefield duties.” While units are conducting more exercises at the unit-level, there are still no combined exercises as of this writing. The South Korean Ministry of National Defense is officially not concerned about readiness. Outside experts did confirm, however, that there are readiness concerns in the ROK military. It is likely, therefore, is that there is only a window for bargaining. Author’s interview with Steve Tharp, Seoul, September 2018; Author’s interview with a USFK officer, Seoul, September 2018; Courtney Kube, Dan De Luce, and Stella Kim, “U.S. to end large-scale military drills with South Korea,” *NBC News*, March 1, 2019, <<https://www.nbcnews.com/news/military/u-s-end-large-scale-military-drills-south-korea-n978111>>.

In this context, the United States needs to change strategy. The DPRK is a nuclear weapons state, Washington should accept it quietly.¹⁰³ Negotiations can then move on the much more plausibly achievable goal of capping and managing the North's nuclear arsenal—freezing the production of fissile material and missiles.¹⁰⁴ To achieve these more limited aims, Trump does not need to meet Kim alone in a room again—a setting in which he is liable to needlessly give away the farm. Detailed discussions should instead happen below the principal's level, getting it off the front page.¹⁰⁵

In complement to this strategy, the United States military posture should focus on deterrence, as a posture necessary for compellence is likely to undermine stable deterrence (e.g. with military coercion or 'left-of-launch' counterforce threats). Deterrence of the North is likely to remain stable.¹⁰⁶ Kim knows he would lose a war with the United States. Moreover, China has warned that it would intervene in a war started by the United States, but not necessarily in a war started by North Korea.¹⁰⁷

While there would still be risks of inadvertent war by misperception,¹⁰⁸ perhaps the greater threat to stable deterrence emanates from Washington, which could act rashly, believing

¹⁰³ Publicly recognizing the North as a nuclear power would make it more likely that South Korea would try to get its own nuclear weapons one day.

¹⁰⁴ On the use of coercive diplomacy to achieve more limited goals, see Michael McFaul, "Cold War lessons in coercive diplomacy for dealing with North Korea today," *FSI Stanford*, August 16, 2017, <<https://medium.com/freeman-spogli-institute-for-international-studies/cold-war-lessons-in-coercive-diplomacy-for-dealing-with-north-korea-today-5a729f719ce>>.

¹⁰⁵ A team of DPRK envoys who are truly empowered to negotiate would also be a sign of greater sincerity.

¹⁰⁶ For an optimistic view on the stability of deterrence, see David C. Kang, "Kim Jong-un Is Not a Freakish Buffoon," *New York Times*, July 5, 2017, <<https://www.nytimes.com/2017/07/05/opinion/kim-jong-un-north-korea-sanctions.html>>.

¹⁰⁷ Simon Denyer and Amanda Erickson, "Beijing Warns Pyongyang: You're on your own if you go after the United States," *Washington Post*, August 11, 2017, <https://www.washingtonpost.com/world/china-warns-north-korea-youre-on-your-own-if-you-go-after-the-us/2017/08/11/a01a4396-7e68-11e7-9026-4a0a64977c92_story.html>.

¹⁰⁸ Robert Jervis and Mira Rapp-Hooper, "Perception and Misperception on the Korean Peninsula," *Foreign Affairs* (May/June 2018), <<https://www.foreignaffairs.com/articles/north-korea/2018-04-05/perception-and-misperception-korean-peninsula>>. See also Robert Jervis, "Unpacking a US Decision to Use Force Against North Korea: Issues, Options, and Consequences," *38 North*, January 2018.

Kim to be the unpredictable actor. Trump, for example, reportedly asked Philippines President Rodrigo Duterte if Kim was “stable or not stable,” calling him a “madman with nuclear weapons.” And former UN Ambassador Nikki Haley reportedly assessed that Kim was “not a rational person.”¹⁰⁹

If the United States and the DPRK return to such a cycle of provocation and escalation again, and if the United States is once again rallying support for a coercive campaign to pressure the North, additional assuring policy changes might include abandoning the “One Korea” policy,¹¹⁰ and providing China with incentives to coordinate in coercion. If anything can mitigate Pyongyang’s assurance fears, the tools rest in Beijing.

If, as this book’s theory expects, the United States fails to compel the denuclearization of North Korea, Washington and the ROK-US alliance are likely to muddle through just fine. Brute force is still too costly an option. The United States would probably tolerate failure and a loss of face by blaming China. It would have little choice but to continue to be engaged on the peninsula in order to keep Seoul from proliferating as well.

Instead of admitting failure, however, the Trump administration could pull a bait and switch by claiming credit for bringing “peace” to the peninsula. The DPRK could keep its weapons while the Korean War is declared over and UN sanctions are relieved to allow some limited cooperation between North and South. The administration could even reduce the American military presence in accordance with Trump’s instincts. In relief with the 2017 war scare, for which this administration is responsible anyway, such a future is not so bad.¹¹¹

¹⁰⁹ John Delury, “Take Preventive War with North Korea Off the Table,” *Foreign Affairs*, August 22, 2017, <<https://www.foreignaffairs.com/articles/north-korea/2017-08-22/take-preventive-war-north-korea-table>>.

¹¹⁰ China will never accept it anyway, unless a unified Korea was not an American ally. Jay P. Lefkowitz, “We Need a Radical New Approach on North Korea,” *New York Times*, July 29, 2017, <<https://www.nytimes.com/2017/07/29/opinion/we-need-a-radical-new-approach-on-north-korea.html>>.

¹¹¹ A significant risk would be greater incentives for South Korea or Japan to acquire nuclear weapons themselves.

Pyongyang could even play along in the ruse, continuing its missile and nuclear testing moratorium and continuing to keep provocative ICBMs out of its military parades.¹¹² Trump may be satisfied with pretending North Korea has made progress toward denuclearization, when in fact it has not made coercive concessions.¹¹³

¹¹² Kim has not tested a nuclear weapon or ballistic missile since November 2017. He also did not parade any nuclear-capable systems in his September 9th military parade; a notable absence.

¹¹³ Ankit Panda and Vipin Narang, "Diplomacy without Denuclearization: North Korea in 2018," *War on the Rocks*, December 24, 2018, <<https://warontherocks.com/2018/12/diplomacy-without-denuclearization-north-korea-in-2018/>>.

CHAPTER 8: CONCLUSION

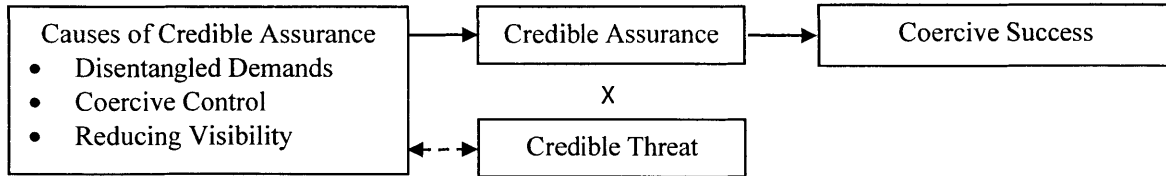
For as long as there have been humans, there has been coercion—deterrence and compellence. The first deterrent threat failed when Eve ate the apple.¹ That Biblical story is swiftly followed up by the first case of compellence. Moses’ “Let my people go!” is one of the first recorded compellent demands. Pharaoh’s stubbornness makes him the target of God’s graduated compellent punishments in the form of the ten plagues. This first case of compellence has a mixed record. While Pharaoh complies, freeing his slaves after his firstborn son is killed in the final plague, soon he changes his mind and pursues the freed Israelites to the Red Sea where his army must be crushed by brute force. There is even a hint of an assurance problem in the text of Exodus; Pharaoh refuses for the eighth time, saying, “Clearly you are bent on evil”—perhaps he feared he would be punished anyway.²

This book has therefore explained the value of assurance in coercion and exposed how coercers struggle to convince coercees of the contingent nature of their threats. For coercion to succeed, coercers must convince targets that punishments will *not* be carried out if they comply. This Coercive Assurance Theory helps to explain why targets defy coercive demands backed by credible and severe threats, and therefore elucidates broader patterns of coercion success and failure in international politics.

¹ This biblical example of deterrence was made famous by Lawrence Freedman.

² Exodus 1:10.

Specifically, I investigated this causal chain and the relationships between each variable.



This chapter reviews the theory and summarizes the findings of the empirical tests. I then consider how research on the dilemma of coercive assurance should progress and highlight the contributions of this book.

I. SUMMARY OF THEORY AND FINDINGS

Despite Schelling's original intuition that to say "stop or I'll shoot" implies that "if you comply, I won't shoot," a generation of coercion theory privileged the study of threat credibility and left coercive assurance largely underexplored. To build out this research program, I began by asking the most basic question: does assurance credibility affect the outcome of coercion?

The traditional model, Threat Credibility Theory, says that credible threats are a necessary and sufficient cause of compellent success. Compellence fails when threats are insufficiently credible or severe: credible because a target must believe that it will incur costs for defiance; severe because the target must be unwilling to pay the cost of punishment in pursuit of the stakes.

However, the traditional model does not appreciate that threats can fail when they are insufficiently conditional/contingent. Applying the "security dilemma" to the realm of coercion, successful compellence requires not only that I threaten you until you comply, but also that you

believe I will not punish you if you comply. And yet communicating that I do not intend to punish you later is undercut by the fact that I am threatening you today! Coercive Assurance Theory recognizes this dilemma at the heart of coercion—both credible assurance and credible threats are necessary causes of compellence success.

As every compellent demand actually has two stakes—the “issue stake” over which a demand is made and the “reputational stake” associated with giving in—the dilemma of coercive assurance consists of two commitment problems. The Coercive Restraint Commitment Problem causes targets to fear that if they acquiesce, they may be punished anyway. The Snowballing Demands Commitment Problem causes targets to fear that if they make concessions today coercers may be back for more later. The two commitment problems are logically distinct and derived from different theory, although they are ideal types and may overlap in the real world.

From these commitment problems, I derived three mechanisms that can mitigate the problem of assurance in coercion. Each removes a direct impediment to assurance and signals the intent of the coercer not to punish once the target complies. These mechanisms begin to answer the question: what are the causes of credible coercive assurance?

Mechanism	Direct Effect	Signaling Effect
<i>Disentangling Demands</i>	Punishments possible to lift separately	Willing to strike a limited bargain
<i>Coercive Control (Domestic and International)</i>	Spoilers less likely to act independently	Not building a coalition for aggression
<i>Reducing Visibility (Domestic and International)</i>	Less information for others to draw inferences	Not seeking a pretext for aggression

First, coercers can disentangle multiple demands of targets. If the issues are entangled, a target may rationally calculate that it cannot avoid punishment by conceding to one demand while the other demand remains unsated. The coercer is “mad already.” Multiple issues are entangled if they are tied to the same threatened punishment(s); disentangled issues are independently contingent on separable threatened punishments. Disentangling one’s demands and punishments further signals intent not to punish duplicitously. A coercer intent on meeting limited concessions with only further demands and punishment would have no reason to disentangling its demands in the first place.

Disentangling demands can also take the form in practice of abandoning a maximalist demand, such as regime change. In such cases coercion is again made more likely to succeed, but not because of coercive assurance. Another body of theory describes how the magnitude of demands can impede coercion. This alternative explanation for coercion failure finds some support in this book as well but does not diminish the importance of Coercive Assurance Theory.

Second, coercers can exert control over the terms and tools of coercion both domestically and internationally. Such control reduces the probability that a “spoiler,” with greater demands and an independent capability to punish the target, will refuse to abide a bargain and take it upon themselves to punish anyway. Targets need to know that they are bargaining with the right coercer who will be able to control whether and when any punishment is carried out. Third parties capable of punishment but with lower demands of the target, however, may be more assuring to the target. The existence of such “partners” may mitigate the costs of one single party renegeing.

Working to demonstrate coercive control also conveys a signal to targets that a coercer is not seeking a pretext for punishment anyway. A coercer bent on punishment would not bother to control spoilers, whose interests would overlap with a duplicitous coercer.

Third, coercers can reduce the visibility of a coercive interaction to shelter the target from perceived reputational costs. Coercers can achieve this by allowing targets to plausibly deny the extent of their concessions, restricting the amount of information that audiences (domestic or international) can use to draw inferences. Targets who are concerned about acquiring a reputation for acquiescence will find it easier to concede if they are spared some reputational costs. Additionally, reducing visibility conveys a signal about the coercer's intent. A coercer who withholds information about a target's wrongdoing shows that it is not merely building a public justification for aggression.

Targets of coercion are primed to look for these signals of assurance. Those who fear punishment put out feelers to avoid or relieve pain. In choosing whether to concede, targets of coercion are calculating the probability that they will be punished anyway. Some may accept a low risk of duplicity while others may be deeply suspicious and accept none. Yet assurance is always worth trying. These mechanisms chip away at suspicion. They reduce the perceived likelihood of duplicity and therefore increase the chances of concession.

These three compelling reasons why targets of coercion fear non-credible assurance—entangled demands, spoilers, and public concessions—are not exhaustive. They are building blocks to contribute constructively to policymakers dealing with the challenge of devising coercive strategies. Further research, discussed later in this chapter, can and will improve our understanding of the complete causes of coercive assurance.

Finally, it is important for a policymaker to understand the relationship between threats and assurance; for instance, whether and when bolstering the credibility of assurances will undermine the credibility of threats, or vice versa.

Here I derived a conventional wisdom from the existing literature on commitment-making in international politics. Threat-Assurance Tradeoff Theory proposes that threat and assurance credibility are locked in an inverse linear relationship. Anything I do to improve my threat undermines my assurance; and anything I do to improve assurance undermines my threat. The two must be balanced.

Threat-Assurance Independence Theory, on the other hand, proposes that the credibility of threats and assurances may vary independently.

Table A summarizes the affirmation (✓), falsification (✗), or mixed findings (~) of this study for each competing theory.

Table A: Summary of Theoretical Tests

	<i>Rival Theories</i>	<i>My Theories</i>
Causes of Compellence Success	Threat Credibility Theory ~	Coercive Assurance Theory ✓
Causes of Assurance Credibility	Threat-Assurance Trade-off Theory ~	Threat-Assurance Independence Theory <div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 5px 0;"> Disentangling Demands ✓ </div> <div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 5px 0;"> Coercive Control ✓ </div> <div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 5px 0;"> Reducing Visibility ✓ </div>

The history of nuclear weapons counterproliferation provided a case universe in which to test these theories. Targets care deeply about such high stakes and, because of the grave consequences, coercers use a broad toolkit. I also focused on coercive bargaining between non-allies; a harder case to make assurance credible. Later in this chapter I consider in more depth the pros and cons of selecting this universe of cases.

Coercive Assurance Theory proved to be a better explanation for the occurrence and timing of coercive nuclear nonproliferation bargains. Assurance was more often the sticking point of coercive bargaining than threat credibility.

Before proliferators made concessions, coercers tended to have to communicate which punishments applied to which demands. Some also had to exert control over potential spoilers. And targets sought, and savvy coercers granted, deniability of their concessions.

None of these mechanisms of bolstering coercive assurance undermined threat credibility. They therefore affirm Threat-Assurance Independence Theory. However, some signals that augmented the credibility of threats, such as the local movement of military forces, were associated with greater target demands for assurance. This finding suggests that material capabilities do trade off threat and assurance credibility. In such cases, material impediments to coercive bargains must either be overcome or balanced with greater assurance. Thus, threats and assurances can either undermine or reinforce each other. Neither stark theory is best to describe the relationship; it is rather conditional on the type of signal.

The charts below summarize the empirical findings of the case studies. For each case, the first chart evaluates how the theory performed at each target decision point; the second chart specifies how each piece of key evidence supports a theorized mechanism.

South Africa

Decision Point Year(s)	Threat	Assurance			Concessions	Coercive Assurance Theory?
	Credible	Demand Disentangled	Coercive Control	Reduced Visibility		
1977	Yes	No	No	No	No	✓
1985	Yes	No	No	No	No	✓
1986-1988	Yes	No	No	No	No	✓
1989-1993	Yes	Yes	Yes	Yes	Yes	✓

Mechanism	Direct Effect	Signaling Effect
<i>Disentangling Demands</i>	--	1977 Kalahari Crisis; 1979 IAEA entanglement (Fair evidence)
<i>Coercive Control (Domestic)</i>	1986 Congress overrides Reagan (Strong evidence)	--
<i>Reducing Visibility (Domestic and International)</i>	1989 Weapons dismantlement (Fair evidence)	1991-1993 IAEA deniability (Fair evidence)

The tenets of Coercive Assurance Theory are affirmed in the case of South Africa, which built a secret nuclear arsenal despite international pressure to sign the NPT. Pretoria perceived that sanctions were imposed, escalating, and, in the 1980s, hurting. Yet their perception of non-contingent punishment drove the South African leadership to defy western compellence. Both the United States and the IAEA entangled their nuclear demands with human rights punishments. Owing to their practice of apartheid, Pretoria's leaders feared that acquiescence on the nuclear issue would provide no relief from the economic pain. President Reagan's attempt to disentangle the issues in the mid 1980s failed when Congress overrode his veto on apartheid sanctions legislation. The episode further shows how a lack of coercive control can exacerbate the problem of entangled demands.

When, in 1989, complementary coercive assurance became credible in the eyes of leaders in Pretoria, South Africa acceded to the NPT and dismantled its nuclear arsenal. In so doing, South Africa sought deniability in their concessions. Compellers strategically abetted this desire by tacitly cooperating to reduce the visibility of its concessions.

The South Africa case also bears out the predictions of Independence more so than Tradeoff theory. Nevertheless, South Africa did not fear the use of military force by its coercers. Compellence took the form of sanctions. Other chapters were, therefore, better tests of the relationship between threat and assurance.

Persuasive alternative explanations also exist in the case of South African nuclear reversal. Pretoria perceived intense regional security threats until the collapse of the Soviet Union and navigated the end of apartheid and a major domestic political transformation to full democracy while it dismantled its nuclear arsenal. The end of apartheid removed a major barrier to coercive assurance, but not due to a change in coercer strategy. The case is therefore a good test for theory, but it is less amenable to policy lessons.

Libya

Decision Point Year(s)	Threat	Assurance			Concessions	Coercive Assurance Theory?
	Credible	Demand Disentangled	Coercive Control	Reduced Visibility		
1980	No	No	No	No	No	-
1986	Yes	No	No	No	No	✓~
1995	Yes	No	No	No	No	✓~
1998	Yes	Yes	No	No	No	✓
Sept 2001	Yes	Yes	No	No	No	✓
Mar 2003	Yes	Yes	No	No	No	✓
Dec 2003	Yes	Yes	Yes	Yes	Yes	✓

Mechanism	Direct Effect	Signaling Effect
<i>Disentangling Demands</i>	--	1998 Lockerbie settlement (Fair evidence)
<i>Coercive Control</i> (Domestic and International)	2003 UK as partner (Weak evidence)	2003 Secret negotiations; Domestic hawks and Israel frozen out (Weak evidence)
<i>Reducing Visibility</i> (Domestic and International)	--	2003 BBC China seizure; AQ Khan intel shared (Fair evidence)

Coercive Assurance Theory also helps to explain why the United States and the United Kingdom successfully compelled Libya to abandon its nuclear program in 2003. Libyan policymakers did justify cheating on the NPT with assessments that American threats were not credible, but only from 1980 to 1986. Later, when American threats became credible and sanctions severe, Libya continued to defy compellence. From 1986 to 1998, Qaddafi correctly perceived that the United States sought his ouster. These maximalist demands impeded coercion, but not in the way that Coercive Assurance Theory expects—it was not a commitment problem, only a magnitude of demands problem. After the resolution of guilt and compensation for the Lockerbie bombing, however, the United States scaled back its demands for regime change and then encountered the problem of coercive assurance. During negotiations, Qaddafi was continually concerned that the West intended to disarm him and attack Libya. As secret talks dragged on, however, the U.S. came around to understanding the role of coercive assurance.

The entanglement of UN and U.S. sanctions over the two issues of accountability for the Lockerbie bombing and WMD proliferation resulted in Libyan concessions on neither stake. Lockerbie guilt and compensation had to be resolved and taken off the table before Libya agreed

to WMD concessions. The fact that other impediments remained after this disentanglement, however, highlights the importance yet insufficiency of disentangled demands alone.

Washington also maintained coercive control by freezing spoilers out of the secret bargaining process. Internationally, Israel was not told of the coercive bargaining until the end of talks. London served as a “partner” to Washington’s demands, assuring Libya of lower costs to renege. Domestically, the United States also relied on the secrecy to keep hardline opponents out of the process—hawkish members of the Bush administration and members of Congress with the backing of the powerful lobby for victims of the Lockerbie bombing. Isolating spoilers from the coercive bargaining process also signaled that Libya’s coercers were not building a pretext for a war of regime change.

Although these efforts by coercers to signal control are clear, we have only weak evidence that these signals were received in Tripoli. The only indirect evidence that surfaces is that the Libyan leadership asked for signs that they were bargaining with the right members of the coercer governments. Both the U.S. and the UK, at different times, sent messages from their heads of state with high-level representatives to assure the Libyans of sincerity.

Finally, even though Tripoli perceived a short shadow of the future, it was reluctant to make or admit public concessions. Qaddafi saw that the U.S. and UK made the case for war against Iraq based on WMD proliferation and he feared that coming clean would provide ammunition for a war against him. Fortunately, the discovery of the AQ Khan Network allowed the United States to learn much about the Libyan program through a third party. Washington and London used this information strategically, confronting Libya with intelligence privately. The fact that such intelligence remained unpublicized communicated both that its coercers were not building a case for regime change and that they were willing to allow Tripoli to save face. When

Libya made its public statement announcing its bargain with the West, it emphasized its decision to do so “of its own free will.”

As for the relationship between threats and assurance, there is no evidence to suggest that the causes of assurance credibility in the Libya case diminished the credibility of threats. A contingent threat of regime change remained credible even after the United States dropped its demand for regime change. Nevertheless, at two moments when the military threat from the United States spiked—the invasion of Iraq and the capture of Saddam Hussein—Tripoli responded with demands for more coercive assurance. After the invasion of Iraq, Libya continued to import black-market nuclear equipment. And after Saddam’s capture Qaddafi balked one last time on a deal that was nearly completed. This finding suggests a more nuanced picture of the relationship between threat and assurance: sunk cost material signals used to bolster threats, such as the mobilization of military forces, may undermine assurance credibility, even though threat and assurance do not always tradeoff.

Iran

Decision Point Year(s)	Threat	Assurance			Concessions	Coercive Assurance Theory?
	Credible	Demand Disentangled	Coercive Control	Reduced Visibility		
1990-2002	No	No	No	No	No	-
2003	Yes	No	No	No	Yes	✘
2003-2005	Yes	No	No	No	No	✓
2006	Yes	No	No	No	No	✓
2009-2011	Yes	Yes	No	No	No	✓~
2012-2015	Yes	Yes	Yes	Yes	Yes	✓

Mechanism	Direct Effect	Signaling Effect
<i>Disentangling Demands</i>	2015 UN resolution (Strong evidence)	CBI sanctions; Business outreach (Fair evidence)
<i>Coercive Control</i> (Domestic and International)	P5+1 Partners (Weak evidence)	Discouraging Israel (Weak evidence) 2015 INARA (Fair evidence)
<i>Reducing Visibility</i> (Domestic and International)	--	2015 PMD (Strong evidence)

The Iran case provides mixed results for Coercive Assurance Theory. In 2003, Iran scaled back a nuclear weaponization program because of highly credible and severe military threats emanating from the U.S. invasion of Iraq. These concessions are explained by Threat Credibility Theory and not Coercive Assurance Theory. Iran's concessions, however, did not constitute the entirety of its nuclear weapons program. Iran conceded what it perceived as enough to avoid an invasion, while maintaining progress toward building nuclear weapons in the future. Later, Iran made greater nuclear concessions, this time in a formal agreement (the JCPOA) that was best explained by Coercive Assurance Theory.

In 2015 Iran struck a bargain with the P5+1 to accept enhanced verification and limits on its nuclear program. Years of prior negotiations had largely failed because of a lack of coercive assurance. The entanglement of the nuclear issue with Iran's pursuit of ballistic missiles, human rights violations, and support for terrorism contributed to those failures. When the Obama administration sought to compel Iran, it benefited from hiving off the nuclear issue alone. Furthermore, in the thick of negotiation over the terms of JCPOA sanctions relief, Iran sought the specific separation of entangled sanctions designations applied to entities such as the Central Bank of Iran (CBI).

The United States also demonstrated coercive control over spoilers before Iran agreed to make concessions. Domestically, the Obama administration crafted legislation to bound congressional oversight over sanctions relief. Internationally, the United States discouraged the independent use of military force against Iran's nuclear program by Israel. Tehran needed to know that neither the U.S. nor Israel would bomb Iranian nuclear facilities if it signed a deal. Iran thus came to the table only after Israeli leaders closed the window on a potential strike in 2012. Iran was also assured by the presence of multiple coercers in the P5+1, as a deal could, in theory, survive the renegeing of a single coercer.

Finally, the IAEA and the P5+1 tacitly cooperated with Iran to cover up the extent of the concessions. The file on the "Possible Military Dimensions" of Iran's nuclear program was accelerated and closed as part of a conscious decision not to prosecute Tehran's nuclear sins. The contents of a tranche of Iranian documents stolen by Israel in 2018 compared to IAEA reports and pre-JCPOA American intelligence shows that intelligence enabled this strategy. Iran's coercers knew enough for verification going forward, so they granted Tehran deniability over its past weapons program and cheating.

Assurance signals sent in 2012-2015 did not undermine the credibility of threats. Earlier, however, the American invasion of Iraq did prompt an Iranian request for assurance, suggesting again a tradeoff between assurance and material signals that bolster threat credibility. Moreover, Iran's 2003 concessions, unexplained by Coercive Assurance Theory, suggest that the threshold for the necessary credibility of coercive assurance may fall in association with highly credible threats.

North Korea

Although US-ROK-DPRK coercive interactions are ongoing, Coercive Assurance Theory yields pessimistic conclusions when applied to the contemporary Korean peninsula. The Trump administration's Maximum Pressure campaign privileges threat credibility over coercive assurance. The conditions for coercive assurance are mostly absent. Washington's demands are entangled. Pyongyang reasonably wonders whether nuclear sanctions will not just be relabeled missile or CBW or human rights sanctions after any bargain. Moreover, President Trump seems to think that there is strategic value in being unpredictable. Coordination between the two primary coercers, the United States and South Korea, is also too loose—Seoul is inclined to move forward with economic links to the North regardless of progress on denuclearization. Finally, coercers have laid no groundwork to reduce the visibility of any North Korean concessions. The prospects of a coercive denuclearization bargain, therefore, are not good.

In sum, Coercive Assurance Theory performs well in this universe of cases; and, importantly, better than its rival, Threat Credibility Theory.

II. EMPIRICAL EXTENSIONS

There are many cases I have not covered in the preceding pages in which non-allied coercers engaged with the problem of coercive assurance. Interested readers should see the appendix, in which I coded the nonproliferation universe according to whether a non-ally communicated a threat, whether that threat was perceived to be credible, and whether the coercive assurance was perceived to be credible. I probe two of these additional cases here—Iraq and Syria—because in each case coercers used brute force to exact involuntary concessions. It is notable that Coercive Assurance Theory still played a part.

Iraq. Iraq is a classic case of coercers struggling to communicate contingency. Saddam Hussein perceived a lack of coercive assurance; Iraq's coercers would never relent. Post-First Gulf War, the United States and Iraq played a frustrating cat-and-mouse game in which international inspectors struggled to gain access to Iraqi facilities to verify WMD dismantlement. Painful economic sanctions hurt Iraq, while American threats of military force were highly credible. Indeed, the United States had just intervened against Iraqi forces earlier in the decade and later actually conducted air strikes in light of Iraqi intransigence. Why did Saddam not concede?

In the midst of this coercive effort, Saddam framed the choice he faced to his advisors as follows: Iraq could either “have sanctions with inspectors or sanctions without inspectors.”³ As Palkki and Smith assessed after gaining access to recordings of Iraqi internal decisionmaking, “Saddam and his advisors were perfectly aware of American leaders’ statements indicating that the sanctions would remain as long as Saddam was in power, and suspected that no amount of Iraqi compliance would satisfy the United States.”⁴

Later, in the lead up to the 2003 Iraq War, Baghdad similarly refused to be cowed by American pressure, despite possessing no WMD program. Despite making demands and issuing an ultimatum, the Bush administration communicated no coercive assurance. It appeared bent on aggression regardless of Iraqi behavior. In March 2002, for instance, President Bush “waved his hand dismissively” with a group of senators to summarize his Iraq policy: “Fuck Saddam, we’re

³ Duelfer Report 2004, Vol. 1, “Regime Strategic Intent,” p. 61. Quoted in Palkki and Smith in Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (2012), p. 283.

⁴ Palkki and Smith in Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (2012), p. 283. Litwak similarly argues that U.S. policymaker statements about pursuing regime change in Iraq “priced the administration out of the reinsurance market.” Robert S. Litwak “Non-proliferation and the Dilemmas of Regime Change,” *Survival* 45, 4 (Winter 2003-2004), p. 28.

taking him out.”⁵ And Bush declared in March 2003 that, “if Saddam Hussein leaves, we’ll go in anyway.”⁶ In this context, President Bush issued a final ultimatum 48-hours before U.S. forces began the invasion.⁷ Saddam had no incentive to comply.

After the war, a CIA report noted among its four reasons why Saddam did not come clean: a desire to avoid looking weak, especially vis-a-vis Iran and Israel, and a desire to preserve an image of a great and powerful Iraq on the international stage.⁸ Reducing visibility could have been especially useful in this case.

Syria. Carving out space for deniability seems to have worked in one case of brute force as well: Israel’s destruction of a clandestine reactor in Syria in 2007. In March 2007, a Mossad operation in Vienna collected photographic evidence that confirmed an Israeli suspicion: Syria was building a nuclear reactor in the desert. Prime Minister Ehud Olmert shared the intelligence with the United States but was told that Washington would not participate in military action against Syria.⁹ Israel thus conducted a unilateral air strike against the Al Kibar nuclear reactor on September 6, 2007.

While clearly a case of brute force, this episode could be considered coercive if the threat was of more punishment to come if Syria reconstituted the program. One anonymous senior

⁵ “First Stop, Iraq”, *Time*, March 31, 2002. Thank you to Payam Galehdar for bringing many of these quotes to my attention. See Payam Galehdar, “Emotional Frustration and US-Imposed Regime Change,” Working Paper, 2018.

⁶ Bob Woodward, *Plan of Attack* (New York, NY: Simon and Schuster, 2004), p. 369.

⁷ “The Final Ultimatum,” *The Economist*, March 18, 2003, <<https://www.economist.com/news/2003/03/18/the-final-ultimatum>>. Why the administration even issued an ultimatum right before the invasion is unclear. There was reportedly some debate about whether to issue an ultimatum at all, since the war plan was to be executed anyway. Perhaps there is more to explore here about norms of coercion and why coercers without contingent demands feel it necessary to frame their aims as though they are giving targets a choice.

⁸ See the findings of the Iraq Survey Group, <https://www.cia.gov/library/reports/general-reports-1/iraq_wmd_2004/Comp_Report_Key_Findings.pdf>; also summarized in “The Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction,” Report for the President of the United States, March 31, 2005, pp. 151-154, <<https://policy.defense.gov/portals/11/Documents/hdasa/references/GPO-WMD.pdf>>.

⁹ Ehud Barak claims that President Bush supported Israel’s 2007 strike on Syria. Barak, *My Country, My Life* (2018), p. 418. This claim is not substantiated by American sources.

Israeli official told the *New York Times* that the strike was intended to “re-establish the credibility of our deterrent power;” that Israel would not tolerate another nuclear weapons state in the Middle East; that the Begin Doctrine was alive and well.

Reducing the visibility of Syria’s (involuntary) concession seems to have succeeded in both preventing retaliation and reconstitution of the program. It has also been reported that Israel attempted to communicate its aims to Syria after the air strike. Olmert asked Turkish Prime Minister Recep Erdogan to relay a message to Damascus that “Israel would not tolerate another nuclear plant -- but that no further hostile action was planned.”¹⁰ Olmert further expressed his willingness not to draw attention to the matter if Assad did the same.¹¹ Then-chief of staff to the Israeli Defense Minister recalls that “it was decided to provide Assad with a ‘zone of deniability’ that would allow him to restrain himself from retaliating for the destruction of the reactor.”¹²

Assad did not retaliate and, in fact, denied the Israeli warplanes had ever been there.

If Israel did not allow Assad some room for deniability, for example by gloating about the raid and publicizing intelligence about the illicit reactor, Damascus would have been more likely to retaliate and reinvest in a nuclear weapons program. Reducing visibility was helpful.

¹⁰ Erich Follath and Holger Stark, “The Story of ‘Operation Orchard’: How Israel Destroyed Syria’s Al Kibar Nuclear Reactor,” *Der Spiegel*, 11/02/2009, <<http://www.spiegel.de/international/world/0,1518,658663,00.html>>.

¹¹ *Ibid.*

¹² Michael Herzog, “Israel’s 2007 Strike on Syrian Nuclear Reactor: Lessons Learned for Iran,” Washington Institute, April 25, 2018, <<http://www.washingtoninstitute.org/policy-analysis/view/israels-2007-strike-on-syrian-nuclear-reactor-lessons-learned-for-iran>>. The special report in *Haaretz* concurs that Israel intended to give Assad a “denial space” to avoid embarrassing or humiliating him publicly. It was helpful that very few people in the Syrian government knew about the nuclear reactor. Amos Harel and Aluf Benn, “No Longer a Secret: How Israel Destroyed Syria’s Nuclear Reactor,” *Haaretz*, March 23, 2018, <<https://www.haaretz.com/israel-news/MAGAZINE-no-longer-a-secret-how-israel-destroyed-syria-s-nuclear-reactor-1.5914407>>.

III. CONSIDERING BIASES IN THE CASES

In this section I consider the pros and cons of my cases for the study of coercive assurance. First, I consider how my selection of the universe of cases of non-allied nuclear counterproliferation may have biased the results of this analysis. Second, I consider the asymmetry of the cases between coercer and target. Third, I consider how economic sanctions and threats of military force function differently as tools of coercion. Overall, the cases yield more confidence in the mechanisms that bolster coercive assurance credibility than in the necessity of assurance in general. Moreover, coercers may have less opportunity to reduce the visibility of non-nuclear concessions, exert coercive control in more symmetric coalitions, and disentangle demands in less sanctions-heavy cases. Further work should focus on these questions of external validity.

Nuclear Proliferation. I selected the proliferation universe as a hard case for Coercive Assurance Theory; if the theory performs here, we should have high confidence that it generalizes to other kinds of disputes. Said another way, these are least likely cases for credible assurance to be possible. The stake is relevant to the target's security; and, because of the high stakes, coercers employ a broad toolkit. I also focused on coercive bargaining between non-allies; a harder case to make assurance credible. If coercers can assure over such high stakes, they should be able to assure in instances of coercion over non-security stakes. On the other hand, such cases may be most likely cases for assurance to be necessary. Thus, my testing of the causes of assurance credibility has necessarily been stronger than my testing of the importance of assurance to successful bargains. Threats issued over lesser stakes may require less corresponding assurance, but the mechanisms that bolster assurance should still operate. However, this tradeoff is acceptable because existing intuition on the necessity of coercive

assurance is stronger than the intuition on what causes assurance credibility. Much existing work assumes the necessity of assurance without investigating its causes.¹³

Coercers may also have less ability to help targets save face over more public stakes. States that pursue nuclear weapons often do so clandestinely. This provides coercers more opportunity to manipulate the visibility of their targets' concessions. Thus, this universe of proliferation cases may be biased in favor of finding evidence of the Reducing Visibility mechanism. It may simply be less manipulable in other circumstances.

Two additional selection effects pull in opposite directions. We should expect that only the most determined proliferators select into this universe, as insufficiently resolved states may calculate ahead of time that they are unwilling to run the risks of proliferating.¹⁴ This biases my analysis against Coercive Assurance Theory and in favor of finding that the severity of punishments was the primary impediment to successful coercion. Determined proliferators should be more willing to suffer and thus more willing to defy coercive punishments. However, I do not observe as much in the empirical tests, because of a second selection effect: coercers also select into countering some programs and not others. We might expect coercers to attempt to compel only those targets whose compliance they deem to be possible. The most determined proliferators may not make it into the dataset. On the other hand, some of the most determined proliferators, such as North Korea and Pakistan, are included in the universe.

Overall, my selection of counterproliferation cases has on balance made the theory more generalizable. However, future work could focus specifically on proving the necessity of

¹³ Schelling himself limned the importance of coercive assurance but did not investigate it separate from threat credibility. For a review of this literature, see the chapter 2; see also Greenhill and Krause, *Coercion: The Power to Hurt in International Politics* (2018), p. 24.

¹⁴ Nick Miller explains this selection effect. States are deterred from proliferating before they even begin a program. Nick Miller, "The Secret Success of Nonproliferation Sanctions," *International Organization* 68 (Fall 2014), pp. 913-944.

assurance in coercion and on assessing whether coercers in more public domains still have the opportunity to reduce the visibility of target concessions.

Power Asymmetry. The cases of counterproliferation examined in this book also privilege asymmetric coercion—the coercers are all stronger than their targets. This empirical fact has similarly made for stronger results on the causes of coercive assurance than on the necessity of assurance to successful coercion. It also suggests that more work be done on the coercive control mechanism, which may be easier for strong states to manipulate.

The preeminent great power in the international system, the United States, was the primary coercer in each chapter. This asymmetry biases the analysis in favor of finding that coercive assurance is important. Targets who are significantly weaker than their coercers have even more reason to fear that they will be punished after they conceded. The United States is strong and can predate at will. Assurance credibility was therefore more likely to be the ‘sticking point’ of coercive bargains than threat credibility. On the other hand, if the mechanisms bolstering coercive assurance helped to offset these asymmetric threats, they should generalize to cases of more symmetric coercion.

Other findings could be biased by this asymmetry as well. If the United States is so strong that it makes highly credible threats, it may be less surprising that the coercive assurance mechanisms did not undermine the credibility of those threats. The cases thus biased in favor of finding evidence for Threat-Assurance Independence theory against Threat-Assurance Tradeoff theory.

Moreover, these asymmetric cases tilt toward finding evidence of coercer maximalism. If the United States sought regime change in each of the cases, the cause of coercive failure would be the magnitude of demands and not the commitment problem of coercive assurance. However,

I specifically selected cases—South Africa, Libya, and Iran—in which there was bargaining space, evidenced by variation in the failure and success of coercion over time. Therefore, readers can be more confident that coercive assurance, not just maximalist demands, impeded coercers for significant portions of each case.

Finally, specific to the mechanism of Coercive Control, the power asymmetries in my cases bias in favor of finding that a coercer was able to restrain a potential spoiler. Great powers, such as the United States, have more tools at their disposal to reassure or buy off third parties. Relatively weaker coercers may find it more difficult to exert control over spoilers.

Overall, my selection of asymmetric cases has again privileged the findings on the mechanisms of coercive assurance above the necessity of assurance to coercive success. Future work could focus specifically on proving the necessity of assurance in coercion and on assessing whether relatively symmetric or weaker coercers can still exert coercive control over potential spoilers.

Sanctions vs. Force. For the sake of parsimony, I have considered together two types of coercive threats: economic sanctions and military force. The case studies in this book are analytically sanctions-heavy. In one case (South Africa) coercers used only economic sanctions, while in the other two (Libya and Iran) coercers employed both sanctions and threats of force. How might this bias the analysis? Overall, coercers employing economic sanctions may have more opportunity to disentangle their demands, while they may also face greater incentives to demonstrate coercive control.

Threats of sanctions and military force differ in terms of their timing, divisibility, and costliness. Temporally, comprehensive sanctions can be imposed during a coercive effort, while comprehensive force is not used until coercion fails and the coercer opts to impose its will by

brute force. Of course, both sanctions and force may be employed in a graduated fashion to compel the target to concede before the pain becomes unbearable. In terms of coercive assurance, sanctions are “on” at the time of negotiation, so coercers must commit to take action and lift them. Force is generally “off” during negotiation, so coercers must commit not to take action after a bargain. Relieving sanctions should be more difficult to credibly communicate.¹⁵ Moreover, this necessity of taking action makes Coercive Control a more difficult problem for the use of sanctions. If sanctions require a domestic or international coalition to impose, they may require a similar coalition to lift. In such cases, spoilers are true veto players, which the principal coercer must credibly commit to deliver. Unless one coercer is granted unilateral authority to relieve sanctions without the assent of the imposing coalition, such as when the U.S. Congress grants the president the authority to waive legislative sanctions, the spoiler problem is especially difficult. And even in instances of unilateral sanctions relief, targets may perceive the lingering spoilers as sign that such relief is only temporary. My sanctions-heavy cases may therefore be biased in favor of finding evidence for this importance of Coercive Control.

Sanctions can also be sliced into ever smaller parts. While military action can be more or less escalatory, it is less divisible. This fact may bias my analysis in favor of finding evidence for the mechanism of Disentangling Demands. Coercers can more readily match individual demands with discrete sanctions punishments than they can with discrete threats of force. Tying American and UN sanctions to different demands is more meaningful than tying threat of U.S. and UK airstrikes to different demands—similar targets might be destroyed by either one.

As for cost, the imposition of sanctions is generally less costly to the coercer than the use of force. As long as the coercer’s economy is not dependent on trade or financial flows from the

¹⁵ Taking a page out of Schelling’s distinction between compellence and deterrence, it is generally more difficult to change the status quo than it is to maintain it.

target (as in each of this book's case studies), sanctions are of limited cost to the coercer. Projecting military power, on the other hand, requires some treasure and, often, blood. It is easier for a coercer threatening war, therefore, to convince a target that there will be no war if it complies. The coercer will bear some cost for the war as well.

Finally, for targets, military force can bring more immediate pain than economic sanctions. What punishment the impact of sanctions may accumulate over time, concentrated military power can impose more quickly. The time horizon of the target's considerations may therefore differ depending on the nature of the threat it faces—longer if sanctions, shorter if force.

In sum, sanctions-heavy coercion may be more amenable to disentangling demands while requiring more coercive control to succeed. Future work should examine the divisibility of threats of military force and the relative frequency of spoilers in economic versus military coercion.

IV. FUTURE RESEARCH AND REMAINING QUESTIONS

The causes of coercive assurance raised in this book are not exhaustive. Rather, this work begins a necessary shift in the study of coercion away from threats alone. In this section I raise remaining questions and flag them for future research.

First, I have focused on the occurrence and timing of coercive bargains in order to evaluate the causes of compellence success and failure. One could instead shift the spotlight to decisions to renege on coercive assurances. Qaddafi met his demise at the hands of U.S.-backed rebels only eight years after striking a bargain. Iran signed the JCPOA only to have the Trump administration reimpose sanctions three years later. In such cases, scholars could seek to explain

variation in decisions to renege. For instance, it remains unclear whether and how the 2003 deal was discussed during Obama administration's deliberations about intervention in Libya.

Explaining these decisions to renege may yield useful insights for policymakers seeking to craft durable agreements.¹⁶

Second, I have shown that targets of coercion seek to avoid reputational costs when making concessions. I have not, however, delved into the debate about whether conceding states actually do acquire reputations and therefore become more likely targets for future predation. Nor have I explained whether coercers acquire reputations for renegeing or abiding by coercive assurances. There is room for such research. Existing work on reputations in international politics tends to focus on reputations for resolve and threat-making. Comparing across my cases, however, it may be suggestive that Iran was willing to strike a nonproliferation bargain with the United States after the public demise of Libya's Qaddafi. If reputations for renegeing on coercive assurances matter, perhaps other tools of assurance can overcome them.

Third, specific to reducing visibility, does this tool of coercive assurance require good intelligence on the part of the coercer? There is some disagreement in this regard between the cases of Iran and South Africa. Quality intelligence about the Iranian nuclear program gave American policymakers confidence in their decision not to push Tehran to confess its nuclear sins. In the case of South Africa, however, the United States possessed particularly poor intelligence about Pretoria's actual weaponization efforts. Yet in both cases the proliferators

¹⁶ A note on selection: It should be empirically rare to observe cases of renegeed assurance after a coercive bargain is struck. Coercers that cannot credibly communicate coercive assurance should fail to coerce their targets in the first place. Thus, non-contingent punishments may be feared by targets, but rare in practice.

were allowed to deny much of their transgressions. More work could be done on the links between intelligence penetration and coercive strategy.¹⁷

Fourth, scholars should explore further the relationship between control and chance. Why does increasing coercer control augment the credibility of coercive assurance without undermining threat credibility? Such a relationship may appear odd at first blush given Thomas Schelling's concept of "the threat that leaves something to chance." Indeed, Schelling spoke of manipulating control—deliberately losing control—for the purpose of making incredible threats, like nuclear war, credible. Schelling's apt analogy was to two climbers chained together at the top of a cliff: one climber cannot credibly threaten to push the other off the cliff, as that would ensure the deaths of both; but one climber may move closer to the edge, do a dance, stand on one foot, or otherwise increase the risk of unintentionally falling to compel the other to accede before it is too late. Schelling's elegant theory, however, applies only to cases of brinksmanship and not cases where the coercer is likely to win any ensuing conflict.¹⁸ Power asymmetry is part of why the cases considered in this book are so theoretically interesting.

Moreover, "chance" and "control" may not be as contradictory as they appear. While a coercer may place itself and its target in a position where the *chance* of disaster looms around unknown corners, it can also end such a state of affairs relatively quickly by re-exerting *control* over its armed force. A coercer thus communicates: I cannot prevent disaster once I decide to risk it, but I can eliminate the risk of disaster if I choose. Chance augments threat credibility, while control bolsters coercive assurance.

¹⁷ I am also writing a paper with a colleague that builds out a theory of why states would in general tacitly collude to cover up the transgressions of their adversaries. Cullen G. Nutt and Reid B.C. Pauly, "The Strategic Logic of Concealing the Sins of the Guilty," Working Paper, January 2019.

¹⁸ It also remains puzzling for Schelling's theory why nuclear weapons are such poor instruments of compellence. Matthew Fuhrmann and Todd S. Sechser, *Nuclear Weapons and Coercive Diplomacy* (Cambridge University Press, 2017). Although scholars still debate this; see Matthew Kroenig, "Nuclear Superiority and the Balance of Resolve: Explaining Nuclear Crisis Outcomes," *International Organization* 67, 1 (2013), pp. 141-171.

It remains debated what “threats that leave something to chance” look like in practice,¹⁹ but Schelling’s own examples illuminate the logic of the theory. Schelling’s use of Henry V’s speech from the eponymous Shakespeare play is telling. Standing before the gates of Harfleur, King Henry cries:

...you men of Harfleur,
Take pity of your town and of your people,
Whiles yet my soldiers are in my command.

- (Act 3, Scene iii) (emphasis added)

Threats that leave something to chance thus have an assurant quality. The fact that things might get out of hand, that accidents might happen, or that I might cross your red line in a limited war without knowing it (all supposedly part of threats that leave something to chance) does not imply that I am not in control. The ability to turn off the risk/chance once the target complies is necessary for coercive assurance.²⁰ Chance (threat credibility) and control (assurance credibility) need not tradeoff.

¹⁹ Leaders tend not to heed Schelling’s advice and manipulate risk in the real world. Leaders seem to fear decentralized crisis decision-making and do what they can to increase flexibility and reduce unpredictability in crisis; for example, by leaving themselves room to back down in crisis. Jack Snyder and Erica Borghard, “The Cost of Empty Threats: A Penny, Not a Pound,” *American Political Science Review* 105, 3 (August 2011), pp. 437-456. Jervis expanded on Schelling’s theory to identify uncertainty about “human expectations” as the mechanism by which it operates. “In most situations threats that leave something to chance operate through human expectations rather than through mechanical devices. If I were to throw lighted matches around a gas station this would automatically create some risk. Once the matches left my hand there is no other human action needed to produce an explosion. But this is not the case with most of the threats that leave something to chance in international relations. In this arena the danger created by an incident is the possibility that decision-makers on each side will react to the other side’s actions by increasing the level of violence, even though neither side intended this to occur. And the bulk of this risk is generated by the fact that neither side can with confidence and precision know the interpretations of the incident the other side is making or estimate the other side’s intentions and probable response.” Robert Jervis, *The Logic of Images in International Relations* (Princeton University Press, 1970), p. 239.

²⁰ Schelling obliquely refers to something like this in a footnote, writing that “the adversary may find it easier—less costly in prestige or self-respect—to back away from a risky situation, even if we created the situation, than from a

Fifth, regime type is used by some scholars as an explanatory variable for coercive outcomes, mainly in the debate over “audience costs,” yet this work does not consider the coercive assurance challenges of domestic cleavages. Applying an assurance lens may illuminate some existing findings. Coercive assurance, for example, helps to explain why Downes and Sechser find that democracies are no more effective coercers than nondemocracies.²¹ Democracies may in fact just be worse at signaling coercive assurance. When new leaders come into office, they may renege. The United States faces this problem particularly acutely as a coercer. Its Constitution grants significant presidential discretion over foreign policy.²²

V. CONTRIBUTIONS

This book has shown that there is a dilemma at the heart of coercion. It has been noted by others but none have yet developed theory on its sources or solutions. Our conventional intuition fails to appreciate it. Too often coercers place their targets in a ‘damned if you do damned if you don’t’ position. Much of our existing theory on coercion is built on a traditional model that, intentionally or not, overlooks the necessity of coercive assurance.

When coercion fails war can be the result. It is therefore important that scholars identify levers that policymakers might pull to bolster their assurance in coercion. That is why I focused on fleshing out the manipulable sources of assurance in hard cases of nonproliferation where the

threat that is backed exclusively by our resolve and determination. He can even in backing away, blame us for irresponsibility, or take credit for saving us both from the consequences.” He cites Khrushchev after the Cuban Missile Crisis as an example. Schelling, *Arms and Influence* (1966), pp. 121-122.

²¹ Alexander B. Downes and Todd S. Sechser, “The Illusion of Democratic Credibility,” *International Organization* 66, 3 (Summer 2012), pp. 457-489. Downes and Sechser do not identify assurance as a possible cause of their results.

²² Schultz has observed already that increasing political polarization “complicates our ability to make long-term commitments to allies and adversaries.” Kenneth A. Schultz, “Perils of Polarization for U.S. Foreign Policy,” *Washington Quarterly*, 40, 4 (2017), pp. 7-28, <https://twq.elliott.gwu.edu/sites/g/files/zaxdzs2121/f/downloads/TWQ_Winter%202018_Schultz.pdf>.

results should generalize to other stakes. And there are plenty of policy prescriptions that come from the literature on demonstrating resolve that pay no heed to whether putting an aircraft carrier off your cost or burning the bridge behind you might have an impact on the credibility of your assurances in addition to your threats. My work illuminates the downsides of resolve concepts, such as saber rattling, the Madman Theory, or two-level games.

This book contains some specific lessons for sanctions policy. American officials put far more thought into constructing sanctions than into how to eventually unwind those sanctions. This is a policy area where if policymakers understand assurance, they at best usually think it is just axiomatic and not manipulable. However, there are ways to make sanctions more credibly assuring; for example, by keeping them distinguishable by issue and avoiding entanglement of those issues. The U.S. Treasury is actually learning these lessons today. It now seeks to avoid omnibus sanctions packages and be more specific in the designation of sanctioned entities.²³ This work should be well-staffed.²⁴

Congress should also recognize the value of keeping presidential waiver provisions in legislative sanctions. Recent Congressional action to impose sanctions on Russia for election interference have not learned these lessons. For domestic political reasons, these sanctions have tried to limit the White House's ability to lift them. To waive new sanctions pertaining to Russian cyber-attacks, for instance, the president would have to "provide evidence that Russia had tried to reduce such intrusions...and Congress would have at least 30 days to vote on any

²³ Author's interview with Richard Nephew. Harvard Kennedy School, Cambridge, MA, April 16, 2018.

²⁴ See Adam Szubin, "Testimony before the House Foreign Affairs Committee," January 10, 2018, <<http://docs.house.gov/meetings/FA/FA00/20180110/106761/HHRG-115-FA00-Wstate-SzubinA-20180110.pdf>>.

changes he sought.”²⁵ This is a high bar. And even European allies opposed these legislative sanctions, in part because they are harder to lift.²⁶

Overall, the larger and more complex a sanctions regime, the harder it will be to unravel, and thus the harder to assure the target that it will be unraveled. Moreover, democratic states suffer from an internal assurance problem if multiple branches of government serve as multiple players in a bargain. In the United States, the president and Congress do not always agree on what constitutes acceptable terms of coercive bargains. This “two-level game” grants American negotiators leverage at the bargaining table;²⁷ but when it comes to making threats, it undermines coercive assurance if the Executive Branch cannot demonstrate that it is capable of bringing along the Legislative Branch.

Consider the contributions of this book as well to understanding the importance of cover ups as a tool of coercive assurance and its relation to new debates occurring in the field about the strategic uses of secrecy versus the value of naming and shaming.

Citizens in democracies rightly demand that secret schemes and opaque deals be kept to a minimum. Yet concealment in coercive bargaining is one of several areas of foreign policy in which discretion and secrecy may serve the greater good.²⁸ Radical transparency has the potential to shrink the possibility of successful compellence. Leaks are also an inevitable part of democratic national security decision-making. But their harm is potentially far-reaching. To paraphrase T.S. Elliot: States cannot bear very much reality.²⁹

²⁵ Peter Baker and Andrew Higgins, “White House Signals Acceptance of Russia Sanctions Bill,” *New York Times*, June 23, 2017.

²⁶ Ibid.

²⁷ Robert D. Putnam, “Diplomacy and Domestic Politics: The Logic of Two-Level Games,” *International Organization* 42, 3 (Summer 1988), pp. 427-460.

²⁸ James Goldgeier and Elizabeth N. Saunders, “Good Foreign Policy is Invisible,” *Foreign Affairs*, February 28, 2017, <<https://www.foreignaffairs.com/articles/united-states/2017-02-28/good-foreign-policy-invisible>>.

²⁹ “Human kind cannot bear very much reality.” T.S. Eliot, Burnt Norton from *Four Quartets*.

Specific to the nuclear nonproliferation regime, policymakers will benefit from realizing the extent to which the dual-use nature of nuclear technology has aided coercive enforcement of nonproliferation by allowing proliferators to change tack and deny that they were ever up to no good.

This constructive ambiguity of the nonproliferation regime is worth protecting. The inherent opacity of concessions designed into the NPT and the nonproliferation regime allows for coercive bargains to be struck more readily.³⁰ Violators are more likely to come into compliance if they can deny they were ever out of compliance. And this helps to explain why there are so few nuclear weapons states today.

Transparency hawks note gaps in knowledge about WMD programs as a failure of the nonproliferation policy.³¹ But, with the assistance of institutions like the IAEA, easing the standards of transparency to balance verification with deniability helps coercion to succeed in the first place.³² Coercers have to balance demands for transparency with the need for credible coercive assurance. When they reach a threshold of confidence that they can detect future transgressions, there is no strategic leverage in raking targets over the coals.

³⁰ Whether intentionally or not, the NPT is well designed to allow for plausible deniability of past nuclear activities, as member states are required to declare present and future nuclear activities at the time of accession, not to reveal past activities. Similarly, the IAEA, tasked not with investigation per se but with verifying the correctness and completeness of member state declarations, is set up for plausible deniability.

³¹ Nathan E. Busch and Joseph F. Pilat, *The Politics of Weapons Inspections: Assessing WMD Monitoring and Verification Regimes* (Stanford University Press, 2017), p. 115.

³² Perhaps this is one reason it is good that the IAEA and the CWC rarely push to employ 'special' or 'challenge' inspections. Busch and Pilat, *The Politics of Weapons Inspections* (2017), p. 127. "The IAEA is empowered by both INFCIRC-66 and INFCIRC-153 to carry out special inspections at suspected facilities in those countries bound by the agreements. Although these authorities are in fact much *stronger* than the new authorities granted by the AP [Additional Protocol], the IAEA has never effectively exercised this right. Similarly, the CWC gives the OPCW the authority to conduct challenge inspections, which are even more invasive than the special inspections of the IAEA. Under the CWC's challenge inspection procedure, parties to the CWC 'have committed themselves to the principle of 'any time, anywhere' inspections with no right of refusal.' Despite these significant authorities, the OPCW has to date never undertaken a challenge inspection." The IAEA has invoked special inspections powers only twice: to investigate plutonium experiments during the Ceausescu regime at Romania's request, and in North Korea in 1993 but it was denied access.

It is vital that scholars continue to theorize and uncover this and other the roles of the IAEA in international politics as the institution grows in importance.

This book began with the puzzle of American coercion. Washington often fails to coerce despite power asymmetry—Panama, Kosovo, the First Gulf War, Afghanistan and Iraq all ended in conflict despite attempts at coercion by the United States.

Yet, given the duplicity of statesmen and the uncertainty of the international system, it is a wonder that states can ever communicate credible coercive assurance. Through such a lens, the puzzle of this book is not why the strong have trouble coercing the weak, but why the strong can *ever* coerce the weak. The United States predates at will, the argument goes, why should any weaker state ever be so naïve as to strike a coercive bargain?

From this perspective, the argument of this book is the same. Coercive assurance is a necessary component of coercion. But it is not formulaic. In any coercive interaction there are factors that pull toward credible assurance and factors that push against it. Targets must make a choice based on this information they glean from their coercers. Will they punish me anyway? What is the likelihood? How much am I willing to risk?

The United States is strong, its government changes, and it has reneged on coercive assurances in the past. Yet this does not mean that the United States can never credibly assure. Rather, it must overcome whatever value its targets place on this asymmetry or reputation for predation with some other manipulable variables that bend its signals toward assurance. I have identified three of these factors in this book: disentangling demands, coercive control, and reducing visibility. Future scholarship will surely uncover others.

The United States struggles to coerce weak states. Yet it can and it does. What we have failed to fully understand, until now, is why.

APPENDIX: CASES OF COMPELLENCE OVER NUCLEAR WEAPONS PROGRAMS

In this appendix I summarize the universe of cases of coercion over nuclear weapons programs (n=15). I code the nonproliferation universe according to whether a non-ally communicated a threat,¹ whether that threat was perceived to be credible, and whether the associated coercive assurance was perceived to be credible. Each case is accompanied by a summary narrative, save for those discussed in full chapters. No other such coding exists in the literature.²

Capturing this universe assisted with selection for the qualitative cases and provides further evidence for the generalizability of coercive assurance concepts beyond those cases. The coding reveals the relative importance of coercive assurance as a complement to threat-making in the process of coercive bargain over nuclear programs.

Today, for the first time in the nuclear age, there are no active nuclear weapons programs outside of the borders of the nine nuclear weapons states.³ This success is not driven by a lack of demand for nuclear weapons; rather it is a testament to the success of coercive diplomacy and the

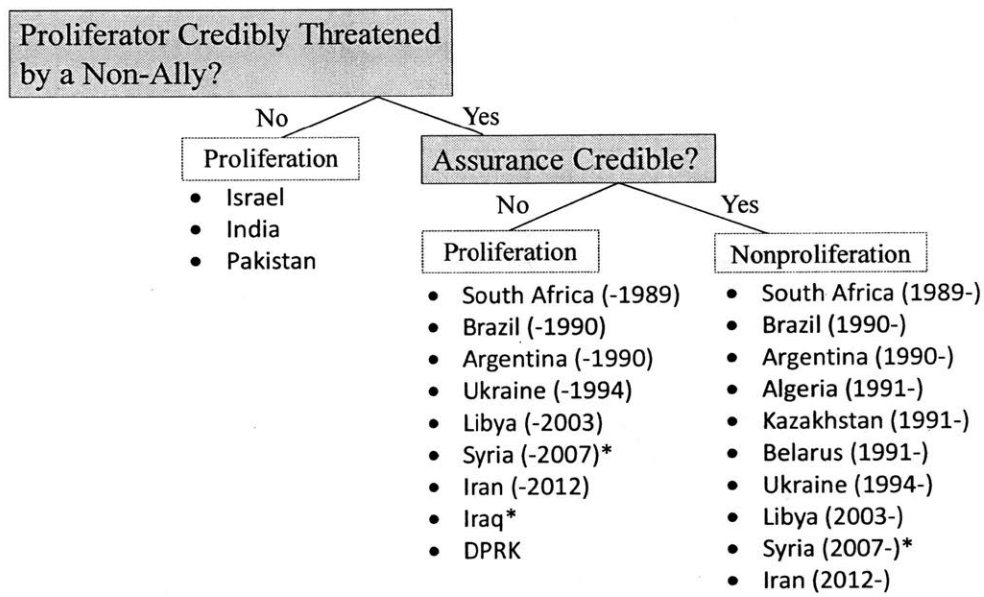
¹ I do not consider threats from allies. Cases also do not enter into the universe if policymakers discussed the option of coercing but choose not to pressure the proliferator (e.g. deciding that the costs would be too high or that there is simply no good leverage to employ). A country counts as a potential “proliferator” if it had any interest in hedging (a low bar for inclusion).

² Kreps and Fuhrmann have compiled an important dataset on the use of force (considered or employed) against nuclear programs. Their work emphasizes military prevention of nuclear proliferation but overlooks the bargaining and threat-making that is more common in international nuclear politics. Matthew Fuhrmann and Sarah E. Kreps, “Targeting Nuclear Programs in War and Peace: A Quantitative Empirical Analysis, 1941- 2000,” *Journal of Conflict Resolution* 54, 6 (2010), pp. 831–859.

³ This assessment is only based on publicly available sources. Syria technically has outstanding compliance issues with the IAEA, but it is not likely that civil war-torn Syria has an active nuclear weapons program.

patchwork of bilateral and multilateral agreements that muzzle the ambitions of latent nuclear powers.

Universe of Cases of Coercive Nuclear Nonproliferation



* = use of force

Coercer(s)	Proliferator	Threat	Coercive Assurance	Bargain Struck	Nuclear Weapons Acquisition	Brute Force	Coercive Assurance Theory?
P5+1, Israel	Iran	1996	2012	2015-	-	-	~✓
Israel	Syria	2007	2007	2007-	-	Yes	~✓
USA	Libya	1980	2003	2003-	-	-	✓
USA, South Korea	North Korea	1992	-	1994-2003	2006	-	~✓
USA, UK, Russia	Ukraine	1991	1994	1994-	-	-	✓
USA, Russia	Belarus	1991	1991	1992-	-	-	✓
USA, Russia	Kazakhstan	1991	1991	1992-	-	-	✓
USA	Algeria	1991	?	1992-	-	-	?
Argentina	Brazil	1978	1990	1990-	-	-	✓
Brazil	Argentina	1975	1990	1990-	-	-	✓
USA	South Africa	1975	1989	1989-	1979	-	✓
USA, UK	Iraq	1991	-	-	-	Yes	~✓
Israel	Iraq	1981	-	-	-	Yes	~✓
India	Pakistan	1981	-	-	1998	-	✗
USA	Pakistan	1976	-	-	1998	-	~✓
Egypt	Israel	1960	-	-	1967	-	✗
✓ = Affirmed ~✓ = Partially Affirmed ✗ = Miss ? = Insufficient Evidence							

Iran 1996-2015

See Chapters 5 and 6.

Syria 2007

Syrian interest in nuclear technology goes back as far as 1976, when it founded its Atomic Energy Commission, an organization tied closely to the Syrian military.¹ Nevertheless, there is no evidence to suggest it sought nuclear weapons until two decades later. Syria likely began exploring nuclear weapons technology in 2000, and possibly as early as 1997.² Its program focused on technical collaboration with North Korea and possibly with Iran.³ Construction on the clandestine Al Kibar reactor began in 2001 or 2002.⁴

In March 2007, a Mossad operation in Vienna collected photographic evidence which confirmed Israeli suspicions that the Al Kibar desert construction site was a 25-megawatt nuclear reactor.⁵ Prime Minister Olmert shared the intelligence with the United States. Washington had not independently concluded that it was a reactor until it received the intelligence indicating as much from the Israelis. The reactor was not configured to produce electricity—no transmission

¹ Ellen Laipson, "Syria: Can the Myth Be Maintained without Nukes?," in Kurt M. Campbell, Robert J. Einhorn, and Mitchell B. Reiss, *The Nuclear Tipping Point* (Brookings Institution, 2004), pp. 83-110.

² Philipp C. Bleek, "When Did (and Didn't) States Proliferate?" Discussion Paper (Cambridge, MA: Project on Managing the Atom, Belfer Center for Science and International Affairs, Harvard Kennedy School and the James Martin Center for Nonproliferation Studies, Middlebury Institute of International Studies, Monterey, CA, June 2017).

³ "Background Briefing with Senior U.S. Officials on Syria's Covert Nuclear Reactor and North Korea's Involvement," April 24, 2008, <<https://fas.org/irp/news/2008/04/odni042408.pdf>>. It is unclear how much Iran was involved, though some analysts suspect coordination or at least Iranian knowledge or support. Leonard S. Spector and Avner Cohen, "Israel's Airstrike on Syria's Reactor: Implications for the Nonproliferation Regime," *Arms Control Today*, August 7, 2008, <https://www.armscontrol.org/act/2008_07-08/SpectorCohen>.

⁴ U.S. intelligence estimate is 2001; satellites picked up images of the building under construction in 2002. "Background Briefing with Senior U.S. Officials on Syria's Covert Nuclear Reactor and North Korea's Involvement," April 24, 2008, <<https://fas.org/irp/news/2008/04/odni042408.pdf>>.

⁵ David Makovsky, "The Silent Strike: How Israel Bombed a Syrian Nuclear Installation and Kept it Secret," *The New Yorker*, September 17, 2012.

wires or switching facilities—nor was it well-suited for research purposes.⁶ On the other hand, as far as U.S. Intelligence knew, Syria did not possess a reprocessing facility to extract the plutonium produced in the reactor.⁷ The lack of both fuel fabrication and reprocessing capacity led U.S. intelligence agencies to only declare that they had “low confidence” that the Al Kibar facility was part of a Syrian nuclear weapons program.⁸ The U.S. intelligence community did assess that the Al Kibar reactor was similar in design the North Korean Yongbyon reactor complex, a gas-cooled graphite moderated reactor. North Korea was the only other country to have built this kind of reactor since the 1970s. Intelligence agencies could also verify the presence of North Korean delegations and scientists at the Al Kibar reactor during the years of construction. U.S. intelligence assessed that North Korean motives for the cooperation with Syria were for profit. Two senior intelligence officials identified the motive as “cash,” and reiterated that the reactor “was in Syria for Syria.”⁹

Israel wanted to destroy the reactor before it came online, for fear of contaminating the Euphrates River with radiation. The Bush administration declined to aid the Israelis in a military strike; nor did the United States ‘bless’ or give a ‘green-light’ to the Israeli military.¹⁰ According to an anonymous Bush administration official, they considered coercive options rather than brute force: “we had looked at some approaches that involved a mix of diplomacy and the threat of military force with the goal of trying to ensure that the reactor was either dismantled of

⁶ “Background Briefing with Senior U.S. Officials on Syria’s Covert Nuclear Reactor and North Korea’s Involvement,” April 24, 2008, <<https://fas.org/irp/news/2008/04/odni042408.pdf>>.

⁷ “Background Briefing with Senior U.S. Officials on Syria’s Covert Nuclear Reactor and North Korea’s Involvement,” April 24, 2008, <<https://fas.org/irp/news/2008/04/odni042408.pdf>>.

⁸ Leonard S. Spector and Avner Cohen, “Israel’s Airstrike on Syria’s Reactor: Implications for the Nonproliferation Regime,” *Arms Control Today*, August 7, 2008, <https://www.armscontrol.org/act/2008_07-08/SpectorCohen>.

⁹ “Background Briefing with Senior U.S. Officials on Syria’s Covert Nuclear Reactor and North Korea’s Involvement,” April 24, 2008, <<https://fas.org/irp/news/2008/04/odni042408.pdf>>.

¹⁰ “Background Briefing with Senior U.S. Officials on Syria’s Covert Nuclear Reactor and North Korea’s Involvement,” April 24, 2008, <<https://fas.org/irp/news/2008/04/odni042408.pdf>>.

permanently disabled, and therefore never became operational. ... Israel felt that this reactor posed such an existential threat that a different approach was required.”¹¹

Israel conducted a unilateral air strike against the Al Kibar nuclear reactor on September 6, 2007. While clearly a case of brute force, this episode could be considered coercive if the threat was of more punishment to come if Syria reconstituted the program. One anonymous senior Israeli official told the *New York Times* that the strike was intended to “re-establish the credibility of our deterrent power;” that Israel would not tolerate another nuclear weapons state in the Middle East; that the Begin Doctrine was alive and well.

Reducing the visibility of Syria’s (involuntary) concession seems to have succeeded in both preventing retaliation and reconstitution of the program. Israel remained silent on the matter, imposing a “news blackout” that lasted seven months.¹² The United States too contributed to the deniability. Israel apparently requested American silence.¹³ According to an anonymous senior Bush administration official, “We were concerned that if knowledge of the existence and then destruction of the reactor became public and was confirmed by sources that the information would spread quickly and Syria would feel great pressure to retaliate.”¹⁴ And then speaking of the later decision to come forward with details, “As time passed, our assessment is that that risk receded.”¹⁵

¹¹ “Background Briefing with Senior U.S. Officials on Syria’s Covert Nuclear Reactor and North Korea’s Involvement,” April 24, 2008, <<https://fas.org/irp/news/2008/04/odni042408.pdf>>.

¹² Leonard S. Spector and Avner Cohen, “Israel’s Airstrike on Syria’s Reactor: Implications for the Nonproliferation Regime,” *Arms Control Today*, August 7, 2008, <https://www.armscontrol.org/act/2008_07-08/SpectorCohen>.

¹³ Leonard S. Spector and Avner Cohen, “Israel’s Airstrike on Syria’s Reactor: Implications for the Nonproliferation Regime,” *Arms Control Today*, August 7, 2008, <https://www.armscontrol.org/act/2008_07-08/SpectorCohen>.

¹⁴ “Background Briefing with Senior U.S. Officials on Syria’s Covert Nuclear Reactor and North Korea’s Involvement,” April 24, 2008, <<https://fas.org/irp/news/2008/04/odni042408.pdf>>.

¹⁵ “Background Briefing with Senior U.S. Officials on Syria’s Covert Nuclear Reactor and North Korea’s Involvement,” April 24, 2008, <<https://fas.org/irp/news/2008/04/odni042408.pdf>>.

It has also been reported that Israel attempted to communicate its aims to Syria after the air strike. Olmert asked Turkish Prime Minister Recep Erdogan to relay a message to Damascus that “Israel would not tolerate another nuclear plant -- but that no further hostile action was planned.”¹⁶ Olmert further expressed his willingness not to draw attention to the matter if Assad did the same.¹⁷ Then-chief of staff to the Israeli Defense Minister recalls that “it was decided to provide Assad with a ‘zone of deniability’ that would allow him to restrain himself from retaliating for the destruction of the reactor.”¹⁸ Assad did not retaliate and, in fact, denied the Israeli warplanes had ever been there.

Assad also denied that the facility was a reactor or that Syria had any undeclared nuclear facilities.¹⁹ Syria also declined to allow an IAEA team to inspect the site. Syria razed the bombed-out building and quickly erected a new structure in its place.²⁰ This work was largely done at night or under the cover of tarps to conceal it from satellite observation.²¹ North Koreans also visited Syria after the Israeli strike to assist with damage assessment.²² Only after it had cleaned the location did Syria relent to an inspection on June 23, 2008. IAEA environmental samples taken during the visit found traces of “chemically processed natural uranium particles.”

¹⁶ Erich Follath and Holger Stark, “The Story of ‘Operation Orchard’: How Israel Destroyed Syria’s Al Kibar Nuclear Reactor,” *Der Spiegel*, 11/02/2009, <<http://www.spiegel.de/international/world/0,1518,658663,00.html>>.

¹⁷ Erich Follath and Holger Stark, “The Story of ‘Operation Orchard’: How Israel Destroyed Syria’s Al Kibar Nuclear Reactor,” *Der Spiegel*, 11/02/2009, <<http://www.spiegel.de/international/world/0,1518,658663,00.html>>.

¹⁸ Michael Herzog, “Israel’s 2007 Strike on Syrian Nuclear Reactor: Lessons Learned for Iran,” Washington Institute, April 25, 2018, <<http://www.washingtoninstitute.org/policy-analysis/view/israels-2007-strike-on-syrian-nuclear-reactor-lessons-learned-for-iran>>. The special report in *Haaretz* concurs that Israel intended to give Assad a “denial space” to avoid embarrassing or humiliating him publicly. It was helpful that very few people in the Syrian government knew about the nuclear reactor. Amos Harel and Aluf Benn, “No Longer a Secret: How Israel Destroyed Syria’s Nuclear Reactor,” *Haaretz*, March 23, 2018, <<https://www.haaretz.com/israel-news/MAGAZINE-no-longer-a-secret-how-israel-destroyed-syria-s-nuclear-reactor-1.5914407>>.

¹⁹ Leonard S. Spector and Avner Cohen, “Israel’s Airstrike on Syria’s Reactor: Implications for the Nonproliferation Regime,” *Arms Control Today*, August 7, 2008, <https://www.armscontrol.org/act/2008_07-08/SpectorCohen>.

²⁰ “Al-Kibar,” Nuclear Threat Initiative, March 1, 2011, <<https://www.nti.org/learn/facilities/461/>>.

²¹ “Background Briefing with Senior U.S. Officials on Syria’s Covert Nuclear Reactor and North Korea’s Involvement,” April 24, 2008, <<https://fas.org/irp/news/2008/04/odni042408.pdf>>.

²² “Background Briefing with Senior U.S. Officials on Syria’s Covert Nuclear Reactor and North Korea’s Involvement,” April 24, 2008, <<https://fas.org/irp/news/2008/04/odni042408.pdf>>.

These particles did not come from Israeli munitions, as the Syrians later claimed. The IAEA issued a report in February 2009 and has since requested more access to Syria on numerous occasions. Syria has not responded to an IAEA letter since August 2009.²³ On May 24, 2011, the IAEA finally concurred publicly that “the destroyed building was very likely a nuclear reactor” and should have been declared to the IAEA.²⁴

Arab nations were also strikingly silent after the attack. An Egyptian newspaper dubbed it the “synchronized silence of the Arab world.”²⁵ Amazingly, no state delegation raised the issue at an April 25, 2008 UN Security Council meeting, which came only one day after the U.S. government had published evidence proving the Al Kibar facility was a reactor with links to North Korea.²⁶ Only North Korea strongly condemned the attack publicly.²⁷

There is no publicly available information to suggest that Syria reconstituted its nuclear weapons program after the 2007 raid. Any planned efforts for the future were also likely complicated when the Syrian Civil War broke out on March 15, 2011.

Libya 1980-2003

See Chapter 4.

²³ “Al-Kibar,” Nuclear Threat Initiative, March 1, 2011, <<https://www.nti.org/learn/facilities/461/>>.

²⁴ “Al-Kibar,” Nuclear Threat Initiative, March 1, 2011, <<https://www.nti.org/learn/facilities/461/>>.

²⁵ Leonard S. Spector and Avner Cohen, “Israel’s Airstrike on Syria’s Reactor: Implications for the Nonproliferation Regime,” *Arms Control Today*, August 7, 2008, <https://www.armscontrol.org/act/2008_07-08/SpectorCohen>.

²⁶ Leonard S. Spector and Avner Cohen, “Israel’s Airstrike on Syria’s Reactor: Implications for the Nonproliferation Regime,” *Arms Control Today*, August 7, 2008, <https://www.armscontrol.org/act/2008_07-08/SpectorCohen>.

²⁷ Leonard S. Spector and Avner Cohen, “Israel’s Airstrike on Syria’s Reactor: Implications for the Nonproliferation Regime,” *Arms Control Today*, August 7, 2008, <https://www.armscontrol.org/act/2008_07-08/SpectorCohen>.

North Korea 1992-2006

North Korea began exploring nuclear weapons in 1962.²⁸ It requested assistance to build nuclear weapons from the Soviet Union. The USSR declined, but agreed to provide a research reactor, which became operational in 1967. The DPRK also asked China for assistance and was rebuffed in 1964 and 1974.²⁹ After his requests for large power plants were rebuffed by the USSR and Czechoslovakia, Kim Il Sung ordered the construction of an indigenous plant in 1979. In 1980 (or 1982) a U.S. satellite discovered the indigenous reactor under construction in Yongbyon, a gas-graphite reactor suitable for plutonium production.³⁰ That reactor became operational in 1987. At the same time, North Korea is suspected of having tested conventional explosives for an implosion device.³¹ In 1989 the Yongbyon reactor was shut down for 100 days, suggesting that fuel had been removed for reprocessing.

In 1985, the United States coordinated with nuclear suppliers to prevent “sensitive” nuclear materials transfer to North Korea.³² In 1988, the U.S noticed that North Korea was building a reprocessing facility at Yongbyon.³³ The United States wanted North Korea to sign a safeguards agreement with the IAEA. North Korea refused until the US removed all nuclear

²⁸ Philipp C. Bleek, “When Did (and Didn’t) States Proliferate?” Discussion Paper (Cambridge, MA: Project on Managing the Atom, Belfer Center for Science and International Affairs, Harvard Kennedy School and the James Martin Center for Nonproliferation Studies, Middlebury Institute of International Studies, Monterey, CA, June 2017).

²⁹ Etel Solingen, *Nuclear Logics: Contrasting Paths in East Asia and the Middle East* (Princeton, NJ: Princeton University Press, 2007), pp. 127-128.

³⁰ Philipp C. Bleek, “When Did (and Didn’t) States Proliferate?” Discussion Paper (Cambridge, MA: Project on Managing the Atom, Belfer Center for Science and International Affairs, Harvard Kennedy School and the James Martin Center for Nonproliferation Studies, Middlebury Institute of International Studies, Monterey, CA, June 2017).

³¹ Philipp C. Bleek, “When Did (and Didn’t) States Proliferate?” Discussion Paper (Cambridge, MA: Project on Managing the Atom, Belfer Center for Science and International Affairs, Harvard Kennedy School and the James Martin Center for Nonproliferation Studies, Middlebury Institute of International Studies, Monterey, CA, June 2017).

³² Department of State Briefing Paper, January 5, 1985, in “North Korea and Nuclear Weapons: The Declassified Record,” No. 5, The National Security Archive, <<http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB87/>>.

³³ Michael J. Mazarr, “Going Just a Little Nuclear: Nonproliferation Lessons from North Korea,” *International Security*, Vol. 20, No. 2 (Fall 1995), pp. 92-122.

weapons from South Korea and provided a negative security assurance pledging not to use NW against the DPRK.³⁴ After the collapse of the USSR, Russia threaten to cutoff nuclear cooperation with North Korea unless it accepted IAEA safeguards.³⁵

In September 1991, the US removed its nuclear weapons from South Korea. In December 1991, North and South Korea signed the Joint Declaration on a Non-Nuclear Korean Peninsula. In January 1992, the US canceled joint military exercises with South Korea as a signal of cooperation. North Korea signed a safeguards agreement with the IAEA.³⁶ They ratified the agreement in April-May 1992. Unfortunately, North Korea still dissembled and did not complying fully with safeguards; it removed equipment before inspections and concealed operations at a reprocessing plant.

In the Summer of 1992, Russia and China both communicated threats of abandonment to the DPRK over its nuclear program.³⁷ The US and South Korea recommenced military exercises in early 1993, citing a North Korean lack of compliance with the IAEA, while the IAEA issued demands for special inspections. The North defied these demands, so the IAEA referred North Korea to the UN Security Council. The North responded by declaring its intention to withdraw from the NPT.³⁸

When in March 1994 the North refused to allow inspectors at the reprocessing facility, an IAEA team withdrew from the country. The US cancelled scheduled talks and resumed military

³⁴ Mitchell Reiss, *Bridled Ambition: Why Countries Constrain Their Nuclear Capabilities* (Washington, DC: Woodrow Wilson Center Press, 1995), pp. 235-236.

³⁵ Reiss, *Bridled Ambition*.

³⁶ Robert Carlin, "North Korea," in Mitchell Reiss and Robert Litwak (eds.), *Nuclear Proliferation after the Cold War* (Washington, DC: Woodrow Wilson Center Press, 1994), p. 139.

³⁷ Reiss, *Bridled Ambition*, pp. 241-243.

³⁸ Reiss, *Bridled Ambition*, pp. 247-253.

exercises with the South, bringing additional military assets to theater, including Patriot missile batteries and airpower.³⁹

The crisis peaked in June 1994 after Hans Blix announced that the IAEA could not confirm the peaceful purposes of North Korea's nuclear program. South Korea called up reservists and the US considered military options. In this context, former President Jimmy Carter traveled to Pyongyang and negotiated a deal to bring all sides back to the table. In October 1994, the parties signed the Agreed Framework. The DPRK froze activity at its nuclear facilities in exchange for light water reactors, heavy oil shipments, and a negative security assurance from the United States.⁴⁰

The United States seriously considered the use of force against North Korean nuclear facilities in 1994. Secretary of Defense William Perry ordered the CJCS Shalikashvili to prepare plans for "a military attack" in 1993, and President Clinton almost put them into action in 1994.⁴¹ South Korean leaders also voiced private support for raids on North Korean nuclear facilities at Yongbyon in 1991, 1993, and 1994. Plans were reportedly drawn up for an air strike, and likely would have been coordinated with the United States.⁴² Some have called into question the credibility of these threats of force, however, as the prospect of retaliation intimidated Seoul. Secretary of Defense William Perry wrote in a 2002 co-authored op-ed that in 1994 "we believed that the nuclear program on which North Korea was embarked was even more dangerous and were prepared to risk a war to stop it." Most importantly, he noted that the threat of war was communicated to North Korea: "As we entered into negotiations to shut down Yongbyon, we

³⁹ Reiss, *Bridled Ambition*, p. 266.

⁴⁰ International Atomic Energy Agency, "Agreed Framework of 21 October 1994 Between the United States of America and the Democratic People's Republic of Korea," November 2, 1994, in "North Korea and Nuclear Weapons: The Declassified U.S. Record," No. 17, The National Security Archive, <<http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB87/>>.

⁴¹ Kreps and Fuhrmann 2010, dataset.

⁴² Kreps and Fuhrmann 2010, dataset.

made our willingness to use military force crystal clear to the North Koreans by positioning forces to strike Yongbyon and reinforcing our military units that were deployed to defend South Korea against an onslaught from the north.”⁴³ The US also threatened North Korea in 1993, when Secretary of State Warren Christopher said to the North Koreans that the US had “options other than negotiation” if inspectors were barred from nuclear sites. And President Clinton said to the press in December 2003: “I hope we are not headed toward a full blown crisis. I hope that we can avoid one, but I am not positive that we can...I am confident that if, God forbid, any kind of conflict should come we could do what we need to do.”

As for coercive assurance, both President George H.W. Bush and President Clinton repeatedly emphasized their interests in keeping the DPRK non-nuclear while respecting its sovereignty and pledging non-intervention. The Agreed Framework, signed in 1994, explicitly stated that “the U.S. will provide formal assurances to the DPRK, against the threat or use of nuclear weapons by the U.S.” This coercive assurance was weak. Indeed, some speculate that the United States was only willing to sign the Agreed Framework because it foresaw a collapse of the Kim regime in the near future.

The Agreed Framework officially fell apart in 2003, but North Korea almost certainly crossed the red lines therein prior to 2003. In 1997 a North Korean defector claimed the North already had nuclear weapons. In 1999 the US also began to get information on North Korean procurements from Pakistan, which suggest that the North had a covert uranium enrichment program.⁴⁴ The DPRK also began a clandestine uranium enrichment program in the late 1990s.

⁴³ Ashton B. Carter and William J. Perry, “Back to the Brink,” *Washington Post*, October 20, 2002.

⁴⁴ Jeffrey T. Richelson, *Spying on the Bomb: American Nuclear Intelligence from Nazi Germany to Iran and North Korea* (W.W. Norton, 2007), p. 529.

Both the US and North Korea subsequently abandoned the Agreed Framework. The North kicked out inspectors and destroyed IAEA monitoring equipment.⁴⁵ The North withdrew from the NPT in 2003.

The North tested its first nuclear device in 2006 (likely a fizzle). North Korea conducted further nuclear tests in 2009, 2013, twice in 2016, and in 2017 (likely a thermonuclear device). A total of six rounds of multilateral talks were held between 2003 and 2007. These Six Party Talks failed to compel concessions from the North. They were discontinued in 2009 and have not since been resumed.

The Trump administration reengaged in coercive diplomacy in 2018 after a slow-moving crisis provoked by missile and nuclear tests in 2017. Although US-ROK-DPRK coercive interactions are ongoing, Coercive Assurance Theory yields pessimistic conclusions when applied to contemporary Korean peninsula. The Trump administration's Maximum Pressure campaign privileges threat credibility over coercive assurance. The conditions for coercive assurance are mostly absent. Washington's demands are entangled. Pyongyang reasonably wonders whether nuclear sanctions will not just be relabeled missile or CBW or human rights sanctions after any bargain. Moreover, President Trump seems to think that there is strategic value in being unpredictable. Coordination between the two primary coercers, the United States and South Korea, is also too loose—Seoul is inclined to move forward with economic links to the North regardless of progress on denuclearization. Finally, coercers have laid no groundwork to reduce the visibility of any North Korean concessions. The prospects of a coercive denuclearization bargain, therefore, are not good.

⁴⁵ Richelson, *Spying on the Bomb*, p. 530.

Ukraine 1991-1994

Ukraine inherited approximately 1,900 nuclear warheads upon the collapse of the Soviet Union. Ukraine signed the Lisbon Protocol to the START treaty, agreeing to eliminate the warheads, in 1992. However, the bargain was unsure until 1994. Ukraine shifted from renouncing nuclear status at its moment of independence to challenging Russian ownership of the nuclear weapons and seriously considering maintaining all or part of the arsenal.

It is notable that compared to Belarus and Kazakhstan, what it took to get Ukraine to concede was not necessarily more threats but more coercive assurance in the form of the Budapest Memorandum.

As for threats, according to Einhorn, “Any attempt by Ukraine to acquire the ability to launch the missiles on its own would have been strongly opposed by Russia and could even have led to military confrontation.”⁴⁶ Ukraine’s leaders knew this but held out for more from their coercers.

Ukraine’s concerns were for its own security. Its initial demand was for a legally binding treaty that would guarantee its security from a great power patron. The standoff finally ended in December 1994, when Russia, the UK, the United States, and Ukraine all signed the Budapest Memorandum of Security Assurances. Robert Einhorn argues that these security assurances were “weak” and “mainly repackaged existing multilateral assurances in a document uniquely applicable to Ukraine.”⁴⁷ Indeed, some argue that Russia’s annexation of Crimea in 2014 proved those security assurances to be meaningless. Nevertheless, they were commensurate with Ukraine’s resolve to maintain the weapons post-Cold War.⁴⁸ Ukraine’s appetite for assurance at

⁴⁶ Robert Einhorn, “Ukraine, Security Assurances, and Nonproliferation,” *The Washington Quarterly* (Spring 2015).

⁴⁷ Robert Einhorn, “Ukraine, Security Assurances, and Nonproliferation,” *The Washington Quarterly* (Spring 2015).

⁴⁸ Ukraine seems to have decided as early as 1990 that it wanted to be non-nuclear. Its July 16, 1990 Declaration of State Sovereignty said it would remain non-nuclear.

the time of its coercive bargain is suggestive evidence that coercive assurance was necessary, and that threats alone were insufficient, to coerce concessions.

Ukraine also received some inducements. Russia agreed to provide fuel rods for Ukrainian nuclear reactors, and Russia cancelled part of Ukraine's energy debt.⁴⁹ The United States paid several hundred million dollars to assist with dismantlement of the warheads. The warheads were in fact dismantled and not reincorporated into Russia's nuclear arsenal.

Belarus and Kazakhstan 1991-1992

Approximately 1,410 Soviet nuclear warheads (including 104 SS-18 ICBMs and 40 Tu-95 strategic bombers with ALCMs) remained within the borders of Kazakhstan at the end of the Cold War. 81 road mobile SS-25s and an unknown number of tactical nuclear weapons remained within the borders of Belarus. Kazakhstan was also home to the Soviet Semipalatinsk nuclear test site. I consider these cases together, as less is written about the Belarus internal decisionmaking and similar dynamics seem to have played out in both cases.

In 1991, Kazakh leader Nazarbayev intimated that he wanted to keep the nuclear weapons.⁵⁰ Secretary of State James Baker met with Nazarbayev to settle the matter in 1991.

Baker used "tough talk" and "a stern warning that three American missiles were targeted at each one of the ICBMs stationed in Kazakhstan." Nazarbayev appeared not to be cowed at the meeting, but ultimately relented.

Nazarbayev acknowledged Kazakhstan's "inability to master the technicalities and pay the costs of maintaining the missiles stationed on its soil." But he also wanted to know "what

⁴⁹ Robert Einhorn, "Ukraine, Security Assurances, and Nonproliferation," *The Washington Quarterly* (Spring 2015).

⁵⁰ David Hoffman, "Kazakhstan Keeping Nuclear Arms, Republic's President Tells Baker," *Washington Post*, December 18, 1991, <<http://bit.ly/2eGBwdA>>.

Kazakhstan will get in return for dismantling these weapons;” “I was initially after security guarantees,” Nazarbayev claimed later. As Kucera writes, he sought “international recognition, respectability, investment and security. These objectives were incompatible with keeping the nuclear arsenal.”⁵¹

Kazakhstan signed the Lisbon Protocol to the START treaty in 1992, agreeing to eliminate the warheads. All warheads were repatriated to Russia by April 1995, and the Semipalatinsk nuclear test site infrastructure was destroyed by July 2000.⁵² Belarus also agreed to ship its warheads back to Russia when it signed the NPT and ratified the Lisbon Protocol to the START treaty. Its tactical warheads were removed by May 1993 and the strategic weapons were removed by November 1996.⁵³

Neither Kazakhstan nor Belarus seem to have been that resolved to keep their inherited nuclear weapons. They simply found themselves with a bargaining chip and tried to get as much out of it as possible. Under these circumstances, even minor threats coupled with coercive assurance and minor inducements were sufficient to get the targets to concede.

Algeria 1991-1992

In early 1991, U.S. routine satellite surveillance discovered the Es Salam reactor under construction 150 kilometers south of Algiers. Algeria was known at the time to be building another reactor 200 kilometers east of Algiers. But this new discovery raised alarms bells, especially when the United States learned that China supplied the nuclear technology.⁵⁴ Other

⁵¹ Joshua Kucera, “Why Did Kazakhstan Give Up Its Nukes?” *Eurasianet*, May 15, 2013, <<http://www.eurasianet.org/node/66967>>.

⁵² NTI Country Profiles: Kazakhstan, <<http://www.nti.org/learn/countries/kazakhstan/>>.

⁵³ NTI Country Profiles: Belarus, <<http://www.nti.org/learn/countries/belarus/>>.

⁵⁴ The reactor deal with China had been struck in 1983 and the reactor construction began in 1986. David Albright and Corey Hinderstein, “Algeria: Big Deal in the Desert?” *Bulletin of the Atomic Scientists* (May/June 2001), p. 48.

suspicions of nuclear activity involving Algeria had also crossed the radar of American intelligence in the 1980s.⁵⁵ A Spanish intelligence agency concluded some years later that the Es Salam reactor had originally been part of a nuclear weapons program.⁵⁶

The intelligence community was concerned about the images of the Es Salam reactor not only because it was undeclared but because of its large cooling towers. They were big enough to support a 50 MW reactor, despite Algeria's claim of 15 MW. Other buildings on site looked like preparations for potential reprocessing facilities. Most concerning, surface-to-air missile batteries at the facility suggested Algeria was prepared to defend the site from airstrikes.

Algeria had earlier refused to sign the NPT, saying it was a discriminatory treaty. It viewed Western suspicions over its nuclear program as conspiratorial and aimed at the "subjugation of Algeria."⁵⁷

The threat of American coercion was clear. According to an NSC Policy Coordinating Committee document, the United States was working with allies (France, Germany, Italy, Spain, and Portugal) to "exert influence on Algeria."⁵⁸ The same memo has a redacted section which may have included suggestions for specific coercive measures.⁵⁹ France played a particularly important role because of its colonial ties to Algeria. After a meeting with Chinese officials,

⁵⁵ The Federation of American Scientists reports that Algeria imported 150 tons of uranium concentrate from Niger in 1984. Federation of American Scientists, "Algeria Special Weapons," <<https://fas.org/nuke/guide/algeria/>>. Albright and Hinderstein confirmed that U.S. intelligence reports exist which claim that Iraq sent nuclear material to Algeria. They did not, however, get access to these reports. David Albright and Corey Hinderstein, "Algeria: Big Deal in the Desert?" *Bulletin of the Atomic Scientists*, (May/June 2001).

⁵⁶ David Albright and Corey Hinderstein, "Algeria: Big Deal in the Desert?" *Bulletin of the Atomic Scientists* (May/June 2001), pp. 49-50.

⁵⁷ David Albright and Corey Hinderstein, "Algeria: Big Deal in the Desert?" *Bulletin of the Atomic Scientists* (May/June 2001), pp. 46 and 48.

⁵⁸ William Burr, "The Algerian Nuclear Problem, 1991: Controversy over the Es Salam Nuclear Reactor," National Security Archive, September 10, 2007.

⁵⁹ I have filed a Mandatory Declassification Review for this document.

French Foreign Minister Roland Dumas said “there is no question of Algeria’s acquiring a nuclear weapon.”⁶⁰

A key vector of leverage was the United States leaning on China to lean on Algeria. Under Secretary of State Batholomew apparently delivered a message to Beijing in June 1991, and James Baker reiterated the issue when he visited China in November 1991, expressing hope that China “will continue to urge Algeria to complete its safeguards agreement,” and “refrain from any transfers of sensitive nuclear technologies to Algeria.”⁶¹ Around this time, Washington and Beijing were engaged in sensitive discussions about extending Most Favored Nation (MFN) trade status to China. In a meeting with Chinese Foreign Minister Liu, Kimmitt responded to Liu’s concerns that MFN not be linked to any other issues by saying that the White House’s evaluations “would inevitably be against the backdrop of China’s actions on these issues,” one of which was the Algerian nuclear question.⁶² Kimmit expressed hope that China would “encourage” Algiers to contact the IAEA and that China itself would sign the NPT.

The French, too, leaned on China. In January 1992, the US Embassy reported on information passed along from the French. Reportedly, France had sent a delegation to Beijing in mid-December 1991 to “register French concern over China’s sale of the nuclear reactor to Algeria. The Chinese are quoted as saying: ‘We got caught this time in Algeria, but this will not

⁶⁰ William Burr, “The Algerian Nuclear Problem, 1991: Controversy over the Es Salam Nuclear Reactor,” National Security Archive, September 10, 2007.

⁶¹ “Core Points Nuclear Proliferation and the NPT,” circa October-November 1991. Cited in William Burr, “The Algerian Nuclear Problem, 1991: Controversy over the Es Salam Nuclear Reactor,” National Security Archive, September 10, 2007.

⁶² U.S. Embassy Cable 13790, May 13, 1991. Cited in William Burr, “The Algerian Nuclear Problem, 1991: Controversy over the Es Salam Nuclear Reactor,” National Security Archive, September 10, 2007.

happen again.”⁶³ The French delegation was reportedly “not comforted with this double entendre.”

But the United States (and France⁶⁴) also hoped to “avoid a heavy-handed approach,” consistent with a desire to reduce the visibility of Algerian acquiescence.⁶⁵ In September 1991, the NSC’s Policy Coordinating Committee updated its paper to reflect Algeria’s political uncertainty. It noted that US pressure for a safeguards agreement if public could “become a highly charged political issue.” It therefore concluded that the US should continue to pressure Algeria, but if “significant nuclear proliferation risk” emerged, the US would explore “other options.”⁶⁶ President George H. W. Bush therefore issued secret demarches to Algiers and Beijing about its grave concerns regarding the Es Salam reactor.⁶⁷

Yet bureaucracies inside the U.S. government took opposing views of the situation in Algeria. The Pentagon saw the reactor as proof of a weapons program. The State Department hesitated to conclude as much. Algeria was known to be politically unstable, planning to hold its first multiparty elections later in 1991 with the Islamic Salvation Front poised to win a majority. According to declassified documents, Washington appreciated the delicate domestic politics in Algeria and the threat of the Islamic Salvation Front.

A leak from the Defense Department spoiled plans for discretion. On April 11, 1991, *Washington Times* reporter Bill Gertz published a report provocatively titled “China Helps

⁶³ U.S. Embassy in China, Cable 02139 to State Department, “Recent Nuclear Developments in China,” January 24, 1992, <<http://nsarchive.gwu.edu/NSAEBB/NSAEBB114/chipak-22.pdf>>. State Department FOIA release. Cited by National Security Archives, <<http://nsarchive.gwu.edu/NSAEBB/NSAEBB114/>>.

⁶⁴ The American embassy noted “with some surprise that the French media was not playing up the Algerian nuclear story.” William Burr, “The Algerian Nuclear Problem, 1991: Controversy over the Es Salam Nuclear Reactor,” National Security Archive, September 10, 2007.

⁶⁵ William Burr, “The Algerian Nuclear Problem, 1991: Controversy over the Es Salam Nuclear Reactor,” National Security Archive, September 10, 2007.

⁶⁶ “The Algerian Nuclear Problem,” September 1991. Cited in William Burr, “The Algerian Nuclear Problem, 1991: Controversy over the Es Salam Nuclear Reactor,” National Security Archive, September 10, 2007.

⁶⁷ I have filed Mandatory Declassification Reviews for these demarches. Exact dates are unclear.

Algeria Develop Nuclear Weapons.” If it were not for the Pentagon’s leak, all signs point to an approach by Washington that embraced reducing visibility.

Unfortunately, the absence of more accounts of the episode and the dearth of declassified documents (as yet) prevents scholars from examining whether and how coercive assurance mattered to the target in this case. With more evidence, I would expect to find Western officials cognizant of the importance of disentangling demands, coercive control, and granting Algeria deniability.

Algeria admitted to building the reactor on April 30, 1991 and promised to allow IAEA inspections once it was completed. In February 1992, Algeria finally signed an agreement allowing IAEA inspections. It also made an “off-the-record statement that it would eventually sign the NPT.”⁶⁸ The reactor began operating in 1993. Algeria joined the NPT in January 1995, and signed the Treaty of Pelindaba in 1996, declaring Africa a nuclear-weapons free zone.

Argentina 1975-1990 and Brazil 1978-1990

I consider the Argentinian and Brazilian nuclear programs together. In each case, the other was the coercer. The threat was not of punishment per se, but of reactive proliferation—if you get the bomb, we will too.⁶⁹ These mutual threats were only effective when combined with coercive assurance that gave each side confidence that the other would not proliferate anyway, manifest in a joint verification agreement.

Argentina built its first research reactor (RA-1 design) in 1953 as part of the U.S. Atoms for Peace program, and within a decade mastered building its own research reactors based on the

⁶⁸ David Albright and Corey Hinderstein, “Algeria: Big Deal in the Desert?” *Bulletin of the Atomic Scientists*, May/June 2001, p. 49.

⁶⁹ Some may consider this a deterrent threat instead of compellent, but I consider it anyway.

design.⁷⁰ In 1968, Argentina purchased a 320 MW reactor from West Germany (Siemens). This was Argentina's first power reactor and it was placed under safeguards after German insistence.⁷¹ At the same time, Argentina built a reprocessing facility at Ezeiza, beginning their nuclear hedging activities in earnest.

After a 1976 coup Argentina came under control of a military junta government. The power transition renewed focus and investment in Argentina's nuclear program. In 1978 Argentina began to build a second reprocessing facility at Ezeiza (the first one closed in 1973 having extracted only one kilogram of plutonium from spent fuel⁷²), and again did not place it under safeguards. Also in 1978, Argentina secretly began to build a gaseous diffusion uranium enrichment plant.⁷³

Brazil received its first research reactor through the U.S. Atoms for Peace program in 1957. After failed negotiations with the French for a natural uranium reactor, Brazil signed a deal with Westinghouse in 1965 for a light-water reactor (Angra 1) and received it in 1971.⁷⁴ In 1967, Brazil asserted its opposition to the discriminatory nonproliferation regime, refused to sign the Treaty of Tlatelolco and the NPT, and proclaimed its right to develop peaceful nuclear explosives (PNEs). In the same year, Brazil's National Council for Nuclear Energy (CNEN) conducted a study on the feasibility of building nuclear weapons.⁷⁵

⁷⁰ James E. Doyle, *Nuclear Safeguards, Security, and Nonproliferation* (Oxford, UK: Elsevier, 2008), p. 311.

⁷¹ Argentina did receive a research reactor previously. After signing an agreement for foreign nuclear assistance in 1955, a U.S.-designed research reactor was built in Constituyentes in 1958. Joseph Cirincione, et al., *Deadly Arsenals* (Washington, DC: Carnegie Endowment for International Peace, 2002), p. 338.

⁷² Ibid.

⁷³ The enrichment facility was indeed configured to produce only LEU, although this was reversible. Jacques E. Hymans, "Of Gauchos and Gringos," *Security Studies* 10, 3 (Spring 2001), p. 170; and Joseph Cirincione, et al., *Deadly Arsenals* (Washington, DC: Carnegie Endowment for International Peace, 2002), p. 339.

⁷⁴ Michael Reiss, *Bridled Ambitions* (Washington, DC: Woodrow Wilson Center Press, 1995), p. 49.

⁷⁵ H. Jon Rosenbaum, "Brazil's Nuclear Aspirations," in *Nuclear Proliferation and the Near-Nuclear Countries*, Onkar Marwah and Ann Schulz, eds. (Cambridge, MA: Ballinger, 1975).

In 1975, Brazil signed a major deal with West Germany to purchase ten nuclear power plants and additional facilities capable of managing the full fuel cycle (the deal included technology for uranium exploration and mining, uranium enrichment via Becker jet nozzle technology, fuel fabrication, spent fuel reprocessing, and nuclear power plant construction).⁷⁶ International inspections were included as part of the deal, but they were not comprehensive, leaving the door open for Brazilian proliferation.

In the late 1970s, Argentine-Brazilian relations soured, especially sparked by suspicion that a 1975 nuclear technology deal between West Germany and Brazil was aimed at acquiring nuclear weapons. Brazil and Argentina were also increasingly at odds over the exploitation of their shared hydroelectric resources.⁷⁷ Some Argentine leaders called for building nuclear weapons in the late 1970s, but the proposals were not supported by the government or the CNEA.⁷⁸

In 1978, Brazil officially sanctioned a secret military effort, which became known as the “parallel program.” Leaders in the Air Force were the most vocal about their desire to build a nuclear weapon. Between 1984 and 1985 the Brazilian Air Force constructed a 280-meter deep shaft in Cachimbo, a base deep in the Amazon. While denied at the time, it is clear that this shaft was constructed for testing purposes. It was lined with concrete and lead, consistent with the specifications for U.S. test tunnels in New Mexico.⁷⁹

While it was widely believed that Brazil “had to have the capacity to build the bomb, in case Argentina were to do so,” Brazil recognized in the 1980s that Argentine supporters of a

⁷⁶ Michael Barletta, “The Military Nuclear Program in Brazil,” CISAC Working Paper, August 1997, p. 4. http://cisac.stanford.edu/publications/military_program_in_brazil_the/.

⁷⁷ Jacques E. Hymans, “Of Gauchos and Gringos,” *Security Studies* 10, 3 (Spring 2001), p. 174.

⁷⁸ Ibid.

⁷⁹ Michael Reiss, *Bridled Ambitions* (Washington, DC: Woodrow Wilson Center Press, 1995), p. 51.

nuclear weapons program were on the fringe of their domestic political scene.⁸⁰ Thus, Brazil never invested substantially in preparing to build a nuclear weapon.⁸¹ It was aware that Argentina was unlikely to go that far. Nonetheless, Brazil wanted to be prepared. Brazilian officials have since reported that the Brazilian nuclear program was a itself a threat. Michael Barletta reports an anonymous Brazilian official stating that the message that nuclear program sent to Argentina was: “watch your step; I can do it too, and I’m bigger than you are.”⁸² According to Debs and Monteiro, “the [Brazilian] idea was to acquire the technology necessary to build a nuclear weapon so that if at any point in the future Argentina decided to go nuclear Brazil could quickly follow suit.”⁸³

These threats of mutual proliferation kept both programs in check, especially because they were supplemented with a verification regime, which assured that neither would carry out its threat to proliferate anyway. In 1983, when Argentina transitioned back to democratic rule,⁸⁴ the government revealed that it had secretly built a gaseous diffusion uranium enrichment plant.⁸⁵ (The enrichment facility then continued to operate from 1983 to 1989.⁸⁶) The revelation

⁸⁰ Michael Barletta, “The Military Nuclear Program in Brazil,” CISAC Working Paper, August 1997, p. 15. <http://cisac.stanford.edu/publications/military_program_in_brazil_the/>.

⁸¹ Alexandre Debs and Nuno P. Monteiro, *Nuclear Politics: The Strategic Logic of Proliferation* (Draft Manuscript, April 11, 2014), p. 73.

⁸² Michael Barletta, “The Military Nuclear Program in Brazil,” CISAC Working Paper, August 1997, p. 16. <http://cisac.stanford.edu/publications/military_program_in_brazil_the/>, accessed: June 10, 2014.

⁸³ Alexandre Debs and Nuno P. Monteiro, *Nuclear Politics: The Strategic Logic of Proliferation* (Draft Manuscript, April 11, 2014), p. 73.

⁸⁴ Some consider democratization the real cause of Argentinian and Brazilian nonproliferation. Robert Einhorn suggests, for example, that “Argentina and Brazil both discontinued nuclear weapons programs and joined the NPT as a result of their transitions from military to civilian rule.” Yet democracy returned to Argentina in 1983 and investment in uranium enrichment and reprocessing facilities continued until 1989 and 1990, respectfully. Brazil transitioned to democratic rule in 1985, but its secret nuclear program continued. Only in 1990 did President Collor officially close the shaft at Cachimbo. See Robert Einhorn, “Ukraine, Security Assurances, and Nonproliferation,” *The Washington Quarterly* (Spring 2015).

⁸⁵ Michael Reiss speculates that one reason for the timing of the announcement was to regain lost prestige after Argentina’s defeat in the Falklands War. Michael Reiss, *Bridled Ambitions* (Washington, DC: Woodrow Wilson Center Press, 1995), p. 48.

⁸⁶ Although it reactivated the Pilcaniyeu enrichment facility in 2010. “Argentina Celebrates Enrichment Plant Reactivation,” *World Nuclear News*, October 26, 2010, <http://www.world-nuclear-news.org/ENF-Arentina_celebrates_enrichment_plant_reactivation-2610107.html>.

cast relations with Brazil in doubt, but in November 1985, Argentina again began to cooperate with Brazil on confidence-building measures. Reciprocal visits to nuclear facilities began in 1987. Argentina then suspended its reprocessing program in 1990.⁸⁷ Brazil's parallel military nuclear program was exposed in August 1986 when a Sao Paulo newspaper broke a story about its test shaft. The Brazilian government denied it until 1987, when they announced that the Navy had successfully enriched uranium with centrifuge cascades.⁸⁸

Both Argentina and Brazil finally ended their programs in 1990 when they signed a mutual agreement establishing a bilateral inspections regime, safeguarded facilities under the IAEA, and implemented a Nuclear Weapons Free Zone.

South Africa 1975-1989

See Chapter 3.

Iraq 1981-2003

Iraq is a classic case of coercers struggling to communicate contingency. Saddam Hussein perceived a lack of coercive assurance; Iraq's coercers would never relent. The fact that this case ended in successful nonproliferation is largely due to brute force. I consider here both Israel's threat against Saddam's Iraq and later American and allied coercion.

After a 1958 coup, Iraq moved to secure more nuclear assistance from the Soviet Union, eventually procuring a Soviet research reactor (IRT-2000) in 1959.⁸⁹ The reactor was constructed

⁸⁷ "Argentina: Nuclear Weapons Program," *Federation of American Scientists*, <<http://www.fas.org/nuke/guide/argentina/nuke/>>.

⁸⁸ Michael Barletta, "The Military Nuclear Program in Brazil," CISAC Working Paper, August 1997, p. 2. <http://cisac.stanford.edu/publications/military_program_in_brazil_the/>.

⁸⁹ Malfrid Braut-Hegghammer, *Unclear Physics: Why Iraq and Libya Failed to Build Nuclear Weapons*, (Cornell University Press, 2016), p. 28.

at Tuwaitha. Another coup in 1968 brought the Baath party to power, under the leadership of Hassan al-Bakr and his deputy, Saddam Hussein. Some scientists at Tuwaitha began to discuss the option of a nuclear weapons program in the early 1970s, but no such order was given by Saddam Hussein until he came to power.⁹⁰

Beginning in about 1973, Iraq developed an intent to hedge, as Saddam reorganized the Iraqi Atomic Energy Commission (IAEC) and told a group of scientists to explore the full nuclear fuel cycle. As part of this exploration, Iraq asked the USSR for upgrades to the IRT-2000 research reactor at Tuwaitha. Iraq also acquired a complex (dubbed Osirak) with two new types of research reactors from France, plus laboratory-scale reprocessing equipment. They initially asked to purchase a gas-cooled graphite-moderated power reactor, which raised eyebrows in the west.⁹¹ Iraq similarly asked Italy for proliferation-prone technologies, such as a reprocessing plant, but settled for radiochemical and uranium fuel laboratories.⁹² The reactors were placed under safeguards.

In a 1978 speech, Saddam articulated the ambition to have a nuclear option, saying, “We should generate the unusual capabilities of the Arab nation, including the capability to have a bomb, and that is no longer monopolized science. The atom is widespread and thorough science, and any country can produce the atomic bomb.”⁹³ The following month, Saddam complained in a meeting that Israel’s monopoly on nuclear weapons in the region allowed Israel to draw “red lines” and coerce Arab states.⁹⁴

⁹⁰ Ibid, p. 44.

⁹¹ Ibid, pp. 52-53.

⁹² Ibid, p. 57.

⁹³ Ibid, p. 61.

⁹⁴ Ibid, p. 62.

Once Saddam came to power in 1979, he finally gave the order to explore a nuclear weapons option.⁹⁵ At an IAEC meeting in late 1979, the NRC director communicated to the scientific leaders that Saddam wanted the program to take a more “strategic” direction. Braut-Hegghammer reports that the scientists understood this to mean nuclear weapons.⁹⁶ Iraq was not racing Iran to the bomb, but they were aware that Iran was developing nuclear expertise and so sought to hedge. In 1979, Iraq bought several thousand kilograms from uranium (in various forms) from Italy, Portugal, and Niger. Only its request for UF₆ from China appears to have been denied.⁹⁷

Iraq’s progress exploring the nuclear fuel cycle alarmed the Israelis, who began to covertly target Iraqi scientists and equipment for clandestine murder and sabotage.⁹⁸ Israel first detected Iraqi nuclear intentions in 1974. After a 1978 cabinet meeting, officials were instructed to “delay the Iraqi nuclear program by all possible means.”⁹⁹ These efforts culminated in the 1981 bombing of the Iraqi Osirak reactor. In 1979, Israeli saboteurs also attacked the facilities in southern France, where reactor cores shipped the Iraq had originated. Bombs also destroyed the offices of SNIA-Techint in Rome, where Iraq’s separation plant originated.¹⁰⁰ Israel likely also was behind assassinations of Iraqi nuclear scientists.¹⁰¹

Clearly there were many red lines drawn on Iraq’s nuclear ambitions.¹⁰² I code the beginning of Israeli threats as 1981, because while Israel privately considered the use of force as

⁹⁵ Ibid, p. 46.

⁹⁶ Ibid, p. 64.

⁹⁷ Ibid, p. 58.

⁹⁸ Ibid, p. 61.

⁹⁹ Perlmutter et al. 2003; cited in Kreps and Fuhrmann 2010, dataset.

¹⁰⁰ Kreps and Fuhrmann 2010, dataset. The attack bore the “fingerprints” of Mossad. Uri Sadot, “Osirak and the Counter-Proliferation Puzzle,” *Security Studies* 25, 4 (2016), p. 657.

¹⁰¹ Sadot, “Osirak and the Counter-Proliferation Puzzle” (2016), p. 657.

¹⁰² Iran also used force against the Iraqi nuclear program. I do not consider this a separate case, however, because it occurred in wartime. As the Iran-Iraq War began, Iranian jets bombed the Osirak facility on September 27, 1980, but did not cause significant damage. Saddam appears to have concluded even at this early attack that Iraq would forge

early as 1977, but did not make any public threats before launching the attack in 1981.¹⁰³

Saddam perceived coercion as well. In September 1980, he said: “The Arabs, the Zionists, and the Americans are going to work hard against us because they are afraid, which is a problem.”¹⁰⁴

Moreover, Braut-Hegghammer writes that the Iraqi regime “feared that Israel would not allow an Arab state to acquire nuclear weapons and believed Tel Aviv was prepared to use force to prevent this from happening.”¹⁰⁵ Iraq prepared to withstand both conventional and nuclear strikes from Israel. This was the perception of a credible threat, but it did not dampen Iraq’s nuclear ambitions.

Israel bombed the Osirak reactor complex on June 7, 1981.¹⁰⁶ The Israeli prime minister, Menachem Begin, held a press conference two days after the raid and set a clear red line: Iraq would not be permitted to develop a nuclear weapon. After invoking the Holocaust, Menachem Begin said: “Tell your friend, tell anyone you meet, we shall defend our people with all means at our disposal. We shall not allow any enemy to develop weapons of mass destruction turned against us.”¹⁰⁷ In a subsequent interview with CBS News, Begin reminded viewers that “this attack will be a precedent for every future government in Israel...every future prime minister will act, in similar circumstances, in the same way.”¹⁰⁸

ahead even if its facilities were damaged or destroyed. They could be rebuilt, replaced, or resupplied. The effort would not stop. Braut-Hegghammer, *Unclear Physics* (2016), p. 68.

¹⁰³ Kreps and Fuhrmann 2010.

¹⁰⁴ Malfrid Braut-Hegghammer, *Unclear Physics* (2016), p. 61.

¹⁰⁵ *Ibid*, pp. 115-116.

¹⁰⁶ Israel assessed that the Osirak reactor would go critical in mid-1981. In September 1980, the Israeli security cabinet authorized an airstrike, delegating the timing to Prime Minister Begin. Sadot, “Osirak and the Counter-Proliferation Puzzle” (2016), p. 661.

¹⁰⁷ Leonard S. Spector and Avner Cohen, “Israel’s Airstrike on Syria’s Reactor: Implications for the Nonproliferation Regime,” *Arms Control Today*, <https://www.armscontrol.org/act/2008_07-08/SpectorCohen>.

¹⁰⁸ *Ibid*.

Saddam was defiant after the Israeli attack. As Braut-Hegghammer puts it, “the destruction of Osirak was a public humiliation that could not be ignored.”¹⁰⁹ Iraq concluded that, “[the strike] will not stop the course of scientific and technical progress in Iraq. Rather, it is an additional strong stimulus to develop this course...with even greater resources and with more effective protection.”¹¹⁰ Indeed, Saddam said that he had “long expected [the strike]” and that future nuclear installations would be buried.¹¹¹ This translated as well into organizational action, as the scientists in charge sat down to develop concrete plans for nuclear weapons development.¹¹² The real effect was of pushing the program underground.¹¹³ Saddam, for example, instructed his scientific team after the raid to avoid sensitive foreign assistance.

Avoiding foreign procurement foreclosed the plutonium route to the bomb as well as large-scale centrifuge uranium enrichment. The method Iraq settled on instead was electromagnetic isotope separation (EMIS) (with backup options of laser isotope separation and gaseous diffusion). The IAEC was reorganized around this new effort in January 1982.¹¹⁴ The EMIS path made progress. In January 1986, Iraq separated uranium isotopes from uranium tetrachloride.¹¹⁵ Iraq tried unsuccessfully to build a uranium conversion facility in 1983. Later they commissioned a facility from Brazil and modified it by 1987.¹¹⁶

At a meeting between Saddam and senior IAEC members in April 1985, Vice Chairman Humam made a promise: the nuclear program would fulfill its objectives by 1990. He did this

¹⁰⁹ Braut-Hegghammer, *Unclear Physics* (2016), p. 72.

¹¹⁰ *Ibid.*, p. 73.

¹¹¹ Sadot, “Osirak and the Counter-Proliferation Puzzle” (2016), p. 663.

¹¹² Braut-Hegghammer, *Unclear Physics* (2016), p. 75.

¹¹³ Note that there is a rich debate about whether the Osirak strike was worthwhile; whether it delayed the Iraqi program long enough for Saddam to commit a strategic blunder (invading Kuwait in 1990) or it merely caused Saddam to pursue a nuclear deterrent with more vigor and secrecy. See Sadot, “Osirak and the Counter-Proliferation Puzzle” (2016), pp. 646-676; and Braut-Hegghammer, *Unclear Physics* (2016).

¹¹⁴ Braut-Hegghammer, *Unclear Physics* (2016), p. 83.

¹¹⁵ Braut-Hegghammer, *Unclear Physics* (2016), p. 92.

¹¹⁶ Braut-Hegghammer, *Unclear Physics* (2016), p. 95.

apparently without consulting the other IAEC leaders.¹¹⁷ By 1987, a special organization was formed at Tuwaitha—Group 4—dedicated to building a bomb.¹¹⁸ As a last-ditch effort, Hussein Kamil, Saddam’s son-in-law, ordered a “crash” nuclear weapons effort after Saddam invaded Kuwait in August 1990. The goal was to build a bomb in six months.¹¹⁹

Saddam’s invasion of Kuwait proved to be a strategic blunder. The nuclear program was on the verge of “scaling up toward industrial-scale enrichment.”¹²⁰ Gudrun Harrer concurs that Iraq would likely have acquired nuclear weapons in the 1990s had the First Gulf War not intervened.¹²¹

Iraq’s reconstituted nuclear infrastructure, including the Al Jesira facility and the Tuwaitha Research Facility, was destroyed by brute force by the United States during the First Gulf War in 1991 (further air strikes were conducted in 1993 and 1998). One of the American war aims was to degrade Iraq’s ability to build nuclear weapons. The United States was surprised to discover the extent of the Iraqi nuclear program after Operation Desert Storm.¹²² Neither did Israeli intelligence know about Iraq’s nuclear progress in the 1980s; only first beginning to hear about the clandestine enrichment program in 1989.¹²³

Post-Gulf War, the United States and Iraq played a frustrating cat-and-mouse game in which international inspectors struggled to gain access to Iraqi facilities to verify WMD dismantlement. United Nations resolution 687 established UNSCOM—the UN Special Commission—and tasked with it overseeing the dismantlement of the Iraqi chemical, biological,

¹¹⁷ Braut-Hegghammer, *Unclear Physics* (2016), p. 96.

¹¹⁸ Braut-Hegghammer, *Unclear Physics* (2016), p. 102.

¹¹⁹ It was a pipe dream. Part of the plan was to divert irradiated fuel from a safeguarded facility. Braut-Hegghammer, *Unclear Physics* (2016), p. 117.

¹²⁰ *Ibid.*

¹²¹ Gudrun Harrer, *Dismantling the Iraqi Nuclear Programme: The Inspections of the International Atomic Energy Agency, 1991-1998* (Routledge, 2014), p. 3.

¹²² Sadot, “Osirak and the Counter-Proliferation Puzzle” (2016), p. 649.

¹²³ Sadot, “Osirak and the Counter-Proliferation Puzzle” (2016), p. 655.

and missile programs. The IAEA through its newly established Iraq Action Team (IAT) oversaw dismantlement of its nuclear program.¹²⁴ Resolution 687 prohibited Iraq from possessing any nuclear, chemical, or biological weapons or missiles above a 150km range, nor facilities for their production.

UNSCOM's first conclusion in mid-1991 was that Saddam and Iraq had not come fully clean in their declaration of WMD facilities to the UN. The Iraqi government knew the stakes of not cooperating, indeed, the UNSC reminded them with threats of military action (legally speaking, WMD disarmament was a criterion for the Gulf War ceasefire, so a breach of Resolution 687 would void the ceasefire and default back to a state of war—a clear threat), but they continued to dissemble. UNSCOM inspectors were blocked from multiple site visits, including the infamous “parking lot incident” in September 1991, when inspectors were prevented from leaving a facility with sensitive documents containing details of Iraq's nuclear weapons efforts.¹²⁵

The West backed up its coercive strategy with painful economic sanctions. The sanctions hurt Iraq, while American threats of military force were highly credible. Indeed, the United States had just intervened against Iraqi forces earlier in the decade and later actually conducted air strikes in light of Iraqi intransigence. For instance, additional strikes were carried out in January 1993 (cruise missiles launched against the Zaa'faraniya complex); and in December 1998 the US and UK struck suspected nuclear sites in Operation Desert Fox.¹²⁶ Why did Saddam not concede?

¹²⁴ Harrer, *Dismantling the Iraqi Nuclear Programme* (2014).

¹²⁵ Rolf Ekéus, “Lessons from UNSCOM and Iraq,” *Nonproliferation Review* 23, 1-2 (2016), pp. 137-138.

¹²⁶ Kreps and Fuhrmann 2010, dataset.

In the midst of this coercive effort, Saddam framed the choice he faced to his advisors as follows: Iraq could either “have sanctions with inspectors or sanctions without inspectors.”¹²⁷ Coercion failed because Iraq perceived no coercive assurance. As Palkki and Smith assessed after gaining access to recordings of Iraqi internal decisionmaking, “Saddam and his advisors were perfectly aware of American leaders’ statements indicating that the sanctions would remain as long as Saddam was in power, and suspected that no amount of Iraqi compliance would satisfy the United States.”¹²⁸ The director of UNSCOM, Rolf Ekéus, concurred that “the biggest problem UNSCOM faced was selling cooperation to the Iraqis...[our strategy] would only work if sanctions could be credibly removed after Iraq was decreed free of WMD. However, lifting sanctions was politically untenable for the American leadership.”¹²⁹ And the Clinton administration did not hide its desire for regime change in Iraq. According to Gudrun Harrer, the US government pursued a “strategy of keeping Saddam Hussein ‘in the box’ in the framework of its dual containment policy of Iran and Iraq... successful and certified disarmament process would have endangered the US aim because it would have resulted in the easing, or even lifting, of the sanctions.”¹³⁰

After Desert Fox, Saddam ceased all cooperation with inspectors. Even after 9/11, Saddam remained committed to intransigence. While some of his ministers began to fear a

¹²⁷ Duelfer Report 2004, Vol. 1, “Regime Strategic Intent,” p. 61. Quotes in Palkki and Smith in Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (Cambridge University Press, 2012), p. 283.

¹²⁸ Palkki and Smith in Solingen (ed.), *Sanctions, Statecraft, and Nuclear Proliferation* (Cambridge University Press, 2012), p. 283. Litwak similarly argues that U.S. policymaker statements about pursuing regime change in Iraq “priced the administration out of the reassurance market.” Litwak 2003/2004, p. 28. See also Litwak 2007, pp. 136-137.

¹²⁹ Rolf Ekéus working paper for Scott Sagan, “Deterring Rogue Regimes” Project.

¹³⁰ Harrer, *Dismantling the Iraqi Nuclear Programme* (2014), pp. 3-4.

unilateral American invasion after the President Bush's 2002 "Axis of Evil" State of the Union address, Saddam waved off their concerns.¹³¹

Finally, in the lead up to the 2003 Iraq War, Baghdad similarly refused to be cowed by American pressure, despite possessing no WMD program. Despite making demands and issuing an ultimatum, the Bush administration communicated no coercive assurance. It appeared bent on aggression regardless of Iraqi behavior. In March 2002, for instance, President Bush "waved his hand dismissively" with a group of senators to summarize his Iraq policy: "Fuck Saddam, we're taking him out."¹³² And Bush declared in March 2003 that, "if Saddam Hussein leaves, we'll go in anyway."¹³³ In this context, President Bush issued a final ultimatum 48-hours before U.S. forces began the invasion.¹³⁴ Saddam had no incentive to comply.

After the war, a CIA report noted among its four reasons why Saddam did not come clean: a desire to avoid looking weak, especially vis-a-vis Iran and Israel, and a desire to preserve an image of a great and powerful Iraq on the international stage.¹³⁵ Reducing visibility could have been especially useful in this case.

¹³¹ Malfrid Braut-Hegghammer, "Rebel Without a Cause? Explaining Iraq's Response to Resolution 1441," *Nonproliferation Review* 13, 1 (March 2006), p. 23.

¹³² "First Stop, Iraq," *Time*, March 31, 2002. Thank you to Payam Galehdar for bringing this quote to my attention. See Payam Galehdar, "Emotional Frustration and US-Imposed Regime Change," Working Paper, 2018.

¹³³ Bob Woodward, *Plan of Attack* (New York, NY: Simon and Schuster, 2004), p. 369.

¹³⁴ "The Final Ultimatum," *The Economist*, March 18, 2003, <<https://www.economist.com/news/2003/03/18/the-final-ultimatum>>. Why the administration even issued an ultimatum right before the invasion is unclear. There was reportedly some debate about whether to issue an ultimatum at all, since the war plan was to be executed anyway. Perhaps there is more for scholars to explore about norms of coercion and why coercers without contingent demands feel it necessary to frame their aims as though they are giving targets a choice.

¹³⁵ See the findings of the Iraq Survey Group, <https://www.cia.gov/library/reports/general-reports-1/iraq_wmd_2004/Comp_Report_Key_Findings.pdf>; also summarized in "The Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction," Report for the President of the United States, March 31, 2005, pp. 151-154, <<https://policy.defense.gov/portals/11/Documents/hdasa/references/GPO-WMD.pdf>>.

Pakistan 1981-1985

Rivals India and Pakistan long threatened to strike each other's nuclear facilities while each made progress toward to bomb. The Indian Air Force conducted a study in 1981, following its procurement of British Jaguar aircraft, and concluded that it could "attack and neutralize" the Pakistani Kahuta nuclear facility.¹³⁶ Despite Indira Gandhi's apparent interest in the option, it was rejected for fear of escalation and international outrage.¹³⁷ Pakistan, however, perceived the threat acutely. In 1983, Munir Ahmed Khan, the chairman of the Pakistani Atomic Energy Commission, warned of Pakistani retaliation for such a strike and emphasized the radiological disasters that would result.¹³⁸ The following year, during the Kashmir/Siachen crisis of 1984, Pakistan "sent an explicit message to New Delhi through diplomatic channels," which threatened that the Pakistani air force would "strike every nuclear installation in India, civilian as well as military" if the crisis escalated.¹³⁹ This was a direct coercive threat to destroy a nuclear program with force. Moreover, there was significant interest in striking Indian nuclear facilities within the Pakistani military.¹⁴⁰

None of these threats to strike nuclear facilities altered the path of either country toward acquiring nuclear weapons. In 1985, India and Pakistan began negotiations on an agreement not to target each other's nuclear facilities. The treaty was signed on December 31, 1988.¹⁴¹

¹³⁶ George Perkovich, *India's Nuclear Bomb: The Impact on Global Proliferation* (University of California Press, 1999), p. 240.

¹³⁷ Ibid. See also Milton R. Benjamin, "India Said to Eye Raid on Pakistani A-Plant," *Washington Post*, December 20, 1982; Douglas Frantz and Catherine Collins, *The Nuclear Jihadist* (New York: Twelve, 2007); and Bennett Ramberg, "Preemption Paradox," *Bulletin of the Atomic Scientists* (July/August 2006), p. 53.

¹³⁸ Perkovich, *India's Nuclear Bomb*, p. 241.

¹³⁹ Sumit Ganguly and Devin T. Hagerty, *Fearful Symmetry: India-Pakistan Crises in the Shadow of Nuclear Weapons* (University of Washington Press, 2005), p. 58. Cited in Kreps and Fuhrmann, dataset.

¹⁴⁰ Kreps and Fuhrmann appendix.

¹⁴¹ "India-Pakistan Non-Attack Agreement," NTI, <<https://www.nti.org/learn/treaties-and-regimes/india-pakistan-non-attack-agreement/>>.

Pakistan 1976-1979

Motivated by a humiliating loss of the 1971 war with India, Pakistan began a nuclear weapons program in 1972. The United States, especially under the Carter administration, tracked Pakistani progress and attempted to compel an end to the program. Pressure built on Pakistan and peaked in the aftermath of the Symington (1976) and Glenn (1977) amendments, which mandated a cutoff of military and economic assistance to proliferators. Pakistan defied. The threat of pain alone could not change its behavior.

India's 1974 nuclear test had thrown Pakistan into a state of panic. They sought "urgent security guarantees" from the United States,¹⁴² which Washington refused to provide. Shortly thereafter, Pakistan began to invest heavily in facilities to produce fissile material. The United States tried to exert pressure, but it never fully grasped how necessary the security guarantee was to gain Pakistani compliance. In 1976, the U.S. government used vague threats of sanctions and offers to sell A-7 attack aircraft to try to get Pakistan to cancel its contract to buy a plutonium reprocessing facility from France. Pakistan refused to comply. Washington considered using force in 1978-1979, but no threats of force were communicated to Pakistan.¹⁴³ At a September 13, 1979 meeting to discuss the military option as well as the possibility of extending security guarantees, there was little support for either policy.¹⁴⁴

Then, in December 1979, the Soviet Union invaded Afghanistan and the United States changed its strategy. Washington ceased efforts to coerce Pakistani nonproliferation, instead prioritizing securing Pakistani assistance in the war against Communism. Thereafter, Pakistan

¹⁴² "U.S. Arms Policy Toward Subcontinent Following Indian Nuclear Test," Telegram 5623 From the Embassy in Pakistan to the Department of State, June 12, 1974, *Foreign Relations of the United States 1969-1976*, Vol. E-8, Documents on South Asia 1973-1976, <<https://history.state.gov/historicaldocuments/frus1969-76ve08/d167>>.

¹⁴³ Kreps and Fuhrmann 2010, dataset.

¹⁴⁴ In 1978, Secretary of State Cyrus Vance ordered a memo assessing the costs and benefits of attacking the Pakistani nuclear program; the conclusion was not enthusiastic about the use of force. Kreps and Fuhrmann 2010, dataset.

acquired the bomb under the shelter of its distracted patron.¹⁴⁵ The Reagan administration opted only to prevent a cascade of proliferation beyond Pakistan by demanding no testing.¹⁴⁶

American efforts at coercive diplomacy failed. The United States was never willing to extend a security guarantee and preferred to rely on leverage deriving from its massive aid packages—sticks and carrots, not assurances. Ultimately, this policy only managed to prevent the Pakistanis from testing a weapon; it failed to prevent them from acquiring one.¹⁴⁷

Israel 1960-1967

In the 1960s, Nasser publicly threatened to use force against the Israeli nuclear program. Israel received these threats, but Egypt attempted to communicate no coercive assurance. Indeed, such security fears of enemy encirclement had driven the Israeli nuclear weapons program to begin with.

On December 23, 1960, Nasser pledged in a speech that if Israel were to be discovered developing nuclear weapons, the UAR would “destroy the base of aggression before that base is used against us.”¹⁴⁸ He also warned that if Israel acquired a nuclear weapon, Egypt would as well.¹⁴⁹ In a later statement, Nasser threatened to destroy the reactor complex at Dimona by ground assault.¹⁵⁰ Nasser also communicated to the United States that if Israel got the bomb,

¹⁴⁵ Vipin Narang, *Strategies of Proliferation*, book manuscript, ch. 4.

¹⁴⁶ Nicholas Miller and Or Rabinowitz, “Keeping the Bombs in the Basement: US Nonproliferation Policy Toward Israel, South Africa, and Pakistan,” *International Security* 40, 1 (Summer 2015).

¹⁴⁷ *Ibid.*, p. 71.

¹⁴⁸ Avner Cohen, *Israel and the Bomb* (New York, NY: Columbia University Press, 1998), p. 244. Quoted in a Cairo Embassy cable to Washington, the speech read “If it is established that Israel is making atom bomb, this would mean beginning of war between us because we will not allow Israel to work on producing bomb. We must attack base of aggression even if we have to mobilize four million men.” “Telegram from the Embassy of the United Arab Republic to the Department of State,” FRUS 1958-1960, Vol. XIII, p. 610.

¹⁴⁹ Maria Rost Rublee, “Egypt’s Nuclear Weapons Program,” *The Nonproliferation Review* 13, 3 (2006), p. 557.

¹⁵⁰ *Ibid.*

Egypt would go to war, “no matter how suicidal for the Arabs.”¹⁵¹ Other scholars consider these statements coercive attempts to “intimidate Israel into giving up its nuclear weapons program.”¹⁵²

Nasser’s rhetoric escalated as Israel marched closer to the bomb. In 1966, Nasser said, “Arab countries must immediately wipe out all that enables Israel to produce atomic bombs.”¹⁵³ Later, Nasser indicated that if Israel were building the bomb, Egypt would launch “protective war. We would have no other choice.”¹⁵⁴ Fuhrmann and Kreps conclude that Nasser’s statements were meant to “motivate the United States to do something about the nuclear issue.”¹⁵⁵

Finally, prior to the outbreak of war in 1967, on May 17, Egyptian MiG 21s flew reconnaissance flights over the Dimona nuclear complex. Soon after, Nasser had to intervene to veto air force orders to begin bombing.¹⁵⁶ The Six Day War began on June 5, 1967.

All of these threats failed to coerce any Israeli concessions. Israel acquired nuclear weapons in 1967.

It is also possible that Egypt’s threats were not credible to Israel. Nasser’s statements may have been intended more for domestic consumption; still, he knew Israel could hear. I consider this a case of failed attempted coercion and remain uncertain about whether it was due to incredible threats or incredible coercive assurance.

¹⁵¹ Ibid.

¹⁵² Ibid, p. 559.

¹⁵³ Kreps and Fuhrmann, Appendix A, p. 1.

¹⁵⁴ Cohen, *Israel and the Bomb*, p. 249.

¹⁵⁵ Kreps and Fuhrmann, Appendix A, p. 1.

¹⁵⁶ Ibid.

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