Stanton Nuclear Security Fellows Seminar

PANEL 1: Strategies for Nuclear Arms Control and Denuclearization

1. Stephen Herzog, Belfer

After the Negotiations: Understanding Multilateral Nuclear Arms Control

- **On what issue are you working and why is it important?**

I am writing a doctoral dissertation on multilateral nuclear arms control. This topic is important for two main reasons. First, there are a number of treaties and agreements that have risen to prominence that play a role constraining both horizontal and vertical proliferation. They include: the Nuclear Nonproliferation Treaty (NPT), the Comprehensive Nuclear-Test-Ban Treaty (CTBT), the Fissile Material Cut-Off Treaty, the Middle East Nuclear-Weapon-Free Zone, and the Nuclear Ban Treaty. Second, scholarship on arms control--particularly multilateral--is fairly stagnant despite an ongoing "renaissance" in nuclear security studies. Most relevant literature consists of single-case studies, and there is little generalizable analysis looking at why states enter into these accords.

- **What is the big question that you are seeking to answer about the issue?**

Why do potential proliferators sign and ratify multilateral nuclear arms control treaties? There is often a considerable lag-time (years) between the opening for signature of these accords, when states opt to sign them, and when states deposit their instruments of ratification. Sometimes states never sign, and other times they sign but decline to ratify, indicating potentially dissimilar motivations underlying signature and ratification decisions. By investigating this phenomenon in the context of potential proliferators, I am able to focus on important cases that share a number of common dimensions but also vary in notable ways. And, I attempt to connect the somewhat dormant field of arms control to the vibrant ongoing research on nuclear proliferation.

- **How are you going to answer your question? What methods will you use and what evidence or cases will you explore?**

To develop a theory of entry into multilateral nuclear arms control, I have conducted work on four cases in the context of both the NPT and CTBT: Brazil, Egypt, Japan, and Romania. I selected these cases for three primary reasons. First, these states have diverse histories with regional threats, security alliances, civilian nuclear technologies, and regime types. Each one represents a different theoretical type in my theory. Second, these states have had varying stances on multilateral nuclear arms control treaties over the decades. I can therefore track the evolution of national discussions about treaty signature and ratification. Third, all are potential proliferators that chose to accept the golden handcuffs of nuclear arms control, thus foregoing weapons development. My data for this project include archival

documents, elite interviews, and secondary sources. I have worked in archives abroad and conducted dozens of interviews with diplomats, scientists, and other government officials. These interviewees include experts that took part in the negotiations and national debates on the NPT and CTBT. In one case, they even include the former head of state who ultimately made the decision to join these treaties.

- **What is your answer to the question you are asking? That is, what is your argument or conclusion even if it is still tentative at this point?**

Signature and ratification appear to be conceptually distinct, although related, processes. I argue that a state's arms control signature decisions are the product of diplomatic type signaling to its allies and adversaries. Motivations for doing so pertain to the state's willingness to endorse the world enshrined by the treaty and may thus be driven by status or security considerations. That is, does the state think that military nuclear technologies and associated activities (e.g., peaceful nuclear explosions) will be beneficial for its role on the world stage or its security situation? If so, it will not sign the treaty until its national ambitions change. And regardless of national ambitions, does the state have sufficient relative power to resist pressure to sign from a powerful patron? I further contend that ratification decisions are a costly signal, as a state is agreeing to forego capabilities that could help ensure its survival. Robust verification regimes and national technical means increase the probability of detecting cheating. Even suspected cheaters (e.g., Iraq in 2003) could face harsh punishments. Given their gravity, ratification decisions are thus the product of a stable regional environment wherein a state does not lack protection against serious security threats. Without this environment, ratification will not occur. Another interesting situation is accession, which is required from states that have not signed the treaty prior to its entry into force. Because signature followed by ratification is no longer possible, accession requires both the type signal and the costly signal simultaneously--a joint event. Overall, one useful way to think about these processes may be in a CTBT context. Signing the treaty means saying "no" to nuclear tests, whereby ratifying means saying "never" to nuclear tests.

- **How does your work fit into the existing work on your subject?**
    - What alternative arguments or explanations exist and why is your answer superior?

There are generally three large-scale explanations for this phenomenon, alongside a bevy of single-case historical studies. First, Way and Sasikumar (2007) use survival models to conclude that countries with security threats are unlikely to sign the NPT, and countries with energy needs are likely to sign it. This explanation does not match the history of several advanced nuclear states, is largely driven by model inclusion of every state in the world, and does not take into account the distinction between signature and ratification. Second, Fuhrmann and Lupu (2016) use statistics to estimate a state's "ex ante probability" of ratifying the NPT based on "latent treaty commitment preferences." This technique provides only correlational results, does not shed light on cross-case variation, and also does not account for both signature and ratification. Finally, Coe and Vaynmann (2015) offer a formal model showing that states will either join the NPT willingly or be pressured into doing so by superpowers. This model offers some good insights, but it does not show detailed variation in both pressure and incentives put forth by superpowers. It also does not comprehensively explain rationales for supporting, opposing.

or reversing course on a treaty, and does not consider the signature-ratification gap. My answer builds on these works by offering a process-based assessment of the imperfect information game of nuclear arms control. It accounts for different theoretical types, phases of treaty endorsement, and cases that vary wildly across space and time.

- How does your work add to or change our understanding of the issue you are studying?

My work does this in a few different ways. First, it offers the first attempt at a generalizable theory of multilateral nuclear arms control that applies across space and time while also covering more than one treaty. Second, it provides a breakdown of the conceptual distinctions in the processes of--and motivations for--signature and ratification. Previous work has addressed one or the other only, often viewing them as two sides of the same coin. I do not think this is accurate.

- What do you see as your most important contribution?

I would highlight two contributions. The first is--as discussed above--my attempt to provide insights on a relatively unexplored topic and to offer an enhanced understanding of the processes and motivations underlying multilateral nuclear arms control. The second draws on my comparative advantage. As a former U.S. nuclear arms control official working on these issues, I have been able to leverage my professional network to arrange interviews with decision-makers, advisors, negotiators, and others. While I do archival work as well, reading an archival document is not the same thing as understanding who the writer was and the context in which said person was working. Thus, I believe that my attempt to develop social scientific insights based on novel interview data from policymakers will be a notable contribution.

- **What policy implications flow from your work? What concrete recommendations can you offer to policymakers?**

Multilateral nuclear arms control is a complex, multi-phased process. State rationales for entering into these treaties at both the signature and ratification levels vary across space and time. Single-case studies do not offer a lot of predictive utility, and one-size-fits-all explanations do not perform well either. My dissertation instead asks scholars and policymakers to consider a potential proliferator’s discrete state type relative to a treaty based upon observable implications. Policymakers working on this issue should not make the blanket assumption that national signature of a treaty means that a state will automatically make a deeper commitment by ratifying the accord. In this respect, the package of sticks and carrots that may be effective in encouraging participation in treaties is hardly universal--though there are patterns. However, over time, even countries with firmly embedded positions can change course if their national ambitions evolve. Understanding how various diplomatic signals relate to a state’s identity and security environment could thus improve multilateral nuclear arms control interactions.

- **What do you think is the weakest or most vulnerable aspect of your study and what sort of feedback would be most useful for you?**

My study focuses on potential proliferators, which is an expansive set of cases, but it is not universal like previous statistical work. Having spoken to diplomats from countries such as Tonga, I have learned that nuclear arms control just simply is not a priority for the limited political bureaucracies of some states. Likewise, many smaller states are not subject to superpower pressure due to their limited nuclear capabilities. Consequently, there are some states that meet all of my stated criteria for signing and ratifying treaties and just do not do so. The dissertation talks about these types of players who are external to the game of arms control diplomacy, but they are excluded through my scope conditions. I have struggled to figure out how to best discuss these states and would greatly appreciate further insights. Still, I think that it is important to be honest, and no theory will cover every case throughout history without error.

2. Ryan Musto, MIT SSP

Daring to Denuclearize: Regional Quests to Ban the Bomb

Issue and Importance

The issue of regional denuclearization is at the forefront of the most pressing nuclear threats of our day. The proposed solution to the nuclear crisis with North Korea, as championed by the United States and its allies, is the denuclearization of the Korean Peninsula. The dissolution of the Joint Comprehensive Plan of Action (JCPOA) with Iran has sparked renewed discussions of a Middle East Weapons of Mass Destruction (WMD) Free Zone, an issue expected to play a prominent role on the agenda of the 2020 Non-Proliferation Treaty (NPT) Review Conference. As global climate change melts the Arctic ice cap, calls for nuclear arms control in the high north have intensified. Finally, a renewed race for strategic advantage in outer space has imperiled the 1967 Outer Space Treaty that prohibits nuclear weapons in orbit and on celestial bodies.

Yet our historical understanding of regional denuclearization remains incomplete. Utilizing multi-lingual, multi-archival research from around the world, I seek to analyze the geopolitical and geostrategic dynamics that lead to proposals for regional denuclearization and determine their outcome. Entitled, Daring to Denuclearize: Regional Quests to Ban the Bomb, my project will present the first international history of regional denuclearization based primarily upon archival sources and oral history interviews. In addition to measuring superpower (and especially U.S.) postures towards regional denuclearization, my project will allow me to further situate nuclear weapons within the North-South divide to reveal the agency of the global south in the formation of the nuclear nonproliferation landscape. Along the way, I demonstrate that proposals for regional denuclearization played an important role in key epochs of the Cold War, such as the space race, the fate of Germany, the Sino-Soviet split, and the debate surrounding nuclear proliferation with the so-called "fourth-country problem."

A better understanding of the dynamics behind regional denuclearization will help the global community to assess the potential for future agreements. Dissecting how past agreements defined geographic contours, established controls, and accounted for superpower consent will be important. Understanding the history of national postures will also be important. For example, although the United States champions the denuclearization of the Korean Peninsula, it ranks last in its commitment to "regional zero" amongst the nuclear superpowers, fully supporting only one of the five denuclearized zones currently in existence in inhabited regions. Knowledge of past U.S. policies towards regional denuclearization will help policymakers tailor a viable agreement for the Korean Peninsula moving *forward.*

The Big Question

My project asks two big questions. The first concerns the dynamics of denuclearization. Why have proposals for regional denuclearization been introduced and what determined their outcome? I seek to understand the factors that lead to the successful denuclearization of regions in inhabited and uninhabited areas, but also to understand why many proposals fail.

The second question relates to the relationship of regional denuclearization to the broader nonproliferation regime. How does a regional approach to nuclear arms control fit with other multilateral, and particularly global, approaches? Does one strengthen or undermine the other? In

answering this question, I seek to bring regional denuclearization in from the periphery of nuclear studies.

Methodology

My research will be based upon recently declassified archival sources and oral history interviews spanning roughly fifteen nations across six continents. The final project will be divided into three sections, each with three chapters. Section I will cover failed proposals for Europe, with chapters on the origins of the idea of regional denuclearization, Poland's groundbreaking 1957 Rapacki Plan for the denuclearization of Central Europe, and proposals that extended beyond the heart of the continent and, for Central Europe, beyond the Rapacki Plan. Section II will cover successful proposals for the uninhabited "final frontiers" of Antarctica, outer space, and the seabed. Section III will analyze the transition of proposals to the global south. Two chapters will cover successful proposals for Latin America and the South Pacific. A third chapter will analyze Africa's early moves towards regional denuclearization, along with failed proposals for Asia and the Middle East. This chapter will also analyze how global south initiatives forced the United States to adopt a specific posture towards regional denuclearization that continues to present day.

Answers to my Questions

My work identifies five factors that have influenced proposals for regional denuclearization throughout history: Security, sovereignty, socio-economic prosperity, prestige, and domestic politics. States viewed proposals for regional denuclearization as a means to secure themselves against the nuclear dangers of the Cold War, to assert their independence from the superpowers and guarantee territorial integrity, to thwart arms races that might imperil regional development, to bolster the international image of diplomats and leaders, and to sway political fortunes. With these criteria in mind, I argue that states "weaponized" schemes against adversaries and allies alike.

My project also argues that state actors oftentimes pursued regional denuclearization as a means to strengthen global efforts towards nuclear arms control. Starting in the late 1950s, regional denuclearization offered an avenue to stem nuclear proliferation, test nuclear controls, and maintain credibility in arms control negotiations beyond a given region. These impulses manifested themselves in proposals for areas as diverse as Central Europe, Antarctica, and Asia. Meanwhile, states have used regional denuclearization to shape the NPT regime. Overall, this project challenges the assumption that proposals for NWFZs are solely regional in intent.

Historiography

My contribution to the historiography is two-fold. First, it adds to our understanding of the dynamics behind specific proposals for regional denuclearization and rejects a prevalent notion that such proposals were spurious or innocuous. My project is the first to reveal long forgotten proposals that were made at the highest levels of government, including proposals for Central Europe, the Far East, and the Middle East that many believed could sway the nuclear trajectories of those regions. Additionally, my work is the first to cover the denuclearization of uninhabited regions in any meaningful way. Overall, I reveal that the issue of regional denuclearization played a much more central role in discussions over arms control during the Cold War than previously acknowledged.

More broadly, my regional perspective fills a gap in the historiography of nuclear arms control which, despite the regional component found in nuclear acquisition and nuclear crises, focuses mainly on bilateral relationships or global regimes. Most studies of regional denuclearization come from the field

of political science without the use of archival materials, while others are narrowly focused on one specific proposal without offering a broader perspective on its significance. As historian Jayita Sarkar notes, our historical understanding of regional denuclearization is still "in its nascent stages." My work seeks to redress such historiographical deficiencies.

Policy Implications

With my work, I hope to highlight the importance of regional denuclearization as an arms control strategy. As agreements like the Intermediate-range Nuclear Forces (INF) Treaty and the New Strategic Arms Reduction Treaty (New START) dissolve, regional denuclearization can offer a way forward. Oftentimes negotiated by non-nuclear states, it has the potential to check the nuclear arms race as great power competition reemerges. Even if the superpowers move away from bilateral accords, they can draw upon regional pacts to reassert their commitment to stopping the proliferation and use of nuclear weapons. As former U.S. Ambassador Thomas Graham Jr. rightly argues in his recent book, regional denuclearization can present an important "alternate route toward zero nuclear weapons" worldwide.

Based on my in-depth look at regional denuclearization, I can offer many recommendations to policymakers. Here, I will focus on two concrete recommendations for the United States:

1) The United States should ratify the treaties for the denuclearization of Africa, Central Asia, and the South Pacific. The United States currently holds the dubious distinction of being the only major nuclear power that has failed to take such steps. As the Obama Administration concluded, adherence to these agreements would do nothing to imperil U.S. strategic capabilities. If anything, it will demonstrate the U.S. commitment to regional denuclearization as Washington seeks such an arrangement for the Korean Peninsula.

2) The United States should fulfill a fifteen-year-old promise to take "practical steps" to help establish a WMD-free zone in the Middle East. This initiative would both strengthen the NPT regime, which was extended indefinitely in 1995 with that assurance in mind, and help to guard against Iran's nuclear program after the dissolution of the JCPOA. In doing so, the United States should follow through on its commitment, under a 2010 NPT resolution, to help convene a regional conference on the matter. As such, the United States should abandon its policy that all states in the region must support the initiative from the outset. This approach gives too much leverage to Israel and makes the United States look like an impediment to progress. Moreover, it belies U.S. practice in the past. In the early 1980s, the United States became a full adherent to Latin America's denuclearized zone while key states like Argentina, Brazil, and Cuba remained outside the regime. Finally, the United States should forego its argument that an agreement cannot be reached under "present conditions" in the region nor with the regional proliferation of chemical weapons and missile technology, as a WMD-free zone could mitigate such threats.

Weaknesses

There are two aspects to my work that I identify as the weakest. The first concerns sourcing. My topic is necessarily global in scope, yet I will not be able to provide archival evidence from some of the key nations involved, either because of national policies that restrict access, language barriers, or simple financial and logistical difficulties. Such pitfalls might include sources from the Soviet Union, China, and states of the Middle East. As an historian, I'm reluctant to talk about national positions without behind-

the-scenes primary-source materials from those nations, and yet I still want to tell as complete a story as possible.

Second, I'm worried about the sweeping nature of my topic. It is broad, both chronologically and geographically, and I worry that the dynamics I identify will be so multicausal as to offer few concrete policy recommendations. Any advice for translating my historical research into policy relevant scholarship would be most helpful.

3. Reid Pauly, CISAC

The Dilemma of Coercive Assurance in Nuclear Counterproliferation

The United States is a poor coercer. It employs military and economic threats of punishment to change the behavior of target states, often over nuclear programs. Yet adversaries often defy rather than comply with American demands. And when coercion fails, war can be the result.

It is no surprise that leaders frequently choose coercive strategies. What is more surprising is how bad they are at it. It is perhaps the most striking empirical regularity in the study of coercion that material power itself does not cause victory. This pattern has caused Robert Jervis to conclude that "something is wrong with our common understanding [of coercion]."

Research Questions: Why do some coercive threats succeed while others fail? How can states communicate the contingency of their threats?

There are many reasons coercion can fail, but one receives the most attention: the inadequacies of threats. If only our threats had been more credible, we say; if only we had squeezed the adversary a little bit harder. Surely then they would have given in, when we had them on the ropes. Through this lens, scholars and practitioners have for decades conceived of ways to bolster the credibility of threats. Particularly in the nuclear age, all strategies to demonstrate resolve come from this conventional wisdom. Leaders should try to tie their hands when issuing threats with strategies of commitment; public threats are harder to back down from; military forces should move to theater in order to create sunk costs; military maneuvers could create risks that leave something to chance in a contest of brinkmanship.

My research shows that these coercive instincts are woefully incomplete. Adversaries often defy coercive demands backed by both credible and severe threats. Rather, there is an underexplored core dilemma at the heart of coercion: effective coercion requires not only that I make you believe that I will punish you if you do not comply, but also that you believe I will not punish you after you have complied.

Threats often fail because they are perceived as insufficiently contingent. Thomas Schelling called it "coercive assurance"—a pledge in the context of coercion not to punish if demands are met—but he did not identify methods to make assurances credible. Policymakers need to know. When Washington's threats put targets in a 'damned if you do, damned if you don't' position, we should expect defiance.

I develop and test Coercive Assurance Theory to show that coercion is more likely to succeed when credible threats are paired with credible assurance. I then show how states make their assurances believable in the process of coercive bargaining. The novel theoretical propositions I test contribute to the literatures on coercion, signaling, and bargaining. I deductively derive hypotheses and test them by process tracing comparative cases of coercive bargaining between non-allies over nuclear weapons programs—South Africa, Libya, Iran, and 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 conduct interviews with participants.

Targets of American coercion fear that they may be punished regardless of their behavior, because the United States is strong, its government changes, and it has reneged in the past. The record of American nuclear counterproliferation reveals many examples of the impediment of assurance. Post-Gulf War, for instance, Washington attempted to coerce Saddam Hussein into abandoning a suspected WMD program. But the 1990s proceeded as a frustrating cat-and-mouse game of Iraqi noncompliance with inspections. In the midst of this coercive effort, Saddam framed his choices to his advisors: Iraq could either "have sanctions with inspectors or sanctions without inspectors." He perceived no escape.

Given the duplicity of statesmen and the uncertainty of the international system, can states ever communicate credible coercive assurance? My research into cases of coercive counterproliferation—demands to curtail nuclear programs—finds that effective coercers do so by avoiding three common errors in the practice of coercive diplomacy. Smart coercers disentangle their demands, exert control over the tools of punishment, and reduce the visibility of their target's concessions. Each strategy bolsters the credibility of one's assurances without undermining the credibility of one's threats.

Disentangling Demands

Coercers often makes multiple demands of their targets. Multiple demands are entangled if they are tied to the same threatened punishment; for instance, imposing comprehensive economic sanctions to curtail both human rights abuses and a ballistic missiles program. If multiple demands are entangled, targets may rationally calculate that they cannot avoid pain by conceding to one demand while the other demand remains unsated. For example, in the 1970s, the United States experienced this problem when confronting South Africa over its clandestine nuclear program. Leaders in Pretoria perceived that complying with American demands to sign the NPT and accept comprehensive inspections would not result in the lifting of sanctions, because the United States also abhorred South Africa's racist practice of apartheid and linked punishment to that issue as well. Pretorian policymakers argued that "the acquisition of nuclear weapons will not necessarily isolate South Africa any further."

Disentangled demands are instead independently contingent on separable punishments. In the 1990s, when confronting Libya over the two issues of WMD proliferation and guilt and compensation for the Lockerbie bombing, breakthroughs with Tripoli came after communication that United Nations sanctions applied to the Lockerbie issue alone, while American sanctions would be tied to the WMD issue.

Bargaining with the Right Coercer

Multiple actors may also make different simultaneous demands of a target and possess independent capabilities to punish. Under such circumstances, targets of coercion also need to know that they are bargaining with the right coercer. If I concede to you, are they going to punish me anyway?

The United States often coerces by coalition. This is the right instinct, for coalitions can provide an insurance of sorts for targets who concede. The EU, Russia, and China, for example, provided a prudent

hedge against American duplicity in negotiations for the 2015 Iran nuclear deal (JCPOA). At the same time, effective coercers co-opt potential spoilers to demonstrate control over the terms and tools of punishment. If anyone is going to punish you, they communicate, it is going to be me. For instance, Israel was not formally party to JCPOA negotiations and threatened to conduct unilateral air strikes on Iran. Its role as a potential spoiler had to be addressed before Iran would agree to a coercive bargain. The Obama administration thus discouraged the independent use of force by Israel—providing generous military aid but withholding advanced bunker-busting munitions, sharing military plans, keeping senior officials on regional rotation, and publicizing private Israeli consultations—and it did so openly for Tehran to see.

Keeping Concessions Private

Finally, effective coercers allow targets to plausibly deny the extent of their concessions. Reducing the visibility of acquiescence spares leaders domestic and international reputational costs; and it conveys a signal that coercers are not intent on building a public justification for aggression.

South African leaders sought plausible deniability when they decided to navigate their way out of isolation in 1989. President De Klerk believed denying his dismantlement of a nuclear weapons program to be critical to his ability to hold together his Conservative coalition and public support as he negotiated apartheid compromises. South Africa's coercers abetted this desire and tacitly cooperated. The IAEA did not push Pretoria to state the past purpose of its declared weapons-grade uranium.

Iran, too, was permitted to deny the extent of its concessions as part of agreeing to accept verifiable limits on its nuclear program in the JCPOA. The file on the "Possible Military Dimensions" of Iran's nuclear program was accelerated and closed as part of a conscious decision to affirm an agreed upon lie and not to prosecute Tehran's past nuclear sins. At the time, Secretary Kerry described the strategy: "We know what they did. We have no doubt. We have absolute knowledge with respect to the certain military activities they were engaged in. What we're concerned about is going forward."

Coercers who reduce the visibility of their target's concessions are more likely to achieve their aims. Counterproliferators must heed the wisdom of T.S. Eliot, that states cannot bear very much reality.

Policy Implications

Ongoing attempts to coerce Iran and North Korea over their nuclear programs may well benefit from research that underlines the importance of signaling that eventual compliance will be followed by coercer restraint. The Trump administration's extensive list of twelve demands of Iran today suffers the impediment of entanglement. Moreover, media portrayals of fitful US-DPRK negotiations miss the fundamental problem of coercive assurance. Pyongyang defies Washington's coercive demands, not because its threats are not credible or its punishments not painful; they defy because they do not believe that if they abandoned their nuclear program that the United States would not punish them anyway.

Washington tends to put far more thought into constructing sanctions than into how to eventually unwind them. 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. The Treasury Department should avoid omnibus sanctions packages and be specific in its designation of sanctioned entities. And Congress should recognize the value of keeping presidential waiver provisions in legislative sanctions; something it has shied away from under the Trump administration.

Finally, policymakers should recognize the extent to which the opacity of the nonproliferation regime has aided its coercive enforcement. Violators are more likely to come into compliance if they can deny they were ever out of compliance. Such constructive ambiguity is worth protecting.

Challenges

This research faces both empirical and theoretical challenges. Credibility is measured in the eye of the beholder, yet I have more access to empirics on coercer strategy than target perception. Accessible interviewees provide indirect evidence at best—perceptions of perceptions. Theoretically, this project needs to be clearer about the relationship between threat and assurance credibility—when they tradeoff or remain independent. Finally, I endeavor to draw externally valid conclusions from one empirical realm (nuclear proliferation) to others (human rights violations, trade practices, etc.). I argue that if coercers can assure over such high stakes, they should be able to assure in coercion over non-security stakes. On the other hand, counterproliferation may be a most-likely domain for assurance to be necessary. Thus, my testing of the causes of assurance credibility will necessarily been stronger than my testing of the importance of assurance to successful bargains.

4. Ariel Petrovics, Belfer

Inducing Nuclear Reversal: Foreign Policy Effectiveness and Deproliferation

Project Subject and Significance

The international community has worked for decades to combat the spread of nuclear weapons, but while some efforts succeeded in halting or even rolling back that spread, many others have backfired with dangerous consequences. Weapons proliferators like Iran and North Korea have proven highly resistant to international engagement efforts, thwarting many international treaties and assuming considerable financial burden in their pursuit. As a result, concerned states hoping to combat such ongoing proliferation face difficult policy decisions, but research has yet to systematically define or test the effects of these policies on nuclear reversal.[1]

Research on coercive sticks like military threats[2] and economic sanctions[3] in general show that these policies are expensive and fail more often than not, though they may offer some important deterrence benefits, preventing future proliferation in those mulling initiating a program of their own.[4] However, policy carrots like foreign aid and cooperation agreements are not perfect either, and past work suggests they are too weak or risk spreading sensitive knowledge into the wrong hands[5]. So we are left asking, of all these imperfect options, which policies work best, and do some actually do more harm than good? Finally, what role does the United States have in these efforts: do we take the lead or pass responsibilities on to other states? I seek to address these issues by asking: *what foreign policies most effectively encourage nuclear reversal in weapons-seeking states, and who should lead these efforts*?

Why This Matters:

Answering these questions has critical implications for ongoing international security challenges. Foreign policies that fail to reverse ongoing nuclear pursuits weaken the international nonproliferation system. Even worse, some policies actually risk inadvertently increasing the spread of nuclear weapons, thereby causing more harm than good. While no policies are guaranteed to succeed, policy makers still choose from these limited options. In the face of North Korea's ongoing weapons program and a faltering Iranian nuclear deal, understanding the conditions that facilitate reversal and those that increase potential downside risks provides timely insight to help inform the difficult choices policymakers face.

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[1] I define nuclear reversal as scaling back of an existing nuclear weapons program. This reversal need not be complete dismantling – often called denuclearization – but does necessitate more than just halting future increases, usually called nonproliferation. Rather, nuclear reversal entails at least small steps to shrink existing capabilities.

[2] Sechser, T (2011) "Militarized Compellent Threats, 1918-2001," *Conflict Management and Peace Science* 28(4)

[3] See T. Clifton Morgan, Navin A. Bapat, and Valentin Krustev. (2009) "The Threat and Imposition of Sanctions 1971-2000" Conflict Management and Peace Science 26(1)

[4] Miller, N. L. (2014). "The secret success of nonproliferation sanctions" *International Organization*, 68(4), 913-944

[5] Fuhrmann, M. (2009). "Spreading temptation: proliferation and peaceful nuclear cooperation agreements." *International Security*, 34(1), 7-41

Methods and Design:

To that end, this project evaluates the effectiveness of nuclear reversal policies in three steps: first offering a testable definition of policy effectiveness, then using this to compare the effectiveness of counterproliferation policies in cross-national quantitative data from 1945-2012, and finally analyzing how these processes out in two current cases, Iran and North Korea.

While past work has traditionally examined only the final outcome of a proliferator's weapons program, nuclear negotiations can take many years during which time proliferators often throttle up or down their nuclear pursuits in response to the policies they face. Though full denuclearization is often the ultimate goal, this lofty goal is not achieved in one fell swoop, but rather as a series of small steps pushing proliferators a little further from a nuclear weapon. By examining only complete dismantling or eventual weapons acquisition, past research has often missed the important hard-won steps towards or away from a nuclear bomb. As a result, the most effective strategies are those most likely roll back existing nuclear capabilities, but also those least likely to inadvertently accelerate proliferation instead.

Findings and Policy Implications:

Foreign policies are more than just an exchange of punishments or rewards. Instead, the policies we choose act as a signal of our character and intent, and proliferators take those signals into consideration in their decision to comply or resist our demands. Cooperative policies can signal positive intentions, helping to convince the proliferator that it is safe to give up nuclear capabilities without fear that the sender is simply seeking to exploit. Coercive policy sticks, on the other hand, can signal to fearful proliferators that it risks future exploitation if it gives up a nuclear deterrent.

I find that cooperative strategies like nuclear and defense cooperation agreements are more effective than coercive policies like military threats or economic sanctions: cooperation is more likely to lead to nuclear reversal and less likely to inadvertently incite greater proliferation instead. Cooperative agreements are therefore a better strategy for inducing nuclear reversal by signaling our goals of a cooperating toward a peaceful resolution. This does not mean carrots are always successful or sticks always hazardous. Not all carrots serve as signals of long-term cooperative intent: while simple one-off payment like foreign aid may seem like an easy way to buy off compliance, such quick quid-pro-quos just fill proliferators coffers without simultaneously reducing its security fears.

Coercive sticks on the other hand risk, are often a risky choice for inducing nuclear reversal. While it may be tempting to punish weapons-seekers for their behavior, coercion risks convincing these proliferators that they in fact need a weapon to defend against foreign threats. As a result, while economic sanctions and military threats have featured prominently in counterproliferation strategies, these policies should be approached with care since they actually risk doing more harm than good. However, this does not mean that the United States cannot take a stance against ongoing proliferation. Not all punishments or policy sticks signal a coercive threat. For example, diplomatic censure can be a useful way for counterproliferators to demonstrate their disapproval without inadvertently increasing the proliferators

security demand for the bomb. As a result, these nonthreatening signals of disapproval – while they do not encourage actual reversal –at least help reduce the risk of future proliferation.

But who should take the lead in crafting these cooperative policies to maximize chances of nuclear reversal? Can any concerned state choose the same policy and expect the same outcome? While past work on cooperation has generally found that cooperation works best when negotiation partners were already allies, I find that nuclear reversal tactics are actually most effective when offered by *powerful adversaries*. Cooperative signals from allies do little to reduce the security fears of proliferators like Iran and North Korea, but cooperative overtures from rivals – especially powerful rivals like the United States – go further in reducing fearful proliferator's demand for the bomb. Greater power does not always translate into more effective policies however, and coercive policies from these same powerful adversaries also carry the greatest risks inciting the proliferator's security fears, causing them to perversely increasing proliferation instead.

Crafting Effective Reversal Policies:

Taken together, what do these findings mean for crafting effective nuclear reversal strategies today? First, we should favor cooperative inducements like nonaggression pacts and peaceful nuclear cooperation agreements that offer abiding conditional assurances. These let fearful prolfierators know that as long as they respect their nuclear commitments, they need not fear exploitation for this weakness. However, we cannot buy off compliance with one-time payoffs like foreign aid, and should especially avoid coercive strategies that back fearful proliferators into a corner which risks convincing them that a nuclear deterrent is necessary despite the costs.

In these engagement efforts, the United States will often have the responsibility to lead. When facing ongoing enemy proliferation, like those risked in North Korea and Iran today, Washington cannot delegate this task to our weaker partners or to other superpowers allied with the targets. While it may be tempting to allow our regional allies to take the lead in combating proliferation in their own back yard, these weaker allies cannot offer their proliferating neighbors the necessary security assurance. For example, South Korea and Japan cannot play this role vis-à-vis North Korea on our behalf, because the United States is the threat against which Pyongyang is balancing.

In addition, while a history of mistrust can complicate negotiations, we cannot punt these issues to allies of the proliferator. While economic ties and existing security agreements can facilitate bilateral discussions, allies are not the threat that motivate proliferators to seek the security of a bomb. For example, though China has significant economic ties with North Korea and is itself a nuclear armed power neighboring the isolated Hermit Kingdom, North Korea's nuclear weapons are to protect against an existential threat from the United States. As a result, assurances from China can do little to convince North Korea that Washington will not attack. If we hope to effectively halt or even better roll back ongoing proliferation in adversaries like Iran and North Korea today, the United States has a leading role to play in any engagement strategy.

Further Research:

This research offers avenues for important policy implications, but it is hampered by empirical and theoretical hurdles. First, this work is based on observational data measuring real foreign policies and the resulting proliferation behavior. However, there are inherent selection biases, and it is possible that only the most resistant proliferators face the toughest policies. within-case analysis helps correct for this – examining how a single tough proliferator responds to different policies – there are lingering problems of selection. This work also faces theoretical challenges: while I argue that cooperation is best when offered by powerful adversaries, how can adversaries like the United States make their promises credible to mistrustful proliferators like Iran or North Korea? Here, further research on can help determine the measures that will make cooperative assurances credible even to fearful rivals.