

Stanton Nuclear Security Fellows Seminar

PANEL 2: China and North Korea

1. Fiona Cunningham, CEIP

Maximizing Leverage: China's Strategic Force Posture Choices in the Information Age

Issue and Importance

How do nuclear-armed states coerce their adversaries in wars with limited aims? My book project examines this question with respect to China. Since the end of the Cold War, China is one of a number of nuclear-armed countries that have developed counterspace weapons, conventional long-range strike capabilities, and large-scale offensive cyber operations capable of paralyzing another country's critical infrastructure networks or military command networks. These three "non-nuclear strategic weapons" provide states with additional coercive leverage against an adversary in a future war. It is puzzling that nuclear-armed states pursue these weapons, despite already possessing nuclear weapons. In addition, at the same time that China was developing these weapons, it maintained a nuclear No First-Use Policy. China's post-Cold War nuclear restraint is puzzling because it would not have been able to achieve a military victory in a conventional war to stop Taiwan from declaring independence.¹ My project examines the relationship between China's nuclear restraint and its non-nuclear strategic weapons.

Research Question

My book project examines the following research question: how and why does China select force postures for its strategic space, cyber, and conventional missile weapons to maximize coercive leverage in limited wars? "Limited wars" are conflicts in which states pursue limited political aims that do not threaten their survival.² "Force posture" refers to the capabilities, doctrine, organizational arrangements, and command and control arrangements, and degree of transparency that a state adopts for its non-nuclear strategic weapons.³

¹ Vipin Narang, *Nuclear Strategy in the Modern Era* (Princeton, N.J.: Princeton University Press, 2014); Keir A. Lieber and Daryl G. Press, *The Myth of the Nuclear Revolution: Power Politics in the Atomic Age* (Ithaca, N.Y.: Cornell University Press, 2020), chap. 4.

² This definition of limited war is based on Austin Carson, *Secret Wars: Covert Conflict in International Politics* (Princeton, N.J.: Princeton University Press, 2018); Morton H. Halperin, *Limited War in the Nuclear Age* (New York, N.Y.: John Wiley & Sons, Inc, 1963); Herman Kahn, *On Escalation: Metaphors and Scenarios* (New York, N.Y.: Praeger, 1965); John J. Mearsheimer, *Conventional Deterrence* (Ithaca, N.Y.: Cornell University Press, 1983); Robert Endicott Osgood, *Limited War: The Challenge to American Strategy* (Chicago, I.L.: University of Chicago Press, 1957).

³ The concept of force posture is adapted from Narang, *Nuclear Strategy in the Modern Era*.

The project explains two related but distinct dependent variables.⁴ The first dependent variable is a decision to pursue a coercive space weapons, cyber attack, or conventional missile capability one of these strategic weapons. The second dependent variable is the choice of force posture for each of these three weapons. I develop two ideal-type force postures that states may select for any one of their non-nuclear strategic weapons. A brinkmanship posture is designed to exploit an adversary's fear of rapid, uncontrolled escalation to the use. A calibrated escalation posture pairs threats of gradual, controlled escalation with reassurances that the most destructive attacks will be used only as a last resort. A brinkmanship posture provides no such reassurance.

Research Design

The research design of this project involves within-country, comparative case studies of Chinese force posture decision-making for its strategic space, cyber, and conventional missile weapons. Each non-nuclear strategic weapon is treated as a case. This research design enables the study to take advantage of both cross-case comparisons of why and how China pursued coercive capabilities and selected force postures for these weapons, as well as within-case variation in China's force posture choices over time. China made eight non-nuclear strategic weapons decisions since 1988, the year it began preparing for a limited war contingency. These decisions are the unit of analysis. The study employs congruence testing and process tracing of decision-making as methods of inference. It draws on original Chinese-language sources collected during fieldwork in China between 2015-7, supplemented by over 70 interviews with Chinese experts. Many of these sources have never been exploited by Western or Chinese scholars.

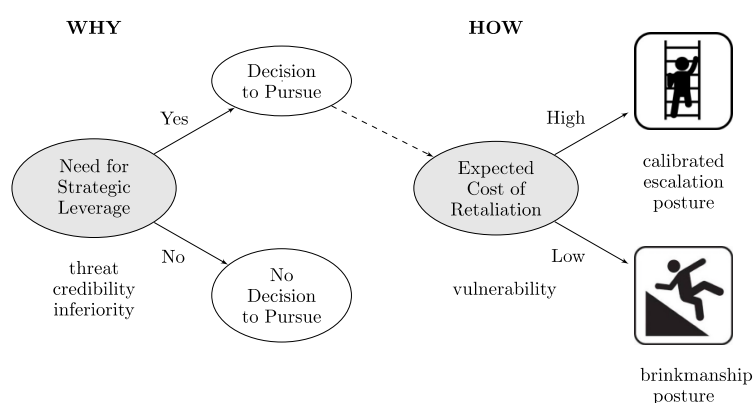
The single-country research design enables the project to explore sub-national variation in how states use non-nuclear strategic weapons for coercion, as well as the relationship between a state's non-nuclear strategic weapons, nuclear strategy and conventional weapons. But this research design attenuates the cross-national generalizability of its findings. The study's findings are limited to China, but its theoretical claims are applied to shadow cases in the final chapter.

Argument

I develop a theory of strategic substitution to explain why and how some nuclear-armed states pursue strategic space, cyber, and conventional missile weapons for coercive leverage in limited wars. These weapons allow states to achieve their aims at a level of cost and risk commensurate with the non-survival, but important nature of limited war aims. Non-nuclear strategic weapons are particularly attractive to states like China, who would not be able to achieve their aims in limited wars based on their conventional military power or nuclear strategy. These weapons provide more than just additional bargaining leverage: they transform the state's prospects for victory in limited wars. These weapons enable states to achieve limited war aims below the nuclear threshold at minimal cost to themselves. They increase the intensity of a limited war right up to the nuclear threshold but dare the adversary to cross that threshold.

⁴ The project follows existing literature that treats the pursuit of military capabilities and choices of strategy as distinct phenomena that require different explanations. See, for example, *ibid*; Barry R. Posen, *The Sources of Military Doctrine: France, Britain, and Germany between the World Wars* (Ithaca, N.Y.: Cornell University Press, 1984).

The theory of strategic substitution makes a two-step argument to explain non-nuclear strategic weapons decision-making (see figure below). First, states pursue the capability to use strategic space, cyber, and conventional missile weapons for coercion when a deterioration in their threat environment exposes a leverage deficit and they have no other viable options to satisfy that need for reasons of conventional inferiority and credibility. States that have doubts about the credibility of making nuclear threats for limited war aims are likely to view strategic space, cyber, and conventional missile weapons as less destructive, more credible sources of leverage. States facing an unfavorable balance of conventional military power are likely to turn to non-nuclear strategic weapons as a cheaper, quicker, and easier source of leverage than correcting that balance. Variation in this need for strategic leverage over time explains why a state pursues a coercive capability for a non-nuclear strategic weapon.



Second, states select either a brinkmanship or a calibrated escalation postures for any one of these weapons based on variation in their expected cost of in-kind retaliation for using those weapons. The expected cost of retaliation reflects the extent of a state's vulnerability to an adversary's space, cyber or conventional missile attack. States are likely to select a force posture that minimizes the cost of the conflict to itself, given variation in states' vulnerability to non-nuclear strategic weapons attack. States with a low expected cost of retaliation can use a brinkmanship posture to coerce an adversary to the bargaining table quickly to end the conflict. States with a high expected cost of retaliation are likely to prefer a calibrated escalation posture that limits the direct damage they would suffer from in-kind retaliation.

Contributions and Alternative Explanations

This project makes two major contributions to the existing literature. First, it updates theories of how nuclear-armed states maximize coercive leverage in limited war for variation in nuclear strategy and technological change. Most theories exploring the limited war strategies of nuclear-armed powers focus on limited nuclear war among the Cold War superpowers.⁵ Those theories cannot explain how countries

⁵ Halperin, *Limited War in the Nuclear Age*; Thomas C. Schelling, *Arms and Influence* (New Haven, C.T.: Yale University Press, 1966); Osgood, *Limited War: The Challenge to American Strategy*; Henry A. Kissinger, *Nuclear Weapons and Foreign Policy* (New York, N.Y.: W. W. Norton and Company, 1969).

with retaliatory nuclear postures and no tactical nuclear weapons (China, India and Israel) coerce adversaries in limited wars. Further, the question of how space, cyber and conventional missile postures interact with nuclear and conventional strategies is almost completely unexplored in the existing literature.⁶ Second, this book project provides the most theoretically-informed and comprehensive explanation of China's approach to strategic coercion and strategic weapons decision-making in the literature, based on original sources.⁷

The literature on military innovation, emulation, diffusion and civil-military relations could also explain why and how states pursue non-nuclear strategic weapons, especially for a "second-mover" state like China.⁸ Nevertheless, these explanations are not supported by the evidence of Chinese decision-making. There is little variation in civilian or military control over non-nuclear strategic force posture decisions between China's space, cyber, and conventional missile weapons, or over time. Yet there is variation in China's force posture choices and its cyber force posture changed in 2014. Chinese decision-makers also explicitly rejected the option of emulating the United States in their strategic weapons decisions.

Policy Implications

This project has a number of implications for policymakers concerned with both China and the future of strategic deterrence more broadly. First, my findings suggest that U.S. policymakers might be misreading China's approach to coercing the United States in a future conflict by focusing on propensity for nuclear use. China's retaliatory nuclear posture is not a sham, but rather a careful and considered attempt to use another state's reluctance to cross the nuclear threshold as a bargaining tool. Second, the theory provides insights into the non-nuclear strategic weapons decisions of other states. States unable to

⁶ For pioneering work in this area that draws more from a U.S. perspective, see Erik Gartzke and Jon R. Lindsay, "Conclusion: The Analytic Potential of Cross-Domain Deterrence," in *Cross-Domain Deterrence: Strategy in an Era of Complexity*, ed. Erik Gartzke and Jon R. Lindsay (New York, N.Y.: Oxford University Press, 2019), 335–72; Erik Gartzke and Jon R. Lindsay, "Politics by Many Other Means: The Comparative Strategic Advantages of Operational Domains," *Journal of Strategic Studies*, 2020.

⁷ Few studies have examined the interaction between China's nuclear and non-nuclear strategic weapons and have not provided a theoretical explanation for China's choices. See Michael S. Chase and Arthur Chan, "China's Evolving Approach to 'Integrated Strategic Deterrence'" (Santa Monica, C.A.: RAND Corporation, 2016); Dennis Blasko, "China's Evolving Approach to Strategic Deterrence," in *China's Evolving Military Strategy*, ed. Joe McReynolds (Washington, D.C.: Jamestown Foundation, 2016), 279–97. Theoretically informed explanations of China's nuclear strategy have not examined the impact of those choices on China's acquisition of other military capabilities. See, for example, M. Taylor Fravel and Evan S. Medeiros, "China's Search for Assured Retaliation: The Evolution of Chinese Nuclear Strategy and Force Posture," *International Security* 35, no. 2 (Fall 2010): 48–87. Studies of Chinese space, cyber and conventional missile capabilities and posture tend to be descriptive and do not provide theoretically-informed explanations or draw on sources shedding light on Chinese decision-making. See Jon R. Lindsay, "The Impact of China on Cybersecurity: Fiction and Friction," *International Security* 39, no. 3 (Winter 2014): 7–47; Jon R. Lindsay, "Introduction: China and Cybersecurity: Controversy and Context," in *China and Cybersecurity: Espionage, Strategy, and Politics in the Digital Domain*, ed. Jon R. Lindsay, Tai Ming Cheung, and Derek S. Reveron (New York, N.Y.: Oxford University Press, 2015), 1–28; Elsa B. Kania and John Costello, "Seizing the Commanding Heights: The PLA Strategic Support Force in Chinese Military Power," *Journal of Strategic Studies* (May 12, 2020): 1–47; Kevin Pollpeter, "Space, the New Domain: Space Operations and Chinese Military Reforms," *Journal of Strategic Studies* 39, no. 5–6 (2016): 709–27; Michael S. Chase and Andrew S. Erickson, "The Conventional Missile Capabilities of China's Second Artillery Force: Cornerstone of Deterrence and Warfighting," *Asian Security* 8, no. 2 (2012): 115–37..

⁸ Posen, *The Sources of Military Doctrine*; Stephen Peter Rosen, *Winning the Next War: Innovation and the Modern Military* (Ithaca, N.Y.: Cornell University Press, 1991); Owen R. Coté Jr., "The Politics of Innovative Military Doctrine: The U.S. Navy and Fleet Ballistic Missiles" (Cambridge, M.A., Massachusetts Institute of Technology, 1996); Michael C. Horowitz, *The Diffusion of Military Power: Causes and Consequences for International Politics* (Princeton, N.J.: Princeton University Press, 2010); João Resende-Santos, *Neorealism, States, and the Modern Mass Army* (Ithaca, N.Y.: Cornell University Press, 2007); M. Taylor Fravel, *Active Defense: China's Military Strategy Since 1949* (Princeton, N.J., 2019).

acquire an independent nuclear deterrent, such as Japan or Iran, might also pursue non-nuclear strategic weapons to compensate for a lack of nuclear or conventional leverage. The expected cost of retaliation might also explain how states that pursue non-nuclear strategic weapons for reasons other than leverage select coercive force postures. U.S. and Israeli cyber posture have become more transparent and restrained as its adversaries have acquired the ability to retaliate in-kind with cyber attacks.

Weaknesses and Feedback

The major weakness of the project is its attempt to walk the fine line between explaining the unique aspects of China's approach to strategic deterrence and providing insights into the broader pattern of nuclear-armed states pursuing non-nuclear strategic weapons. This balancing act results in a theory that is less parsimonious than it could be, especially given the limits on generalizability of its within-country research design. Feedback on whether the project over- or under-sells its contributions beyond explaining Chinese behavior would be very welcome.

2. Sulgiye Park, CISAC

Investigating North Korea's Fissile Material Production Using Geologic Analysis

1. Background

Given the heavy sanctions against the Democratic People's Republic of Korea (DPRK), the mining and milling of indigenous uranium is one of the major rate-limiting steps for the acquisition of fissile materials. Despite ongoing efforts to determine and verify the fissile material and nuclear weapon production capacity of the DPRK, there is no consensus on the known locations, numbers, and characteristics of uranium mines. I propose to use geological and geochemical analysis to investigate the possible types of uranium mines and constrain quality of uranium ore therein, especially of the Pyongsan uranium mine that was declared by the DPRK to the International Atomic Energy Agency (IAEA) post Non-Proliferation Treaty agreement.

The goal of the project is addressing the DPRK's fissile material production capability from a geologic perspective. To what extent can the DPRK rely on indigenous sources of uranium for its production of fissile material? If Pyongsan is not the sole producer of uranium, is dismantling of the Pyongsan Uranium Concentrate Plant enough for a complete nuclear agreement between the DPRK and U.S? Evaluation of the DPRK's uranium quality and quantity will help estimate the amounts of enriched uranium and plutonium that can be produced by the nation. Identification of other potential sites with uranium ore or milling capability will also be a vital to developing a nuclear agreement with the DPRK.

2. Approach and Methods

One of the major difficulties in understanding the uranium ore grade and production capacity in the DPRK is lack of onsite and sampling access. The unique component of my project is that a set of comparable uranium-bearing rocks in proximity to the DPRK uranium mines will be analyzed as a proxy. For example, the closest resemblance to the ore rock type in the Pyongsan uranium mine can be found in Okcheon Metamorphic Belt of Republic of Korea (ROK). My study will begin by conducting geological map analysis and literature review of the tectono-metamorphic evolution of the Okcheon Metamorphic Belt in ROK and the Pyongsan uranium mine to establish the congruent geologic relationship between the two locations. If enough geological evidence supports the correlation between the two sites, a set of rock samples from Okcheon Metamorphic Belt will be analyzed to better constrain the ore quality of the Pyongsan uranium mine. For a sampling proxy, a set of rock was collected at Geosan County in North Chungcheong Province, ROK – Northeast of the Okcheon Metamorphic Belt. The site is geographically closest to the Pyongsan uranium mine and hosts one of the higher-grade uranium ore in the ROK.⁹ Without onsite access, examination of rocks of comparable origin in near proximity may be the most useful route to obtaining information about the ore-type at the DPRK.

I will employ several characterization techniques to analyze the rock samples from the Okcheon Metamorphic Belt. These techniques include electron microprobe analysis, scanning electron

⁹ For example, Dongbok Shin and Sujeong Kim, "Geochemical Characteristics of Black Slate and Coaly Slate from the Uranium Deposit in Deokpyeong Area," *Econ. Environ. Geol.*, 44(5), 373-386, 2011. (in Korean with English abstract).

microscopy, and transmission electron microscopy, all of which combine to inform one on the geochemistry of the rocks, including grain-by-grain spot chemical analysis, phases of uranium, and quantification of trace elements and corresponding compositional maps. The results will illuminate the types of uranium found and grade of uranium, which are critical variables in evaluating the DPRK's capability for increasing its amount of fissile material.

3. Tentative results and policy implications

3.1. Geologic relationships between the Pyongsan uranium mine and Okcheon Metamorphic Belt

There are two plausible relationships between the Pyongsan uranium mine in the DPRK and the Okcheon Metamorphic Belt in the ROK. The first is related to intraplate rifting, which argues that the two basins were once a single formation in which a tectonic movement separated the two basins. The second is that the two dichotomized, spatially-distinct basins evolved separately under synchronous depositional environments and time, resulting in analogous geologic formations. Geochemical analysis of the rock samples, combined with literature review and detailed analysis of geologic maps, will allow one to distinguish the origins of these two basins and establish the basis for estimating the ore grade at the Pyongsan mine in the DPRK.

3.2. DPRK's reliance on indigenous sources of uranium

Based on previous literature review and analysis of geological maps, the DPRK does not have a large amount of high-grade uranium ore today.¹⁰ The set of rock sample surrogates from the ROK suggest that the low-grade uranium ore is in a metamorphosed organic shale. The lack of high-grade uranium ore, however, does not pose a strict limit on its capability of producing nuclear weapons today. The DPRK can still rely on its indigenous sources of low-grade uranium ore to make fissile materials. However, due to the degrading ore quality and volume, concomitant to the increase in the extraction cost, the rate of its nuclear arsenal expansion will decline faster than what is expected with a high-grade uranium ore. Hence, it is likely that the DPRK continues its exploration for new uranium mines.

3.3. Policy implications

Determining the uranium ore grade places a constraint on the DPRK's ability to fuel present and future reactors from its own uranium mines. For example, will the DPRK be able to keep expanding its nuclear arsenal without uranium imports? How likely is the DPRK expand its search for uranium mines? In future negotiations, it will be important to understand what limits should be placed on the DPRK's production of uranium. Specifically, is the Pyongsan mine the DPRK's only source of uranium? Is closing and dismantling the Pyongsan mine and milling facility enough for complete nuclear agreement between the DPRK and the U.S.?

¹⁰ Sulgiye Park, Allison Puccioni, Cameron L. Tracy, Elliot Serbin & Rodney C. Ewing, "Geologic Analysis of the Democratic People's Republic of Korea's Uranium Resources and Mines", *Sci. Global Sec.*, DOI: [10.1080/08929882.2020.1789275](https://doi.org/10.1080/08929882.2020.1789275)

4. Relation to prior work limitations of this study

My work adds to the large body of existing work on the DPRK's nuclear program from the new perspective of a ground-based geological analysis. In addition to the defectors' accounts, records from the IAEA and Soviet Union, and reports and analyses based on satellite images, my work provides evidence-based analysis from a purely scientific and geologic perspective. The set of rock samples collected from the Okcheon Metamorphic Belt also adds a unique outlook to understanding the front-end of uranium pathway in the DPRK.

Some limitations to the work also need to be acknowledged. While using a set of surrogate rock samples serves as one of the more accessible ways of obtaining answers about the DPRK's uranium ore grade, the estimates will be limited for following reasons: 1) the rock samples from the Okcheon Metamorphic Belt are not a direct representation of the average uranium-bearing rocks from the DPRK; 2) given the history of uranium mining in the DPRK, it is difficult to accurately predict the ore grade of the remaining uranium ore; and 3) while preliminary geologic analysis indicates some geochemical similarity between Pyongsan and the Okcheon Metamorphic Belt, there may be other stratigraphic layers present in the DPRK that gives rise to higher or lower grade uranium.

The use of geologic data in previous analyses has been limited and few in the intelligence community are familiar with the approach. While I will certainly benefit from careful review by geoscientists, advice regarding accessibility of my research to policy makers would be appreciated.

3. Yeajin Yoon, MIT SSP

Living with a Nuclear North Korea in Northeast Asia

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

I am working on one of the most pressing security challenges in Northeast Asia—how to deal with a nuclear North Korea in a regional context. Scholars have argued that given the sobering reality that North Korea is a de facto nuclear-armed state, deterrence is the best policy option.¹¹ As denuclearization talks between the United States and North Korea have stalled, it is undeniable that the North’s immediate neighbors—the Republic of Korea (ROK), Japan, and the People’s Republic of China (PRC)—will have to learn to live with a nuclear North Korea in the foreseeable future.

Despite the commitment to ‘maintaining peace and stability on the Korean peninsula as well as in Northeast Asia’ from the highest levels of government,¹² ROK-Japan-PRC trilateral cooperation over North Korea has been less than optimal due to security dilemma dynamics and domestic disputes over history and territory among the three countries. My research seeks to explore practical ways to improve trilateral coordination of these key regional stakeholders to ensure effective deterrence of a nuclear North Korea in the short term and achieve denuclearization in the long term.

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

What explains the divergence of threat perceptions and policy approaches of the three countries vis-à-vis a nuclear North Korea? How might we promote the alignment of interests and incentives among the three countries to ensure stability on the Korean peninsula and in Northeast Asia? At a time of heightened rivalries and tensions, will Seoul, Tokyo, and Beijing be able to put aside their differences and cooperate to prevent further proliferation by Pyongyang?

The legitimacy of political leaders in all three countries depend on their ability to safeguard regional stability and economic interdependence. In this regard, it is in the shared interest of all three countries to contain security threats emanating from North Korea’s nuclear and missile program. My research seeks to answer why it is difficult for the ROK, Japan and the PRC to advance effective cooperation over North Korea.

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

I will conduct process-tracing case studies by looking deeply into the North Korean nuclear crises in the past and examine divergent policies pursued by the ROK, Japan, and the PRC following North Korea’s

¹¹ See, for example, Scott Sagan, “The Korean Missile Crisis: Why Deterrence Is Still the Best Option,” *Foreign Affairs* 96, no. 6 (2017): 72–82.

¹² For example, at the recent trilateral summit held in China, the leaders of the ROK, Japan, and the PRC affirmed their commitment to ‘the complete denuclearization of the Korean Peninsula’, and reaffirmed that ‘maintaining peace and stability on the Korean Peninsula as well as in Northeast Asia is our common interest and responsibility.’ *Trilateral Cooperation Vision for the Next Decade*, The Eighth Trilateral Summit, December 2019, Chengdu, China

nuclear and missile tests. My research will utilize publicly available information (government white papers, polling data, etc) as well as other secondary sources. I will use local polling data in Korea and Japan to shed light on how their respective publics think about nuclear weapons and how public opinion may constrain policy options (e.g. joint opinion polls from Korea's *Hankook Ilbo* and Japan's *Yomiuri Shimbun*; poll data from Gallup Korea and from the Asan Institute). As part of my dissertation project, I have already conducted interviews with regional policymakers and will carry out additional interviews with experts and policymakers, as necessary.

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?

The current divergence in the approaches of the ROK, Japan, and the PRC can be explained by the conflicting incentives that these three countries face in dealing with a nuclear North Korea. While they have strong incentives to work together to contain the risks posed by North Korea's nuclear and missile program to regional security, they still have to contend with ongoing security tensions *with each other* and manage growing nationalist sentiments in their respective domestic politics. My tentative argument is two-fold. First, a complex set of domestic political constraints and incentives of the three countries create obstacles to trilateral cooperation over North Korea despite their mutual interest in maintaining regional stability. Second, high-level buy-in from all three countries is essential to advancing effective cooperation vis-a-vis a nuclear North Korea. Joint policy initiatives and multilateral nuclear negotiations, alongside U.S.-North Korean bilateral negotiations, can help achieve such buy-in from the regional states.

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

Much of the existing work has focused on denuclearization efforts vis-à-vis North Korea. Recognizing the uncertain reality of denuclearization in the immediate future, my work shifts the focus to analyzing ongoing deterrence efforts put forward by the regional states and consider how and when such efforts could further exacerbate security dilemma dynamics in the region. In so doing, I seek to illuminate the domestic political dynamics, with a particular focus on South Korea's shifting domestic politics. For example, according to a recent poll, a striking 47% of South Koreans do not view the North Korean nuclear and missile program as a threat.¹³ And the ROK Defense Ministry's 2018 white paper stopped referencing North Korea as its 'main enemy.'¹⁴ In light of recent developments on the Korean peninsula and shifts in domestic and regional politics, it is timely and relevant to reassess some of the existing arguments about how regional states can best respond to the policy challenge of dealing with a nuclear North Korea.

¹³ '47% of Koreans see North Korea's nuclear and missile program as a 'non-threat,' and 82% of Japanese see it as a threat,' *Hankookilbo*, July 5, 2018, <https://www.hankookilbo.com/News/Read/201807031949386886>, Accessed on September 14, 2020

¹⁴ 'NK may no longer be described as 'enemy' in S. Korea's defense white paper,' *Korea Herald*, December 26, 2018, http://www.koreaherald.com/view.php?ud=20181226000579&ACE_SEARCH=1, Accessed on September 14, 2020

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

Current academic and policy debates focus mostly on how the United States can respond to North Korea's nuclear program. My work seeks to fill this gap and aims to provide an in-depth analysis of the policy approaches of the North's most important neighbors in a comparative perspective. While there are strong forces that push them apart such as historical and territorial disputes, there are also equally compelling incentives for the three countries to work together to ensure regional security and safeguard economic interdependence. In this regard, I will study past negotiated agreements and consider *under what conditions* the three countries' interests and incentives may converge and make substantive progress towards the shared goal of 'the complete denuclearization and permanent peace on the Korean peninsula.'¹⁵

What do you see as your most important contribution?

My work provides insights into the political dynamics of Northeast Asia and sheds light on the domestic constraints and policy dilemmas faced by regional policymakers in managing the deterrence challenge posed by a nuclear North Korea. My work considers each of the three relationships between ROK-Japan, ROK-PRC, and Japan-PRC in turn and show how their incentives to cooperate on North Korea fluctuate with the increasing salience of contentious bilateral issues in domestic politics. For example, the recent flare-up of tensions over the General Security of Military Information Agreement (GSOMIA) between the ROK and Japan and the deployment of the US Terminal High Altitude Area Defense (THAAD) system between the ROK and the PRC illustrate the difficulties and challenges that regional policymakers face in pursuing effective deterrence of North Korea in the context of contentious geopolitics and domestic politics.

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

My work will offer broad policy implications that ROK-Japan-PRC trilateral nuclear diplomacy has for U.S. non-proliferation and deterrence policy on the Korean peninsula and Northeast Asia. Given the complex geopolitics in the region, efforts to enhance deterrence could further heighten regional rivalries and security dilemmas among the ROK-Japan-PRC and between those states and North Korea. I will come up with a set of specific recommendations, which include confidence-building measures aimed at reducing tensions and building trust in the region. I will also address the longer-term question of how the three countries can integrate North Korea into an increasingly institutionalized Northeast Asia.

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

My work will likely to encounter skepticism about ROK-Japan-PRC trilateral cooperation as a feasible policy option in dealing with a nuclear North Korea, given the often-fraught bilateral relations among the three countries. Yet for all its limitations, my argument is that there remains significant potential for

¹⁵ *Trilateral Cooperation Vision for the Next Decade*, The Eighth Trilateral Summit, December 2019, Chengdu, China

trilateral cooperation in the areas of confidence- and trust- building, which is essential to maintaining deterrence in the short term and achieving denuclearization in the long term. It would be useful to receive feedback on how to address counter-arguments about the relevance and utility of ROK-Japan-PRC trilateral cooperation in the context of a nuclear North Korea.