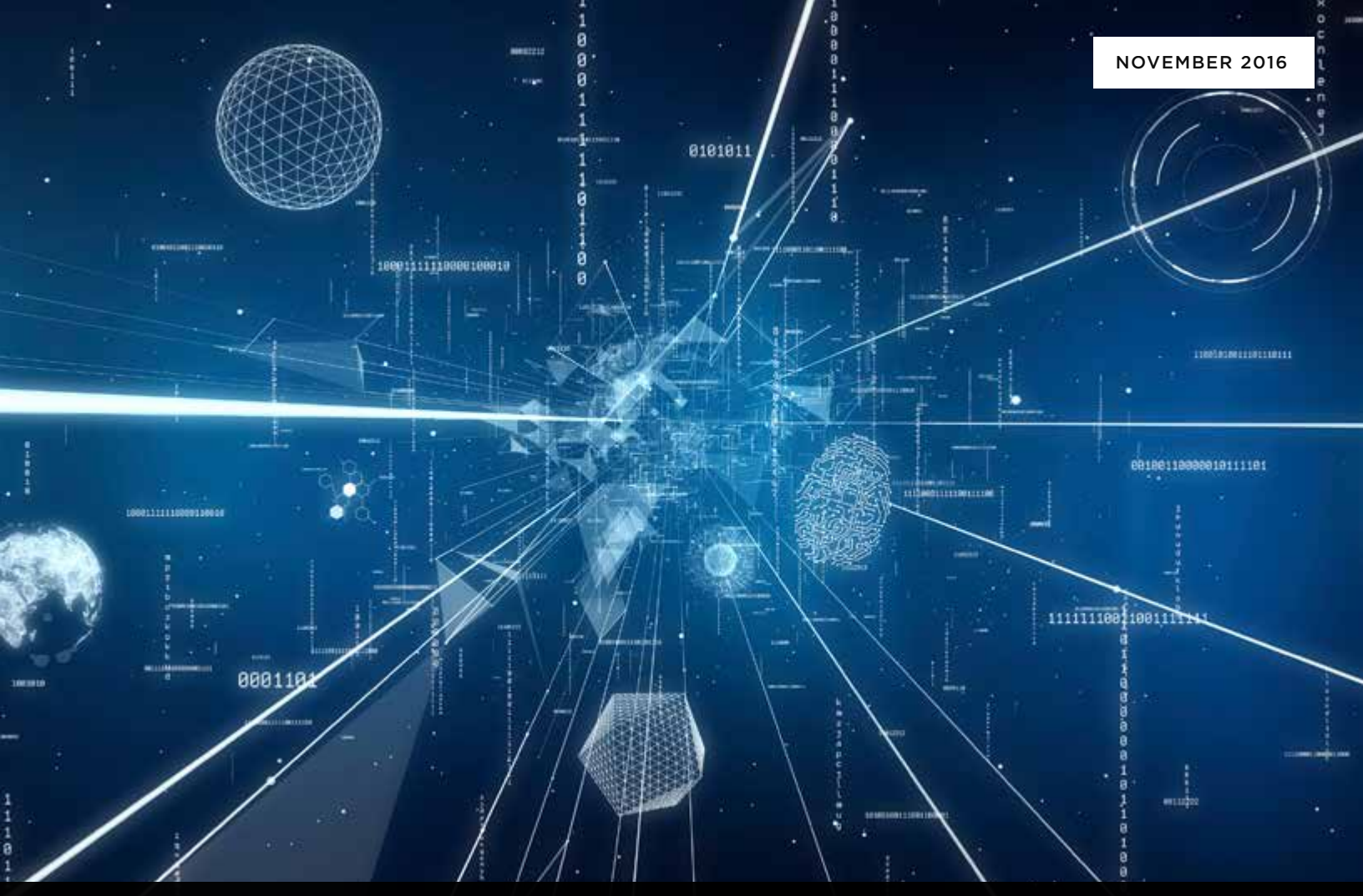


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BREAKTHROUGH ON THE PENINSULA

Third Offset Strategies and the Future Defense of Korea

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Center for a
New American
Security

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The Asia-Pacific Security program seeks to inform the exercise of U.S. leadership in Asia by analyzing how the United States can rebalance its priorities, shape a rules-based regional order, modernize traditional alliances, build the capacity of new partners, and strengthen multilateral institutions and respect for the rule of law. From exploring rising maritime tensions in the region to crafting ways to renew key alliances and partnerships to articulating strategies to extend and enhance America's influence, the program leverages the diverse experience and background of its team, deep relationships in the region and in Washington, and CNAS' convening power to shape and elevate the conversation on U.S. policy across a changing Asia.

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BREAKTHROUGH ON THE PENINSULA

Third Offset Strategies and the Future Defense of Korea

- 3 INTRODUCTION: POLICY RECOMMENDATIONS AND OVERVIEW**
By Dr. Patrick M. Cronin
- 9 CHAPTER 1: THE U.S.-ROK ALLIANCE AND THE THIRD OFFSET STRATEGY**
By Dr. Patrick M. Cronin and Seongwon Lee
- 23 CHAPTER 2: SOUTH KOREA'S MILITARY-INNOVATION TRAJECTORIES**
By Dr. Michael Raska
- 39 CHAPTER 3: NORTH KOREA'S OFFSET STRATEGY**
By Lt Gen In-bum Chun, ROKA (Ret.)
- 51 CHAPTER 4: STRENGTHENING SOUTH KOREAN DEFENSE**
By Dr. Bruce E. Bechtol Jr.
- 63 CHAPTER 5: ENHANCING U.S. POWER PROJECTION**
By Dr. Chung Min Lee
- 77 CHAPTER 6: NORTH KOREA'S MISSILES: A PRECISION-GUIDED PROBLEM
FOR EXTENDED DETERRENCE**
By Dr. Mira Rapp-Hooper
- 85 CHAPTER 7: DETERRENCE: A KOREAN PERSPECTIVE**
By Dr. Hyeong-wook Boo
- 95 CHAPTER 8: ROK SPACE SECURITY AND THE THIRD OFFSET**
By Dr. Daniel A. Pinkston
- 107 GLOSSARY**

INTRODUCTION

Policy Recommendations and Overview

DR. PATRICK M. CRONIN

This volume is a first attempt to address how America's Third Offset Strategy could affect security on the Korean Peninsula. The Third Offset is in essence a call for the United States to maintain military superiority through investing in technological, organizational, and operational innovation, allowing it to operate globally in an era of proliferating precision munitions. Since the concept was coined several years ago, however, there has been scant analysis about how the Third Offset will affect security on the peninsula. Kim Jong-un's acceleration of North Korean nuclear and missile programs makes this more than an academic concern to the Republic of Korea (ROK) and the United States. Pyongyang's military modernization, both unconventional and conventional, could undermine the current order of extended deterrence and reignite regional conflict. At the same time, the potential benefits of Third Offset technologies not only could help preserve peace and stability on the peninsula, but also support the U.S.-ROK alliance's global operations.



U.S. Ambassador Sung Kim is welcomed to South Korea by U.S. Forces Korea (USFK) Commander General James Thurman and Deputy Commander General Kwon Ho Sung in 2011. USFK is one of the United States' largest and most important forward presences in the world. (Staff Sgt. Cody Harding/U.S. Army Korea)

POLICY RECOMMENDATIONS

Having conducted a sustained U.S.-ROK dialogue on the Third Offset, and based largely on the chapters in this volume, the following five policy recommendations emerge for consideration by decisionmakers in both Washington and Seoul.

- *First, the next U.S. administration needs to formally engage the ROK in sustained Third Offset strategic planning.* The implications are too great and the potential dividends sufficiently important to delay alliance consultation. The pace of North Korean nuclear missile development, coupled with myriad other advances, highlights why a Third Offset Strategy is needed to augment both near- and long-term deterrence and defense capabilities for both countries.
- *Second, the U.S. and ROK militaries should concentrate on developing quick hits, such as fully exploiting current technological capabilities, to complicate North Korean planning and demonstrating the capability to fight limited war and shoot down mass missile salvos.* Two specific systems appear ready to enhance alliance deterrence and defense. The first is moving forward with wider deployment of the advanced Standard Missile-6 (SM-6), which can be used both for missile defense and conventional strike. The second is to conduct an early exercise in the next administration to demonstrate the capability of new hypervelocity powder-gun technology. Showing that existing U.S. and ROK artillery and weapons can be retrofitted today to fire smart, hypervelocity weapons provides a quick way of demonstrating to Pyongyang that a mass missile strike could be countered through advanced conventional means.
- *Third, Washington and Seoul should expand the scope of U.S.-ROK alliance planning with respect to technology and innovation.* This should include understanding the multifaceted ways in which North Korea plans to use its technological advances in nuclear missiles, GPS jamming and electronic warfare, cyber warfare, and unmanned aerial vehicles. But this also must address the fundamental conceptual and organizational barriers to ROK innovation and acquisition of complex systems.
- *Fourth, U.S. defense officials need to keep in mind that ultimately the alliance is only as strong as its people and intangibles such as trust and credibility.* This is especially pertinent in light of Pyongyang's desire to

find political seams and attack public opinion in two democracies that not only focus on military capabilities but must balance alliance cohesion, trust, and assurance. In this respect, no technological breakthrough can substitute for America's physical troop presence on the Korean Peninsula as a measure of commitment and trust.

- *Fifth, over the long term, the bigger challenge for the United States in preserving its power-projection capabilities is not likely to be North Korean missiles but Chinese anti-access and area-denial (A2/AD) capabilities.* The ability of the United States to move forward on its Third Offset Strategy in tandem with both the ROK and Japan will be the most important dimension of maintaining America's conventional deterrence in the wider region. Finding ways for the ROK and Japan to build further on intelligence sharing and missile defense also will provide practical means for ensuring network alliance strength amid a changing Northeast Asian security environment.

Korea and the Third Offset

In Chapter 1, Dr. Patrick Cronin and Seongwon Lee expound on the Third Offset and its implications on and off the peninsula. The Third Offset projects to help Seoul alleviate some of the burden of combating a dynamic and nuclear-armed North Korea. By threatening to deploy more advanced technological systems, including missile defenses, the U.S.-ROK alliance can continue to deter North Korea from launching lethal provocations, while also imposing economic and political costs on Pyongyang. This strategic competition with Seoul and Washington will require more technological prowess and investment than Pyongyang is likely to afford. Additionally, the Third Offset will allow South Korea to forge a better security network with other countries in East Asia. Finally, the Third Offset provides an opportunity for closer U.S.-ROK alliance cooperation on research and development.

Of course, there are potential downsides. Some high-technology systems could sharply escalate the scale of a potential conflict. Rising defense costs could force some difficult tradeoffs for the alliance, including U.S. troop presence on the Peninsula. A U.S.-led focus on cutting-edge technology might widen an existing technological capability gap with South Korea, which in turn would provide a persistent drag on the alliance. While all these issues can be managed, they are reminders of the possible unintended consequences of even the most farsighted policies.

South Korea's Approach to Military Innovation

The concern over potential technological fissures in the alliance segue into the second chapter, in which Dr. Michael Raska assesses South Korea's approach to military innovation. The main driver of South Korean military innovation, and a core focus of U.S.-ROK military planners and political leaders, is finding effective ways to maintain deterrence within shifting contingencies that include, but are not limited to, ballistic-missile attack and regime collapse.

Three pillars – defensive deterrence, the U.S.-ROK alliance, and a forward and active defense – animate South Korean national security policy, force structure, and operational conduct. Since the 1990s, South Korean military modernization aims to respond to the growing North Korea threat, close the preexisting technological and interoperability gap in the U.S.-ROK alliance, and attain a self-reliant defense posture.

South Korea has pursued two parallel trajectories of military innovation. The first trajectory, external emulation, is shaped by lessons learned from the U.S. military. The second trajectory, internal adaptation, is embedded in Seoul's efforts to minimize disparities within the alliance.

A lack of operational adaptability, short-term strategic thinking regarding defense management, and a hierarchical strategic culture characterized by interservice rivalry constrain innovation within the ROK military. While South Korea has attempted to address these issues, improved technologies have not been matched by the requisite organizational, and operational innovation needed to deploy the hardware to its greatest potential. As South Korea aims to achieve sustained resource allocation to close the technological gaps between the two allies, it must improve its defense management capacity.

North Korea's Offset Strategy

As South Korea and the United States search for technologies that change the balance of power, retired Lieutenant General In-bum Chun admonishes us to remember the old saying that the adversary has a vote, too. As he writes in Chapter 3, North Korea is investing a range of asymmetric capabilities such as smart, long-range munitions that pose challenges to the U.S.-ROK alliance. Through its experiences, North Korea realizes its limits in direct conventional conflict. Instead, Pyongyang has learned that small-unit operations, to disrupt force generation and sustainment operations in alliance rear areas, and deception operations are more effective.

As a result of studying American military history, Pyongyang has concluded that nuclear weapons are essential to achieving victory against the United States. While countering superior U.S. forces with a nuclear deterrent, however, North Korea then might wage asymmetric conflict through the use of special operations forces to disrupt, degrade, and destroy lines of communication, intelligence capabilities, sustainment nodes, and theater mobility assets.

ROK and Alliance Capabilities

South Korea remains focused on dealing with North Korean asymmetric strategies. Dr. Bruce Bechtol discusses in Chapter 4 how the Third Offset could bolster ROK defenses. Although focused on the future, the Third Offset may have immediate influence on the balance of military power on the Peninsula, which is both necessary and timely, given the extensive military modernization efforts being undertaken by North Korea.

However, the readiness of the ROK armed forces to acquire, assimilate, and use the cutting-edge technologies of the Third Offset remains to be seen. At a minimum, South Korea and the U.S.-ROK alliance will need to address key political and military challenges affecting the implementation of Third Offset technologies and accompanying concepts of operations to deter North Korea's increasing and developing military capabilities.

For the United States, failure to project power in and around the East China Sea would likely create spillover effects into the South China Sea.

Building on this theme, in Chapter 5 Dr. Chung Min Lee discusses the strategic ramifications of the Third Offset Strategy for the U.S.-ROK alliance and Northeast Asia. While North Korea remains the proximate threat, there is a concern about expanding Chinese military power on the horizon.

China's growing military capabilities will hinder the United States' power projection in the 2020s and beyond. The fact that China, unlike the United States, is not committed to projecting power beyond its shores and is free from alliance responsibility tilts the table even further in China's favor. For the United States, failure to project power in and around the East China Sea would likely create spillover effects into the South China Sea. This also affects how the ROK and the United States would respond jointly to a range of contingencies on the Korean Peninsula.

Lee argues that, from a South Korean perspective, short-term and tangible applications of the Third Offset will focus on deterring North Korea's cyber, nuclear, and missile threats while enhancing combined alliance capabilities, whereas the long-term implications of the Third Offset center on the restructuring of forces after unification.

Deterrence

In Chapter 6, Dr. Mira Rapp-Hooper analyzes the effects of North Korea's growing missile threat to the United States' extended deterrence on the Peninsula.

North Korea may use its ballistic and cruise missiles in attempts to prevail in a conventional conflict against the United States and its allies, either through political coercion or through direct anti-access challenges. Recent tests in relation to the ultra-precision KN-02 Toksa, Musudan IRBM, KN-08 ICBM, KN-11 SLBM, and KN-09 ASBM pose both a nuclear and conventional threat.

Rapp-Hooper argues that the alliance must show it is able to prevail in a conventional conflict by 1) hardening and dispersing bases in South Korea, 2) ensuring base access in Japan, 3) preparing for combat-credible limited wars, 4) investing in multi-layered missile defense, and 5) encouraging ROK-Japan intelligence sharing.

Hyeong-wook Boo also focuses on deterrence on the Peninsula. Writing in Chapter 7, he reevaluates the

impacts of the First and Second Offset Strategies on Korean security. He then builds on this history to discuss potential concerns of the Third Offset Strategy in light of the emerging security environment.

From creating a wider technology gap in the alliance, raising sensitive issues regarding the transfer of high technology, and stirring a debate over possible reductions of U.S. boots on the ground, a Third Offset will face many challenges when it comes to convincing Korean officials and the public about the potential benefits of a new, technology-oriented strategy.

In addition to these general alliance challenges, a Third Offset raises important questions about deterrence. These questions center on the weakened links between Seoul and Washington, prompting possible North Korean nuclear escalation, and overlooking critical questions of alliance nuclear capabilities. In addition, while a Third Offset may strengthen the capability to win a war, that

capability may come at the expense of undermining the more essential goal of maintaining deterrence.

Boo suggests that the U.S.-ROK alliance should fully discuss if and how a Third Offset can strengthen America's extended deterrence.

ROK Space Security

The Third Offset increasingly relies on outer space, which also happens to coincide with South Korea's ambitions as a space power. The ROK is concurrently increasingly capable in space, but also increasingly vulnerable as well. In Chapter 8, Dr. Daniel Pinkston examines the status of the ROK's space program, U.S.-ROK space cooperation, and future challenges to the ROK regarding Third Offset capabilities in the domain of space.

Space-based capabilities and cooperation with allies will be critical to deploy Third Offset capabilities. The legal and institutional frameworks are being created to support the sharing of space data and intelligence, and combined space operations. There are opportunities and a willingness for extensive bilateral and multilateral cooperation between the ROK and the United States in space security. Bilateral space situational-awareness cooperation can help provide both countries with a better understanding of North Korean space activities and missile launches. Further, the U.S.-ROK-Japan trilateral Pacific Dragon missile defense test in 2016, which

relied heavily on space-based assets, demonstrated the potential supporting role of space cooperation in countering North Korea's mounting missile threat.

However, Pinkston warns that Seoul will face a dilemma between gaining tangible advantages through U.S.-ROK space cooperation and fearing political friction with Beijing.

Space-based capabilities and cooperation with allies will be critical to deploy Third Offset capabilities.

Throughout the eight chapters in this volume, experts explore important issues regarding the implications of the Third Offset for security on the Korean Peninsula, America's ability to project power to the peninsula and preserve stable extended deterrence, and ROK out-of-area capabilities. Further work is needed through official bilateral alliance channels make the Third Offset a core part of alliance planning and to fully tap the potential of Third Offset thinking and technology to deter North Korea in both the short and long run. Provided the Third Offset remains an essential part of U.S. military modernization, it surely will influence both South Korea and the U.S.-ROK alliance.

CHAPTER 1

The U.S.-ROK Alliance and the Third Offset Strategy

DR. PATRICK M. CRONIN AND SEONGWON LEE

The Third Offset Strategy and North Korea

In November 2014, the Department of Defense proclaimed defense innovation a major priority. Often reduced to the moniker “Third Offset Strategy,” the central aim of the innovation effort is to address the adverse consequences of proliferated long-range, precision-strike systems. As Secretary of Defense Chuck Hagel argued in the foundational speech launching the initiative, DoD will invest “in our nation’s unrivaled capacity for innovation.”¹ Secretary Hagel injected a sense of urgency into the innovation effort, given that forward-deployed U.S. forces and “unmatched technological and operational edge . . . is being increasingly challenged.”² The spread of advanced weapons “that were once the exclusive province of advanced nations,” declared Secretary Hagel, “have become available to a broad range of militaries and non-state actors, from *dangerously provocative North Korea* [emphasis added] to terrorist organizations like Al Qaeda and Hezbollah – all clear threats to the United States and its allies.”³

Although the Secretary did not flinch from noting the level playing field accessible to smaller rogue states such as North Korea, he also made clear the main focus of the Third Offset was addressing other major powers, reflecting a resurgence in great-power competition. This resurgence, Hagel noted, was fueled in part by America’s protracted counterinsurgency campaigns, which diverted U.S. attention away from both Asia and more high-end military threats. During this time, Russia and China have been investing in next-generation aircraft, undersea warfare, and a range of antiship and air-to-air missiles. Moreover, Moscow and Beijing have concentrated on the new domains of cyber and outer space, along with upgrades in electronic warfare.⁴

Secretary Hagel explained that the United States must reverse this narrowing technological gap in security and not retrench from global leadership. The loss of power-projection capability would severely damage U.S. interests, according to Hagel. “Questions about our ability to win future wars could undermine our ability to deter them.” Finally, Hagel stated the United States would be resigning to putting troops in far greater danger, with the fear of massive casualties crippling America’s political will to act for the common defense.⁵

The Third Offset is a clarion call for maintaining American military superiority. It aims for technological and operational innovations to keep the U.S. armed forces a step ahead of potential opponents who are fast acquiring the precise means to deny others the ability to access and maneuver forces within hundreds, if not thousands, of miles of them.

This search for a new offset acknowledges the increasing prevalence of precision-guided munitions (PGMs), upon which U.S. military dominance has long been predicated. The Third Offset further seeks to exploit U.S. quantitative advantages in existing systems and qualitative advantages in next-generation systems. At the same time, the initiative seeks renewed investment in operational concepts, war-gaming, and other forms of red-teaming and alternative analysis. But according to Secretary Hagel, the focus of the Third Offset is “to help ensure that U.S. military forces can *successfully operate in a world of ubiquitous precision munitions.*”⁶

U.S. superiority in weapon capability and accuracy was not achieved overnight. Further, key elements of America’s past military preeminence now are central to the defense strategies and plans of potential U.S. adversaries.⁷ But the United States is agile and has adjusted to previous technological military challenges related to guided-munitions warfare. The Third Offset follows two prior Cold War initiatives to counteract the Soviet Union’s conventional military superiority.

In the 1950s, the United States doubled down on its advantages in nuclear weapons to offset a large and capable Soviet conventional force threatening Western Europe. In the 1970s, with Moscow having achieved nuclear parity, the previous offset strategy and extended deterrence lost credibility. During the Carter administration, Secretary of Defense Harold Brown initiated an effort to focus on long-range precision-strike capabilities. The resulting defense forces aimed to nullify Soviet advantages. In a paper commissioned to help CNAS think about the Third Offset Strategy and its impact on the future of Asian military competition, Shawn Brimley notes the “prospect of facing adversaries that employ precision munitions and battle-networks that could consistently or episodically rival our own represents a very significant shift in the global balance of military power.”⁸ It is this challenge that has prompted the search for a Third Offset.

In the Asia-Pacific region, any discussion of a Third Offset immediately conjures up the rise of China. Beijing’s rapid military modernization and growing technological prowess could fundamentally deny U.S.

forces access to East Asia and the Western Pacific, as well as deny any forward-stationed U.S. forces the freedom to maneuver, particularly in China's *san hai* or "three seas" – the Yellow Sea and the East and South China Seas. These A2/AD qualities ascribed to Chinese missiles and other systems also apply, albeit to a lesser extent, to smaller military powers such as North Korea.

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This chapter focus on how North Korea might develop its own version of an A2/AD or precision-munitions challenge, and how America's emphasis on a Third Offset might affect extended U.S. deterrence and power projection to the Korean Peninsula. Of course, it is important to bear in mind that A2/AD refers to a strategic objective of countering outside intervention, a strategy that depends on a portfolio of various capabilities depending on the situation, geography, and actors. In contrast, the Third Offset is largely an investment strategy, not a military strategy or concept of operation. But investment decisions can enable new operational concepts, just as U.S. investments in the 1970s enabled the Air-Land Battle concept. Furthermore, in addition to the possible implications for the U.S.-ROK alliance's responses to a range of Korean contingencies, the Third Offset also may contribute to the alliance's provision of security as a public good for the wider region. This chapter builds on previous research aimed to expanding a U.S. network of allies and partners, and strengthening intra-Asian security relations, in order to provide a resilient, dispersed defense capability to manage a wide range of scenarios.⁹ In sum, the impact of the Third Offset on dealing with the North Korean threat, strengthening extended deterrence, and supporting alliance out-of-area operations are the three loci of this chapter and, more generally, this volume.

The Third Offset Strategy Investments

The Fiscal Year 2017 (FY17) budget submission and numerous speeches by senior DoD officials attest to some of the most tangible aspects of a Third Offset Strategy. How will the United States spend its defense dollars to evolve U.S. forces to one that can operate in a world of ubiquitous precision munitions and prevail against adversaries that can employ them in all warfighting domains?¹⁰ Barring drastic changes from a new administration, DoD plans to invest about \$18 billion over five years, with more than \$3.5 billion earmarked for FY17 in Third Offset initiatives.¹¹

Experts point to six main areas of investment in the Third Offset: anti-access and area-denial, guided munitions, undersea warfare, cyber and electronic warfare, human-machine teaming, and war gaming and the development of new operating concepts.¹² As one defense analyst tallies the budget priorities against these six categories, the FY17 budget contains about \$1 billion in A2/AD spending, as well as half a billion dollars each for guided munitions and undersea warfare. Another \$300 million will be spent on cyber and electronic warfare, about \$200 million on human-machine teaming, and some \$155 million in wargaming and operational concept development.¹³

Two separate DoD entities are spearheading the Third Offset: the Strategic Capabilities Office (SCO) and the Defense Advanced Research Projects Agency (DARPA).¹⁴ The former focuses on reevaluating existing programs and improving their capabilities at *relatively* low cost, while the latter focuses on developing next-generation technologies.

The Third Offset, however, is not solely about maintaining a qualitative technological edge. It also is about maintaining a sufficient quantity of forces. The DoD decision to allocate nearly \$500 million to increase the U.S. stockpile of precision munitions, refine the Standard Missile (SM-6) anti-air missile and Tomahawk antiship cruise missile, more than triple the payload of *Virginia*-class submarines, and develop swarming concepts for aerial and underwater drones reveal a commitment to quantity. As Shawn Brimley notes, "a key component of the Third Offset Strategy is finding ways for U.S. forces to generate more mass or quantity. The focus on the quantitative side of the warfighting equation in these investments portends a very different approach to the status quo in U.S. warfighting strategy and doctrine."¹⁵

Because much of the Third Offset investment strategy remains hidden from the public purview, it also is

important to estimate the level of classified spending on Third Offset technologies. An estimated \$6 billion of the \$18 billion of the Third Offset Strategy budget is marked for classified military capabilities.¹⁶ Much of this black program most likely will focus on developing counter-measures to ubiquitous precision-guided munitions. New technologies like the railgun and directed-energy weapons are likely part of this private DoD Third Offset investment. Technological breakthroughs in one or more areas may be coming to fruition, but it is important to realize that even the proverbial “game changer” could be a more modest augmentation to existing systems.

These high-end investments are more likely to focus on China and Russia than North Korea. But the application of technology may be equally relevant, especially since Pyongyang is investing in many of the same A2/AD programs that characterize the arsenals of major powers. Putting aside North Korea’s impressive attempts at acquiring a full complement of missiles, including nuclear-armed land- and sea-based intercontinental ballistic missiles, Pyongyang is simultaneously fielding less heralded A2/AD PGMs. For instance, North Korea recently fielded an indigenous 300mm multiple-launch rocket launcher. North Korea also recently tested the antiship version of KN-02 Toksa, extended the range of the antiship KN-01 Silkworm missile, and displayed the KN-09 antiship cruise missile. If nuclear weapons comprise a strategic and psychological A2/AD check on possible U.S. intervention, North Korea’s PGM advancement can be seen as constituting even more operationally kinetic and mental A2/AD measures.¹⁷

North Korea’s Security Challenge

Understanding the North Korean military threat begins with an estimate of leadership goals. The authors assess that the principal objective of the Kim family is not regime survival, but preserving the possibility of Korean unification on Pyongyang’s terms. This desired end-state has been the policy cornerstone under all three Kim dictators who have led the DPRK. In the eyes of the Kim family, the principal obstacle to unification is the United States. Hence, a prerequisite for improving the chances of unification is the withdrawal of U.S. troops from the Korean Peninsula, whether by way of peace treaty, an information campaign to weaken U.S. political will to maintain forward-based forces, or diplomatic maneuvers to drive a wedge between the United States and the ROK.

North Korea faces its own military requirement for an offset strategy, some asymmetric means of compensating for U.S.-ROK nuclear and qualitative conventional superiority. Indeed, this has been the case since the cessation

of major hostilities with the 1953 Armistice. Pyongyang’s early efforts focused on psychological offset measures that targeted the U.S. public’s will to remain engaged on the peninsula. Kim Il-sung aimed to achieve a political offset strategy in 1962, when he laid out his “Four Military Policies” – arm the entire population, fortify the entire country, elevate the entire army to represent the main political elite within North Korea, and modernize the entire military. The bottom line of this offset strategy was to deter U.S. intervention by demonstrating there was far more to lose than to gain in risking an all-out war with North Korea.

In order to offset U.S. influence through physical force, North Korea also has been developing a series of its own advanced-technology programs that collectively constitute Pyongyang’s latest offset strategy. This idea is expounded further in Chapter 3 written by retired ROK Army Lieutenant General In-bum Chun. After witnessing U.S. operations over the decades, North Korea has drawn at least two conclusions: one, that no country can compete with a *fully committed* United States; but, two, the absence of nuclear weapons and missiles in countries such as Iraq and Libya created a permissive environment for U.S. military intervention. The size of the U.S. economy is too vast, American public opinion is too easily rallied around a cause, and U.S. airpower is too strong for any opponent. Thus, argues LTG Chun, it was quite a logical decision for North Korea to develop a chemical, biological, radiological, and nuclear (CBRN) deterrent to offset U.S. superiority.

The size of the U.S. economy is too vast, American public opinion is too easily rallied around a cause, and U.S. airpower is too strong for any opponent. Thus, argues LTG Chun, it was quite a logical decision for North Korea to develop a chemical, biological, radiological, and nuclear deterrent to offset U.S. superiority.

In response to these high-tech North Korean threats, the ROK government is responding with its own “Creative National Defense (CND)” strategy. Creative National Defense is quite similar to the basic concepts underlying the Third Offset Strategy, and it is defined as “a new paradigm for defense development by innovative defense values to fuse all defense activities with creativity, science and technology.”¹⁸

U.S. Extended Deterrence on the Korean Peninsula

Some experts believe that U.S. extended deterrence has eroded, and despite countervailing deployments and measures, continues to erode. Even without drawing such a stark conclusion, however, it is worth analyzing this problem. There are at least four different ways that America's extended deterrence – its conventional and nuclear umbrella meant to deter aggression against the ROK – might lose its saliency.

First, U.S. extended deterrence could be undermined as a result of China's successful military modernization, specifically Beijing's investments in counter-intervention capabilities with A2/AD qualities. Combined with China's growing political and economic clout over its neighbors, including on the peninsula, a rapidly modernizing People's Liberation Army force could pose such a local threat, future U.S. leaders might avoid any action that could escalate into a major regional, and possibly nuclear, war.

Second, extended deterrence could be fatally weakened on the peninsula by further advancements in North Korea's nuclear arsenal. The most obvious tipping point is the deployment of a nuclear-armed IRBM or ICBM. This is a near-term challenge and one that North Korea has sought to accelerate in 2016 with nuclear and missile tests. Although five failed *Musudan* missile launches may have frustrated Pyongyang's attempts to deploy a credible system, a sixth such test in June has been judged at least a partial success.¹⁹ On its current trajectory, North Korea's success seems just a matter of time.

Third, rather than a single nuclear threat tipping the balance of American political will, a diverse array of asymmetric challenges could convince U.S. leaders to avoid a military intervention against North Korea. In addition to nuclear missiles, a combination of cyber attacks, unconventional warfare, and powerful conventional munitions that could strike Seoul would undermine America's protective umbrella over the ROK.

Fourth and finally, U.S. extended deterrence could be crippled on the peninsula by events external to Northeast Asia. For instance, a major internal crisis or major conflict in Europe or the Middle East might create such a diversion of U.S. attention and resources that North Korea could well conclude that America's security guarantees to Seoul constitute a paper tiger. This is the danger that Secretary Hagel warned of when he rolled out the concept of a Third Offset Strategy.

Because extended deterrence requires a precise understanding of an adversary's calculations, it is difficult to

know when, how, or why North Korea might cease to find American credibility lacking. The task of reassuring allies, however, is an even more difficult one than that of deterrence. British Defence Minister Dennis Healey famously said, "It only takes 5 percent credibility of American retaliation to deter an attack [from the Soviet Union], but it takes a 95 percent credibility to reassure the allies."²⁰ This adage reminds us that even without successfully eroding America's extended deterrence, North Korea's offset strategies along with other external factors could expose cracks in the viability of the U.S. defense commitment.

Regional Security Challenges

This chapter has focused on the so-called U.S. Third Offset Strategy, both in its strategic and technological sense, and has broached the topic of its impact on North Korea's strategy and on U.S. extended deterrence. The discussion now shifts to the ROK and regional security, with the aim to consider realistic ways for South Korea to mind its highest security priority while increasingly contributing to regional security. Moreover, the authors hope to highlight ways that the Third Offset might contribute to this difficult twin set of objectives.

South Korea is a major actor in Northeast Asia and global affairs, but its role in the greater Asia-Pacific region remains relatively modest. This might be considered South Korea's middle-power paradox.

Seoul's geopolitical clout in Southeast Asia is rarely and barely exercised or at least noted. This limited profile compares sharply with South Korea's activity on and around the Korean Peninsula. President Lee Myung-bak solidified "Global Korea," a campaign to promote South Korea's international image, while President Park Geun-hye focused more on the peninsula and Northeast Asia. Regardless of which leader is in power, however, Korea's sub-regional and global footprint seems larger than its regional one. From Park Geun-hye's approach to inter-Korean relations known as *Trustpolitik* and the Northeast Asia Peace and Cooperation Initiative, to closing the Kaesong Industrial Complex or deciding to deploy a Terminal High Altitude Area Defense (THAAD) system, South Korea seeks to craft policy to influence Northeast Asia. Globally, from antipiracy patrols in the Gulf of Aden, peacekeeping, and stabilization operations, to trade in electronics and other high-technology products and combating global climate change, pandemics, and proliferation, Korea's global role clearly has risen in recent years.

Given the constant yet dynamic challenges posed by North Korea, South Korea's fixation on Northeast Asia and the peninsula is easily understood. At the same time, Seoul can hardly ignore its vast and reemerging continental power, China. To the east, South Korean-Japanese relations are riven with historical tensions that reinforce Seoul's more circumscribed view of the Asia-Pacific region.

South Korea is so firmly ensconced in Northeast Asia that when the United States launched its pivot to Asia in 2011, conventional wisdom held that it had little to do with South Korea. The ROK-U.S. alliance remained focused on the peninsula like a laser beam, and South Korea's status as a member of the Group of 20 (G-20) nations remained a bridge to the world more than to the rest of Asia. South Korea was still heavily dependent on the United States for its immediate security, but

South Korea is so firmly ensconced in Northeast Asia that when the United States launched its pivot to Asia in 2011, conventional wisdom held that it had little to do with South Korea.

it was increasingly reliant on China for its economic prosperity. Maintaining a balance between these two caused South Korea to constrain its appetite to avoid jeopardizing relations with either major power. Surely seeking security entanglements with Japan or with South China Sea claimant states in Southeast Asia would only catalyze Beijing to pressure Seoul for ganging up against China. However, South Korea could play a larger role in the wider region, particularly if it is able to balance its national interest in good relations with China without sacrificing its core defense interests. In order to stymie the U.S.-ROK alliance, China's propaganda only has to sow sufficient doubt in the minds of decisionmakers to give them pause.

Managing a rising China, coping with increasing maritime tensions, dealing with potentially resurgent friction over Taiwan, all might seem peripheral security challenges to decisionmakers in Seoul who must concentrate on Pyongyang's nuclear and missile threats. But South Korea has much to lose if it does not take a greater role in finding satisfactory ways to address these other regional flashpoints. A capable and prosperous South Korea has much more to contribute throughout the Asia-Pacific region, and not just to Northeast Asia or global issues.²¹

Importance of U.S.-ROK Alliance for Anchoring U.S. Presence in Asia

Although the U.S. rebalance to Asia may have been perceived as largely separate from maintaining security on the Korean Peninsula, the U.S.-ROK alliance is central to regional security. The U.S.-ROK alliance has long served as an anchor for U.S. presence throughout the Asia-Pacific region. There are several reasons that explain why the alliance architecture is both necessary and efficient for maintaining America's regional security presence.

The first and most obvious reason why South Korea helps anchor America's regional security role is found in its military bases. South Korea is the only place on the Asian continent with a U.S. military foothold. The military presence on the peninsula makes South Korea an essential geopolitical "beachhead" for the United States in the Asia-Pacific region.

Second, the U.S.-ROK alliance provides physical territory from which to manage the North Korea problem. Conflict with Pyongyang is a functional issue – especially with regard to nuclear proliferation – that cannot be pinned down solely to the chessboard of geopolitics. There are, after all, alliance plans to seize nuclear weapons and facilities in the case that the North Korean regime collapses. The U.S.-ROK alliance also can help to convert functional solutions into regional presence, as can be seen from the THAAD deployment decision.²² The main purpose of the alliance is to deter North Korea, but "the U.S.-South Korea alliance is a vital tool for both Seoul and Washington to shape Asia's developing regional order and their respective roles within it."²³

Third, the historical value of the alliance cannot be overlooked. Forged in battle, the U.S.-ROK alliance fosters habits of cooperation designed to promote the interests of both nations. Over the decades the two allies have developed increasingly convergent interests, in particular a mutual commitment to democracy, the rule of law, and human rights. This history, convergence, and longevity point to the strength of the alliance and the legitimacy of U.S. presence within the Asia-Pacific.

Fourth, both South Korea and the United States share increasing interests in the maritime domain. Conflict in any of the Korean Peninsula sea lines of communication (SLOCs), let alone the nation's maritime territory, is detrimental to the ROK's national interest. If China

truly seeks hegemony over its near seas, it will come at the costs of Korean national interests. Therefore, South Korea has recently strengthened its advocacy for accessing the maritime commons.²⁴

Finally, the U.S.-ROK alliance does not offset other bilateral ties. For example, the U.S.-ROK alliance can thrive regardless of the U.S.-Japan alliance and vice versa, because both bilateral security frameworks target similar threats, namely North Korea and, potentially, China. This puts the United States in a unique position where it can worry less about triangulating its alliance efforts between Japan and South Korea as it did between Iran and Saudi Arabia in the Middle East.²⁵ The United States can and should focus on furthering both alliance structures; trilateral cooperation is essential to the security of all three nations, although formal cooperation will continue to be slowed down by domestic political opinion in South Korea and Japan.²⁶ Kim Jung-un's nuclear and missile programs are the best accelerators of U.S.-Japan-ROK cooperation; an overly assertive United States most likely would tense up such a natural process.

South Korea's "Blue Water Fleet" and Jeju Naval Base

Before discussing China and maritime tensions in the East and South China Seas, let us begin by noting South Korea's growing naval capabilities. Although dwarfed by its strong neighbors, the ROK has raised a dependable navy that ranks eighth in the world. It has a total of 177 ships in action, including 12 destroyers, a large-deck amphibious vessel, 12 submarines, and 65,000 sailors.²⁷ Considering the overwhelming size and number of its neighbors' fleets, the most feasible naval structure for South Korea would be a fleet in being that can maintain maritime superiority at its littorals, while avoiding decisive naval battle in the oceans.²⁸

The discourse on South Korea's pursuit of a blue-water navy has been ongoing since the 1990s, as Seoul transformed into an export economy that made the nation reliant on its SLOCs. At the same time, traditional advocacy for a peninsula-focused littoral navy dwindled as the ROK's national strength overtook that of the North.

The March 2010 sinking of the ROKS *Cheonan*, which was perceived by some naval critics as an attack in brown waters (shoreline to continental shelf), seemed to turn the tables.²⁹ The incident reminded South Korea of its ever-present threat, and the desire to build an ambitious oceanic navy suffered a serious setback. Confidence gradually was restored, however, in part through actions such as the ROK Navy (ROKN) Underwater Demolition

and SEAL teams' successful antipiracy operation in the waters off of Somalia.³⁰ The blue-water fleet momentum has revived within South Korea.

In February 2016, the ROKN opened a naval base at Jeju Island, located at its southernmost sea. The facility hosts the recently commissioned ROKN 7th Task Flotilla, which is the first ROK flotilla designed to sail for expeditionary purposes. Through the opening ceremony, South Korean leaders have underscored the importance of safeguarding Korea's vital SLOCs around the globe.³¹ Despite some criticism from leftist political opposition, who argue that opening a naval base likely will result in further militarization and, therefore, instability in the region, most Koreans appear to accept the fact that South Korea has grown to a point where it requires an open-ocean navy.³² Increased interest in the deep waters is leading South Korea to rethink its current and future naval strategy.

However, the ROK faces local, regional, and global maritime challenges. First, it has to maintain superiority over North Korea in its littorals. Second, it has to be able to deny neighboring powers in its close seas, which involves the danger of territorial disputes. Finally, it has to protect SLOCs throughout the world's oceans.³³ In any case, it is clear that South Korea should maintain a fleet that is both sufficient in size and capability to deny naval conflicts within its perimeter and maneuverable enough to project to distant sea lanes if necessary.³⁴

The question, however, remains how South Korea's improving naval capabilities will or could be used to safeguard Asian waters, including both the East and South China Seas. This question, in turn, depends on the role South Korea might play vis-à-vis China. Particularly important is the question of U.S. expectations of its ally in maritime Asia.

Expectations and Mechanisms Regarding China

The national interest of all major states in Asia continues to be in the maintenance of a regional order in which all can prosper and live in peace, making a degree of cooperation and transparency important. For instance, managing North Korea requires clear channels of communication with China, especially in a crisis.

But the expectation of the United States is that South Korea, like all nations, should be allowed the right of self-defense. Seoul should not have to sacrifice that sovereign right because of coercive tactics by a larger power. Beyond this, the United States looks increasingly to middle powers like South Korea to help underwrite the regional and global order. In the Asia-Pacific region, this

increasingly requires South Korea to venture forth into the ongoing tensions over rules, norms, and order at sea.

While only North Korea appears to pose a real threat of interstate war, lower-level coercive diplomacy can sap trust and trigger an arms race and skirmishes that easily could escalate. Missile defenses are a logical augmentation for South Korea. Yet, if China is allowed a veto on the deployment of the THAAD missile-defense battery in South Korea, then not only is South Korea more vulnerable but it also sets a dangerous precedent. What military upgrade by any neighbor does China not veto? In other words, deference to Beijing that becomes de facto practice Finlandizes the region. The concept of sovereign national defense does not hold. Hence, the U.S. welcomes the decision by President Park to support the deployment of a THAAD missile battery in Seongju County, more than 130 miles southeast of Seoul.³⁵ That deployment could take up to two years to be completed, however, which could leave its completion to President Park's successor.

Between the extremes of a capable South Korean naval role in an anti-China coalition and doing nothing, there is ample room for Seoul to press forward on its interests with respect to growing tensions in maritime Asia. The United States has an interest not only in harnessing the ROK capabilities as a counterweight to possible aggression, but it also shares a direct interest with Seoul in not allowing the U.S.-ROK alliance from becoming too detached from other real security challenges in the Asia-Pacific.

Ideally, South Korea contributes to maritime strategy, joining international patrols and exercises in maritime Asia wherever international law permits (including the South China Sea), and expanding the network of intra-Asian security ties, including with Japan but also throughout Southeast Asia. These steps would build on its already existing network of bilateral ties within the region through a multilayered approach of bilateral agreements, summits, defense sales, and combined operations to allow South Korea to grow its footprint throughout Asia without undermining its crucial interests. Over the past 10 years, the ROK signed a total of 39 bilateral security agreements, 14 with Asia-Pacific countries.³⁶

Potential Benefits of the Third Offset Strategy

The most important way the Third Offset can help preserve extended deterrence on the peninsula is analogous to how it is intended to help preserve U.S. power projection capability despite proliferating precision-strike capabilities with A2/AD effects. At a minimum, Third Offset technologies and concepts might avoid the current trend of a growing North Korean nuclear and missile program – a trend that threatens to erode the credibility of America's nuclear umbrella and defense commitment. More ambitiously, the Third Offset Strategy could catalyze the search for a new U.S.-ROK alliance strategy to regain the initiative rather than watch its security increasingly threatened by North Korea's mounting nuclear and missile programs.

While the Third Offset offers the promise of preserving extended deterrence and bolstering alliance strategy vis-à-vis North Korea, its potential downsides related to the Korean Peninsula must be considered. Among those potential risks are the possibility of: increasing the chances that a crisis could lead to conflict that rapidly escalates to nuclear war; driving up defense costs that only further call into question domestic political support for sustaining forward-based alliances; and widening the gap in technological capability between U.S. and ROK forces.

In the case of the first issue, Third Offset technologies could convince Pyongyang that it needs to adopt a "use-it-or-lose-it" launch policy, lest an increasingly capable alliance preempts North Korea's finite arsenal. The second issue concentrates on the likelihood that leading-edge technologies will continue to incur costs, straining limited defense budgets at a time when aging populations and entitlements might further constrain resources. The indirect consequence that could result is the tide of U.S. domestic opinion supporting retrenchment at the expense of military presence abroad. Finally, even if the United States succeeds in fielding systems to strengthen its capabilities, the practical political fallout from attempting to share ultra-sensitive technologies with any ally could end up being counterproductive. The well-established difficulty in the U.S. transfer of advanced technology is apt to breed further resentment within South Korea, but probably not before a debilitating political debate within the United States over protecting its industrial secrets. While these real issues need to be addressed within the alliance, they are not insurmountable obstacles. Integrating Third Offset

technologies into comprehensive strategies will be essential, however, if these obstacles are to be overcome. Moreover, to keep costs down and minimize a technology gap in the alliance going forward, bilateral security mechanisms must be fully joined to reduce the risk of selective decoupling that inadvertently contributes to a two-tier alliance with respect to cost or technology. On balance, we think Third Offset offers greater potential benefits for sealing away North Korea's nuclear momentum and reinforcing deterrence.

The Third Offset is no panacea for ROK regional and alliance clout. Even so, the strategy can help the ROK and U.S.-ROK alliance with multiple peninsular and regional challenges.

It is understandable why the ROK does not, or more accurately, cannot dive into a new ocean of regional goals. This takes the discourse back to the North Korea problem. The ROK is a nation that is constantly threatened by a proximate and predictably unpredictable nuclear-armed adversary. It also is a nation that has seen almost every line of policy, hard and soft alike, stumble in solving the problem. Accordingly, the ROK can hardly be blamed for giving greater weight to its intra-peninsular security. The regional security burden-sharing load that the ROK is willing to carry, therefore, will vary according to the complexities of domestic and peninsular variables.

The Third Offset is no panacea for ROK regional and alliance clout.

However, in mapping out a regional outreach plan, it is reasonable to expect the ROK to begin on the periphery of the peninsula, starting in the Yellow and East China Seas, and then subsequently extending from there. But there are ways that the Third Offset could help the ROK contribute more to regional security, without neglecting its overriding priority of dealing with North Korea.

First, the Third Offset strategy can alleviate the ROK's intra-peninsular security concerns, making room for South Korea to turn more of its attention to regional issues. With a force of 600,000 men and women that mostly serve under mandatory conscription, ROK forces have developed a tendency toward personnel-centric operations. About 100,000 soldiers are thinly dispersed along the 248 kilometers-long Demilitarized Zone (DMZ) and fewer than 10,000 marines patrol the 255 kilometers-long western shorelines of Ganghwa Island along the border. Introducing machine-based reconnaissance systems at

the front lines could cut costs, free up personnel, and improve reliability.

Among the specific Third Offset capabilities mentioned by U.S. Deputy Secretary of Defense Robert Work, countermeasures against electronic and cyber warfare hold promise for Seoul, which is increasingly concerned about a spate of recent GPS jamming and hacking attempts made by the North. In addition, undersea warfare systems – including unmanned underwater vehicles (capable of automated hunter-killer operations) – could take significant burdens off the shoulders of ROK naval forces. This initiative is apt considering that North Korea's naval threat comes mostly from underwater.

Second, the Third Offset can boost the ROK regional security role in the area of missile defense. The Third Offset focuses in large measure on countering PGMs. Technologies that contribute to that mission also can help the ROK to participate in an increasing effective regional network of missile-defense systems. While South Korean defenses can manage North Korea's conventional threats, Seoul will continue to want international support to address Pyongyang's nuclear threat. Only by working with the United States and Japan can the ROK best neutralize North Korea's nuclear weapons.

By adopting, implementing, and practicing next-generation missile-defense systems associated with the Third Offset, the ROK could provide itself a more capable missile defense that in turn would be greatly strengthened by integrating within a network of similar systems in the region. In particular, the ROK and the United States can make potentially game-changing improvements to missile defense in the relative near term by fully exploiting current technological capabilities to complicate North Korean planning and demonstrating the capability to fight limited war and shoot down mass missile salvos. Two specific systems appear ready to enhance alliance deterrence and defense. The first is moving forward with wider deployment of the advanced Standard Missile-6 (SM-6), which can be used both for missile defense and conventional strike. The second is to conduct an early exercise in the next administration to demonstrate the capability of new hypervelocity powder-gun technology. Showing that existing U.S. and ROK artillery and weapons can be modified today to fire smart, hypervelocity weapons provides a quick way of demonstrating to Pyongyang that a mass missile strike could be countered through advanced conventional means.

Korea, most Southeast Asian countries lack the resources to afford or effectively deploy Third Offset



South Korean artillery like these, if modified to fire hypervelocity projectiles, could counter mass missile strikes using advanced but conventional means. (Republic of Korea Armed Forces/Flickr)

technology. As a leading country in both the import and export of defense products, the ROK could employ its domestic industries to narrow the gap between the United States and ASEAN states.

In operational terms, the U.S.-ROK alliance can test and develop doctrinal developments that follow the Third Offset. The experience derived from the long-standing U.S.-ROK Combined Forces Command would be invaluable as a template to train selected Southeast Asian countries. For instance, the U.S.-ROK combined marine exercises and training programs are strong and relevant models for archipelagic Southeast Asia.

Fourth, the Third Offset may impose economic and political burdens on North Korea. Notwithstanding the aforementioned potentials of the Third Offset Strategy on Korea, perhaps the most crucial application of the strategy is discussion of the strategy itself.

Open discussions on the new strategy will elicit attention from North Korea and enforce the already impoverished nation to push itself harder to devise countermeasures. Excessive technological and fiscal burdens may put North Korea into a position that is analogous to the Soviets' reaction to the Strategic Defense

Initiative. Not to our surprise, North Korea already has shown its willingness to rival the Third Offset Strategy, according to a Korea Central News Agency report released in response to a recent panel discussion on this very essay:

Former officials and experts on East Asian affairs of the U.S. at a recent seminar held at Georgetown University reportedly asserted that “Third Offset strategy” should be applied to the Korean peninsula as muscle-flexing like joint military drills and introduction of strategic bombers can not thwart the “nuclear and missile threat” coming from the DPRK . . . The DPRK is fully capable of making any strategy of the U.S. go belly-up determinedly, to say nothing of the “Third Offset strategy.”³⁷

This may look merely like another rhetorical trick, but there are more consequences that the very existence of the Third Offset may engender. Given the North Korean leadership's infarcted decisionmaking structure, Kim Jong-un probably will rely on a handful of advisors in case of contingencies. If a seasoned military official – Oh Geuk-ryul, for instance – sees the real capabilities of

the Third Offset Strategy as a huge security challenge to the Korean People's Army (KPA) when Kim does not perceive the challenge and orders provocative operations, the advisor will face a true dilemma. Imagine that Kim orders the Chief of Naval Operations to make a second *Cheonan* sinking incident, but his military advisors know that the ROK recently has started to deploy hunter-killer autonomous underwater vehicles that deny submarine operations. The military advisor could either launch the operation, knowing that it will fail, or refuse to execute the order, which will surely lead to his own execution. If a critical mass of advisors all share this dilemma, they might in fact come up with a third option – collective insubordination. There is a chance the Third Offset could drive a wedge within the North Korean military-state apparatus.

Finally, the Third Offset may lead to alliance investments that alter North Korea's willingness or ability to engage in some types of attack. For instance, consider the idea of strategic paralysis. Eliminating the willingness

of an adversary to pull the trigger may be easier than demolishing or disassembling the weapon. Attacking central command -and-control nodes could hamper North Korea's ability to launch an attack, including by nuclear-tipped missiles. Third Offset investments might yield new ways to target the opponent's political center to preempt an eminent nuclear launch. Hypervelocity smart projectiles such as those mentioned above, as well as other innovations in non-nuclear technologies, also may lead to a change in the security calculus.³⁸ Of course, all of these advanced technologies also could heighten the risk of escalation, and there is no technology to escape the potentially cataclysmic decisions that leaders will have to make in the future.

These are but a few implications. Although we concede much more thought is needed to explore the implication of the Third Offset for South Korea and the U.S.-ROK alliance, we believe this chapter has initiated what should be a sustained and serious alliance dialogue for the future.

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CHAPTER 2

South Korea's Military-Innovation Trajectories

DR. MICHAEL RASKA

Since the early 1990s, South Korea has been undergoing a comprehensive military modernization drive. The aim has been to respond to the widening spectrum of North Korean threats, mitigate technological and interoperability gaps with U.S. forces, and attain a self-reliant defense posture. In the process, South Korea's defense planners have been searching for a new strategic paradigm and operational concepts that would allow greater flexibility, adaptability, and autonomy under uncertain conditions. Ambitious goals and high costs, however, have propelled perennial policy debates on the feasibility, affordability, pace, direction, character, and implementation of the South Korean military transformation.

South Korea's search for a new paradigm and essential defense reforms thus far have come up short. Policy debates in Seoul have reflected five enduring challenges for defense planning: (1) how to balance South Korea's current operational requirements vis-à-vis North Korea and future-oriented regional threats; (2) how to ensure and sustain budgetary support for implementing defense reforms; (3) how to streamline the Republic of Korea (ROK) force structure without reducing its operational readiness and capability; (4) when to transfer current wartime operational control (OPCON) from U.S. forces to South Korea without diminishing deterrence; and ultimately, (5) how to shape the future strategic template of the U.S.-ROK alliance. Yet South Korea's defense reforms have not significantly changed the mindset or organizational force structure of the ROK military. This is notwithstanding efforts to resolve existing technological and operational gaps with U.S. forces, particularly in areas of air power and C4ISR (command, control, communications, computers, intelligence, surveillance, and reconnaissance), as well as joint interoperability among the three separate ROK services. In other words, ROK forces have not been able to align their military-technological innovation or "hardware" with the required "software" components – the relevant organizational, conceptual, and operational innovation to utilize advanced technologies in new ways.

Military innovation in South Korea has been constrained by three sets of interrelated variables. First, South Korea's operational adaptability has been constrained, as reflected in contrasting calibrations of defense requirements, structural dependencies on the alliance, and a static defensive force posture dominated by the ROK Army. Second, Seoul has been hamstrung by short-term thinking with regard

to defense management. Third, South Korea has been hampered by a hierarchical strategic culture of interservice rivalry. Unless, the ROK military overcomes these barriers to military innovation, it will be challenging for the U.S.-ROK alliance to maximize the potential benefits from the next generation of advanced military technologies coupled with conceptual innovation presently evolving in the context of the U.S. Third Offset Strategy.

This chapter provides a brief overview of South Korea's military-innovation paths and patterns. First, the chapter outlines the baseline assumptions underlying South Korea's traditional security paradigm, its conditioning factors, and sources of change. The second part of the chapter contextualizes South Korea's military-innovation paths into three major phases: Conceptual Emulation of the 1990s, Technological Experimentation of the 2000s, and Military-Technological Adaptation of the 2010s onward. In this context, the chapter argues that South Korea's military innovation has reflected an evolutionary or "*modernization plus*" pattern.¹ Seoul's gradualist approach to innovation has been manifest in defense acquisition, doctrine, organization, personnel, and training.² Finally, the chapter concludes with select policy recommendations to enhance South Korea's capacity for military-technological innovation, while pursuing a combined U.S.-ROK Third Offset Strategy.

South Korea's Security Paradigm: Continuity and Change

South Korea's military innovation should be examined in the context of its security paradigm. For nearly seven decades, the country's security has been characterized by an unstable peace.³ The divided Korean Peninsula has been at the vortex of persistent security dilemmas brought by the confluence of geostrategic competition, unresolved historical legacies, powerful national sentiments, alliance politics, and superpower rivalries.⁴ Notwithstanding South Korea's economic transformation to the 11th in the world by nominal GDP and 13th by purchasing power parity (PPP) as of 2016, one could argue that the absence of a permanent peace treaty, robust military deployments on both sides of the Demilitarized Zone (DMZ) that separates both North and South Korea, and continued regional and superpower involvement, security on the Korean Peninsula remains an elusive concept bound by a number of uncertainties and risks.

The peninsula's deeply embedded security predicament continues nearly three decades after the end of the



The Republic of Korea has always had to prepare for chemical, bacteriological, and radiological threats from the DPRK. (Korea Armed Forces/Flickr)

Cold War. Accordingly, South Korea's security paradigm has traditionally aimed on sustaining the status quo: maintaining deterrence and a strong defense posture in order to prevent another major outbreak of war.⁵ The three mutually reinforcing strategic pillars of defensive deterrence, the alliance and forward and active defense, have defined South Korea's national security conceptions, force structure, and operational conduct.⁶

Since the mid-1990s, however, South Korea's security dilemmas have become more complex with the convergence of five major strategic trends: (1) the expansion of the North Korean threat spectrum; (2) shifts in U.S. strategies and the regional military posture; (3) the rise of China; (4) changes in South Korea's sociopolitical fabric based on improved economic conditions; and (5) subsequent changes in the political and security dynamics of the U.S.-ROK alliance.⁷ Notwithstanding the prevailing conventional threats, such as contingencies linked to low- to high-intensity conventional wars, South Korea has faced a diverse range of asymmetric and nonlinear security challenges.

On one end of the threat spectrum is North Korea's continuously advancing ballistic missile program coupled with its nuclear, chemical, and biological weapon development. Since Kim Jong-il's death in

2011, North Korea has recalibrated its strategy toward weapons of mass destruction (WMD) development and more tests intended for deterrence, international prestige, and coercive diplomacy.⁸ North Korea's evolving nuclear weapons capability, demonstrated by four underground tests in 2006, 2009, 2013, and 2016, coupled with an increasingly diverse inventory of ballistic missiles, has helped compensate for North Korea's internal economic, technological, and military deficiencies.

On the other end of the threat spectrum, however, is North Korea's specter of a failed state. North Korea suffers from an internal structural erosion and prolonged international diplomatic isolation, which have broadened the risks of potential instability and volatility – i.e., scenarios ranging from North Korean implosion, collapse, and attendant external involvement in Korean unification modalities.

Furthermore, South Korea's changing security paradigm also has been influenced by regional security developments, military modernization drives, and sharper power-projection capabilities of neighboring China, Russia, and Japan. In particular, China's growing strategic imprint – whether direct or indirect – has been tightly linked to the security and stability of the Korean Peninsula, providing both opportunities and new challenges for South Korea.

China's geopolitical and economic rise has given its diplomacy more leverage in managing tensions on the Korean Peninsula. Since 2003, Beijing has been more active in mitigating crises by providing a critical economic lifeline, via energy and food aid, to North Korea, while attempting to constrain Pyongyang's nuclear ambitions. From Beijing's perspective, China's three strategic objectives toward North Korea have not changed in terms of achieving (1) stability (no implosion, no regime change, and no war); (2) peace (diplomatic normalization between the United States and North Korea); and (3) denuclearization/nonproliferation of WMD on the Korean Peninsula.⁹ Notwithstanding signs of increasing strains in Sino-North Korean relations following North Korea's third nuclear test on February 12, 2013, China's strategic interests place a priority on preventing a North Korean implosion. Such collapse arguably would undermine China's regional geostrategic position by removing a strategic buffer zone vis-à-vis the United States, and increase PLA's military requirements in northeast China. Beijing cannot afford to cease its support, trade, and aid to North Korea and therefore has prevented North Korea's implosion, while simultaneously exerting pressure on Pyongyang to pursue denuclearization.

At the same time, however, China has been quietly preparing for select contingencies in North Korea, including the possibility of its collapse. Specifically, the People's Liberation Army (PLA) is reported to have been conducting military training exercises for three types of missions in North Korea: "humanitarian missions" – assisting refugees by providing emergency food, medical, and energy supplies; peacekeeping or "order keeping" missions – internal control missions such as serving as civil police to strengthen controls in and around vital border crossings with North Korea; and "environmental control missions" to minimize nuclear contamination from a potential strike on North Korean nuclear facilities, or securing nuclear weapons and fissile materials.¹⁰

China's policy toward the peninsula also has been increasingly conditioned by its perceptions and responses to the U.S. strategic rebalancing to the Asia-Pacific. China has viewed U.S. rebalancing efforts as a comprehensive strategy by Washington to curtail China's rise and influence in the region.¹¹ Beijing has periodically criticized U.S. military deployments and exercises in East Asia, along with increasing military cooperation with Japan and South Korea. From Seoul's perspective, the attendant consequences of China's rise and its military

power-projection capabilities have led to uncertainties and security dilemmas surrounding its long-term political transition and, by extension, East Asia's future.

On one hand, China is seeking great-power status by reasserting its geopolitical role and influence in the region by taking advantage of its newly acquired capabilities. At the same time, China faces internal political, socioeconomic, and environmental challenges that permeate into external foreign policy insecurities about its sovereignty, territorial integrity, and extended "core" national interests.¹² Consequently, traditional U.S. allies and partners in the region such as South Korea face two fundamentally opposing strategic choices: strengthening and maintaining security ties with the United States, while deepening economic linkages with China.¹³

China is increasing regional power projection into the Yellow Sea, East China Sea, and South China Sea, defined by the "First Island Chain" (the Kuril Islands, Japan, Taiwan, and the South China Sea). These moves are widely interpreted as an attempt to deny U.S. freedom of action by restricting deployments of U.S. forces into theater (anti-access), while also denying the freedom of movement of U.S. forces already there (area denial).¹⁴ In the long term, China envisions its strategic control over its periphery up to the "Second Island Chain" out to Guam. Most states in East Asia share concerns about China's "coercive diplomacy," military capabilities, and future aspirations in the region.

The resulting Sino-U.S. geostrategic competition in the Asia-Pacific arguably is propelling a regional arms competition, characterized by incremental, often near-continuous, improvements of existing capabilities, as well as in a mix of cooperative and competitive pressures, continued purchases of advanced weapon platforms, including the introduction of new types of arms, and, therefore, unprecedented military capabilities.¹⁵ In particular, U.S. allies and partners in the region – Japan, South Korea, and to a lesser degree Taiwan – are increasing their military spending and pursuing hedging strategies to address their expanding security concerns. Their military modernization trajectories point toward acquiring select indigenous power-projection capabilities, including reduced-signature fifth-generation air platforms, standoff precision weapons, ballistic and cruise missiles, early warning, intelligence, and surveillance and reconnaissance assets, as well as naval assets including maritime patrol, anti-submarine warfare, and submarines.

South Korea’s Military Innovation Trajectories

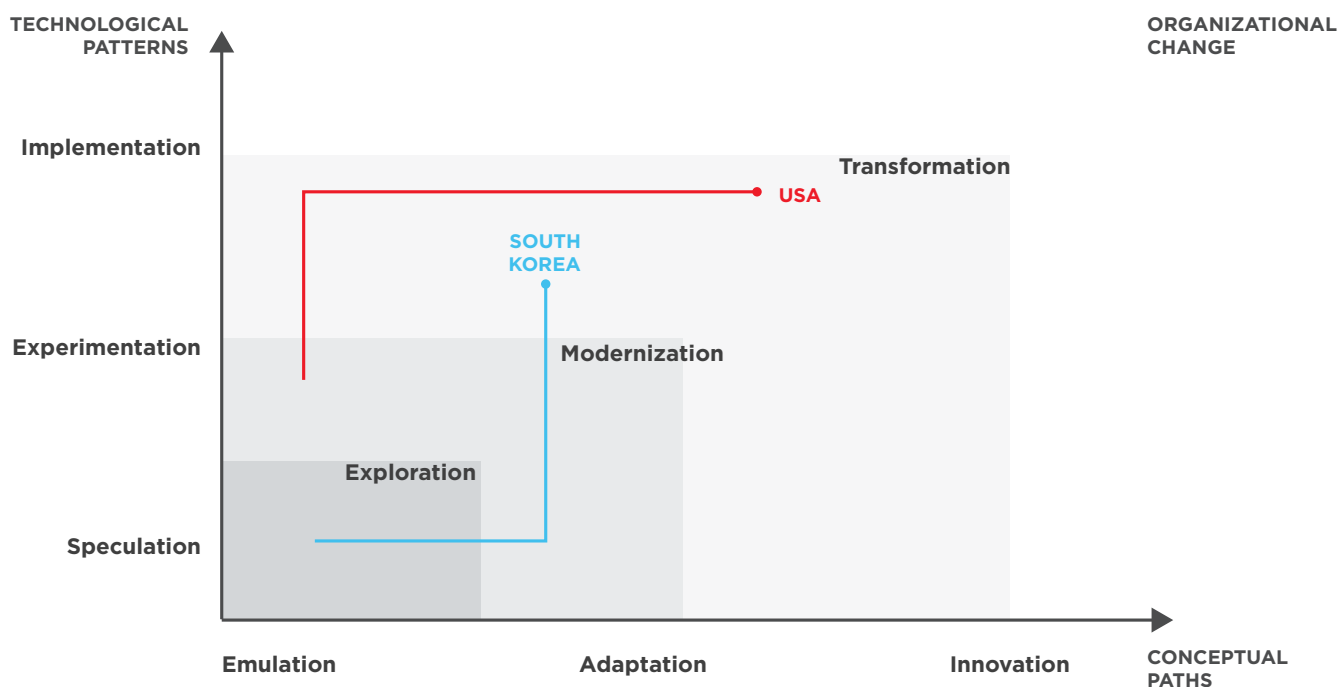
Assessing advances and challenges in the ROK’s military innovation in relation to the U.S. Third Offset Strategy requires an analytical framework that triangulates three key variables of military-innovation dynamics: conceptual paths, technological patterns, and organizational change. The following framework, proposed by the author¹⁶, starts with the assumption that military innovation includes both internal well as external processes of military emulation, adaptation, and innovation – whether in technologies, organizations, or doctrines. Military innovation may not always require simultaneous technological, doctrinal, and organizational breakthroughs, but may span the spectrum between incremental modernization and discontinuous transformation. Hence, the framework attempts to synthesize military innovation through the integration of three sets of variables: (1) *Conceptual Paths* – emulation, adaptation, and innovation; (2) *Technological Patterns* – speculation, experimentation, and implementation; and (3) *Magnitude of Organizational Change* – exploration, modernization, and transformation. Through the confluence

of both the “software” and “hardware” components in each domain, one can project trajectories of military innovation [See Figure 1].

In particular, conceptual paths starting from military emulation refer to importing new ways of war through imitation of other military organizations. Adaptation is defined through adjustments of existing doctrines and methods, in which multiple adaptations over time may lead to innovation. Conceptual innovation then involves developing novel tactics, strategies, and structures. In the words of Theo Farrell and Terry Terriff, “it is only when these new military means and methods result in new organizational goals, strategies, and structures that innovation, adaptation, and emulation lead to major military change.”¹⁷

According to Thomas Mahnken, technological innovation may proceed in three distinct but often overlapping phases: speculation, experimentation, and implementation.¹⁸ By triangulating conceptual paths and technological patterns, it is possible to ascertain the character and magnitude of organizational change: exploration, modernization, and transformation. Exploration includes both speculation and emulation, with initial attempts to develop new areas of technological expertise; military modernization involves

Figure 1. Conceptualizing Military Innovation Trajectories



Source: Michael Raska, *Military Innovation and Small States: Creating a Reverse Asymmetry* (New York: Routledge, 2015), 168.

continuous upgrades of or improvements to existing military capabilities through the acquisition of new imported or indigenously developed weapons systems and supporting assets.¹⁹

Transformation can be then characterized in the context of a “discontinuous” or “disruptive” military innovation that meets both policy and strategy. In the words of Andrew Ross, “disruptive, revolutionary innovation is the result of the confluence of discontinuous technological, doctrinal, and organizational changes; it occurs when discontinuous hardware and architectural changes coalesce and come together in a coherent, integrated whole. Existing capabilities are not optimized but rendered obsolete and displaced. New dominant technologies, doctrines, and organizations are established and integrated as never before. New performance metrics are embraced.”²⁰

Conceptual Paths, Technological Patterns, and Organizational Change

South Korea’s military innovation paths can be visualized in two parallel trajectories. The first trajectory is *external emulation*, which is shaped by the changes and lessons learned in the U.S. military. The second trajectory is *internal adaptation*, which is embedded in South Korea’s efforts to minimize prevailing U.S.-ROK interoperability gaps, respond to widening security challenges, and simultaneously develop more “self-reliant” military capabilities. Historically, U.S. forces have served as an important source for conceptualizing, experimenting, and implementing military innovation in the ROK forces – introducing select conceptual, organizational, and technological innovation intended to enhance the U.S.-ROK capabilities to prepare for, fight, and win wars in and around the Korean Peninsula. In particular, the various services of the U.S. armed forces (Army, Air Force, Navy, and Marines) have perceived the Korean theater of operations as a vital simulation environment for modeling, wargaming, joint experimentation, and battle experiments.²¹ Subsequently, their innovations gradually have permeated and diffused in the context of changes in the combined U.S.-ROK defense planning, training, exercises, and operational conduct, which has propelled the ROK political echelons and military institutions to continuously examine the changes in the character of conflict, the implications of emerging military technologies on the U.S.-ROK joint interoperability, and the concomitant strategic, organizational, and operational requirements for ROK forces.

South Korea’s effort to conceptualize future warfare has its roots in the early 1990s, when the ROK’s Ministry

of Defense (MND), the ROK armed forces, and a small number of Korean/U.S. defense analysts began projecting long-term force-modernization visions based on the evolving strategic priorities and increasing scope of defense requirements. At that time, the emergence of the “Revolution in Military Affairs” (RMA) debate in the United States had a significant impact on South Korea’s perceptions of future warfare; South Korean defense planners studied the evolving U.S. RMA debates and attempted to adapt selected concepts into their long-term defense plans and force-modernization programs.

Parallel to the centralized Korean defense ministry’s RMA-oriented defense reform initiatives, the specific ROK military services also have formulated their long-term strategic blueprints, developing visions of the future battlefield, and conceptualizing doctrines and strategies with a time span up to 2025. For example, in 1998, the ROK Air Force pioneered the process with the publication of the *Air Force Vision 2030*, which called for attaining advanced Korean aerospace capabilities in two phases: evolutionary design up to the year 2015, and revolutionary design up to the year 2025. The report projected that by 2025, the Korean Peninsula will be unified and the overall defense configuration will be based on a fundamental paradigm shift in the ROK military: from a predominantly land-based force toward an air power and navy-centered force, from a functional force toward a mission-based force, and from threat-based to capability-based defense planning.²² The follow-on report, the *AFV 2025*, envisioned new operational concepts such as “*parallel, joint, multi-dimensional operations*” in five overlapping domains: (1) *land*: small-sized, dispersed specialized battles fought mainly by special operations forces, backed by multiple manned and unmanned platforms that utilize the best of advanced intelligence and technology; (2) *sea*: stealthy, small-scale (as opposed to large carrier-group operations) on-sea and underwater operations; (3) *air*: an array of operations, including intelligence collection, reconnaissance, surveillance, target selection, combat assessment, command and control, emergency rescue, sea lines protection, antiterrorism, long-range precision strikes using a mix of manned, unmanned, and stealth platforms launched from land and sea; (4) *space*: extending air operations and entering a new vital strategic domain, which would shape the outcome of any war or dispute at any level; and (5) *cyberspace*: information and cyber operations aimed to maintain information superiority, executed in times of war and peace on a range of military and non-military targets.

Since the turn of the century, South Korea’s military modernization has been shaped considerably by the processes of U.S. defense transformation, emphasizing

strategic and operational flexibility, agility, and lethality coupled with enhanced expeditionary capabilities and development of a new generation of weapons technologies. At that time, U.S. defense transformation stipulated the need for a realignment of the U.S. forces deployed on the peninsula, which gradually would be reconfigured toward supporting regional or even global missions rather than addressing traditional static peninsular defense.²³ At the Korea-U.S. Security Consultative Meeting in 2002, Washington and Seoul launched the “Future of the ROK-U.S. Alliance Policy Initiative” (FOTA), aimed at devising a mutually acceptable plan to reassign existing missions and command structures. During the ensuing FOTA talks in 2004 and 2005, both sides agreed to transform the U.S. strategic presence and operational conduct in South Korea. Under the agreement, the United States would permanently remove about one-third of its existing troop strength stationed in South Korea or 12,500 troops by 2008, while the remaining 25,000 U.S. soldiers would undergo a phased relocation from the current 43 bases scattered around the country to 16 bases, concentrated in two areas south of

“*cooperative self-reliant defense.*” Self-reliance is a long anticipated goal of South Korea’s defense policy. As early as the 1970s, Seoul placed emphasis on the need for “the simultaneous development of the U.S.-ROK alliance, but more importantly, “a self-reliant national defense . . . [when] South Korea will be equipped with capabilities and systems to play a leading role in repulsing any potential provocation.”²⁶ In other words, while the strategic bedrock of South Korea’s security would remain anchored in the U.S.-ROK alliance, South Korea would mitigate its dependence on the United States by gradually adopting more advanced military capabilities.

Implementing a vision of self-reliance meant that South Korea would pursue broader military reforms, particularly in areas of command and control, force structure, and the U.S.-ROK alliance. In this context, in September 2005, the Committee on Defense Reform under former Defense Minister Yoon Kwang-ung published *Defense Reform Plan 2020* (DRP 2020), which shaped South Korea’s defense planning for the next five years. The original plan, later modified in 2008,

South Korea’s military modernization has been shaped considerably by the processes of U.S. defense transformation.

the Han River.²⁴ The U.S. Forces Korea (USFK) redeployment, including the relocation of the USFK headquarters from the Yongsan base in the center of Seoul to a new hub-base near the city of Pyeongtaek, essentially would limit the vulnerability for U.S. troops to a potential surprise attack by North Korea. The relocation could lessen the “tripwire” effect of having U.S. forces close to the DMZ, but it also would provide greater “strategic flexibility” for new supporting roles, missions, and capabilities that would cover a wider, multifunctional expeditionary context, including regional contingencies beyond the Korean Peninsula.²⁵

Under the revamped alliance system, ROK forces would be required to increase their qualitative combat capabilities and assume greater autonomy and responsibility in defense of the country. For example, ROK forces would provide frontline control along the DMZ and the Joint Security Area at Panmunjom, maritime counter-infiltration operations, rapid mine-laying, search and rescue, rear-area chemical and biological decontamination, military police operations, and battlefield counter-battery artillery operations.

These changes have shaped the direction of South Korea’s national security debates and the policy of

2009, and 2010, has been influenced by the French military-modernization initiatives and reforms – perceived as most relevant for the South Korean case with its comprehensive transformation from a manpower-intensive military force to a capability-based future force. In particular, DRP 2020 projected that North Korean threats would inherently diminish by 2020, while potential intra-regional threats coupled with regional force-modernization drives, including China’s, may emanate greater security challenges for South Korea. The plan also considered South Korea’s declining birth rate, estimated to provide an insufficient number of conscripts to sustain the current force size by the year 2020.²⁷ DRP 2020 thus projected a comprehensive blueprint for transforming South Korean forces – from a medium-heavy infantry, artillery-centric, and largely static conventional army chained to defending the DMZ, into a smaller but more agile, professional, capability-oriented, and technology-intensive force.²⁸

Specifically, DRP 2020 called for a gradual three-phased reduction of South Korean military manpower by 27 percent from 690,000 to 500,000 by the year 2020. It further proposed a reorganization of the command structure: the 1st ROK Army and the 3rd ROK Army

would merge under a new Ground Operations Command (GOC), while the 2nd ROK Army would be transformed into a new Rear Area Operations Command. In addition, DRP 2020 suggested the creation of a new Missile Command to address the threats posed by North Korean long-range artillery and ballistic missiles. The ROK Air Force and Navy would streamline their command systems from the existing four layers of command to three. Existing ROK Army infantry formations would be converted into mechanized forces with significantly enhanced mobility and firepower, improved tactical C4I, and traditional division structures transformed into more flexible division and brigade task forces with combined and joint capabilities for rapid crisis-response.²⁹ About one-third to one-half of existing but largely outdated major weapon systems would be effectively replaced with the next-generation weapon platforms, systems, and technologies in order to counter a wide range of threats as well as to match capabilities of regional neighbors.³⁰ Major force-modernization programs included the development, procurement, and integration of next-generation tanks (K2), multirole fighter aircraft (F-15K), multirole helicopters (KMH), submarines, destroyer experimental vessels (KDX), surface-to-air missiles (SAM-X), early warning systems (EX), independent precision-strike assets, and the integration of digital C4ISR infrastructure.³¹ Many platforms as well as their components and subsystems would stem from Korea's indigenous research-and-development defense industrial base, with foreign sources associated with the supply of major items and leading-edge technologies. In order to accelerate the force development, South Korea's defense budget would be increased by 11.1 percent annually through 2015, and 7.1 percent through 2020, totaling about 621 trillion won (US\$ 431 billion at 2008 monetary rates) between 2006 and 2020.³²

Along with a revamped force structure and advanced weapon technologies, DRP 2020 also emphasized the need to adopt new operational concepts to undertake missions then held by the U.S. forces. As with previous "future battlefield" concepts, the ROK military closely observed recent U.S. combat experiences in Iraq and Afghanistan, particularly the effects of mobile, network-centric, combined-arms task forces and precision long-range fires linked to cooperative tactical targeting. With DRP 2020, the ROK forces would adapt similar conceptual elements and capabilities. In particular, upon the completion of the reform, the South Korean military envisioned linking of an array of ISR platforms with select weapon platforms and precision munitions via advanced digitized C4I infrastructure. This

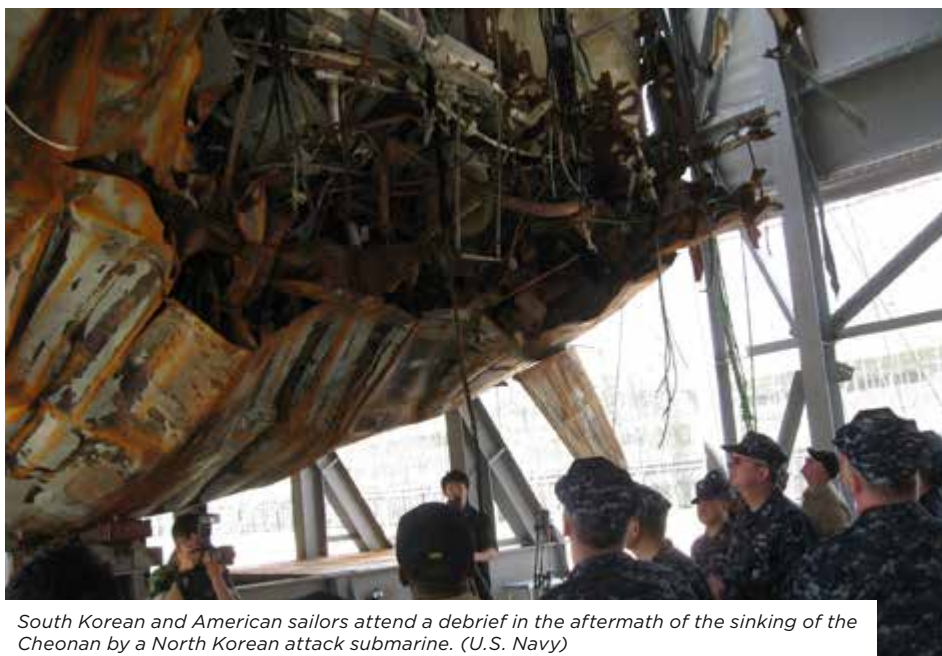
would remove existing gaps in the combined interoperability with U.S. forces, particularly in air power and C4ISR, as well as in joint interoperability among the three ROK services.³³

Since its inception, however, with the ambitious scope, unrealistic time lines, and relatively high costs, DRP 2020 propelled internal policy debates on its actual implementation. These debates led to a major revision in 2009, which downsized select procurement programs such as the K2 main battle tank, readjusted the time line and size of troop reductions, placed an emphasis on more gradual defense spending, and focused on North Korea's nuclear and missile threats. Under the modified plan, the South Korean military would develop capabilities in the areas of surveillance and reconnaissance, precision strike, interception, and force protection – primarily to enable preemptive precision-strike capabilities vis-à-vis North Korean nuclear and missile sites. In other words, South Korea would focus on advanced early warning systems to detect imminent ballistic missile attacks, joint air-to-ground precision munitions, and anti-missile defense systems.

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In 2010, two unprecedented incidents further reshaped the character and direction of South Korea's DRP 2020. The first was the deliberate sinking of the 1,200-ton South Korean corvette *Cheonan* in the Yellow Sea near the disputed Northern Limit Line on March 26 by a torpedo attack from a North Korean submarine. The incident, which killed 46 sailors, raised questions about South Korea's combat readiness and responsiveness, particularly in its naval capabilities, antisubmarine warfare, and command, control, and communications. The lack of combat readiness amplified by operational deficiencies in the ROK military became apparent also in the second major incident of 2010 – the North Korean coordinated dual artillery and rocket attack on South Korea's Yeonpyeong Island on November 23 of that year.

Both the sinking of the *Cheonan* and the shelling of Yeonpyeong Island had a significant impact on South Korea's defense planning. On May 4, 2010 then-President



South Korean and American sailors attend a debrief in the aftermath of the sinking of the *Cheonan* by a North Korean attack submarine. (U.S. Navy)

Lee Myung-bak announced a military-wide review of ROK's defense posture. The resulting 2010 *National Security Review* provided 71 recommendations to improve South Korea's early warning and C4ISR capabilities, missile defense, quality of reservists training, force integration, and command and control. More importantly, the impact of both crises prompted South Korea to request a postponement of the planned transfer of OPCON to Seoul until December 2015. The decision to delay the OPCON transfer also shaped the subsequent *Strategic Alliance 2015* (SA2015) base plan, a new five-year U.S.-ROK roadmap that would "enable better synchronization of the alliance transformation efforts."³⁴ SA2015 emphasized the need to address existing operational deficiencies, update warfighting concepts, adjust weapon procurement and training to maximize the operational effectiveness of the U.S.-ROK alliance, and prepare for a wider range of contingencies. In other words, SA2015 was designed to better prepare the South Korean military for the OPCON transition initially planned for 2015, but subsequently postponed.

Then in March 2011, South Korea's Ministry of Defense publicly announced a new force modernization plan. *Defense Reform 307* primarily addressed medium- to long-term ROK military readiness to counter potential North Korean asymmetric provocations, infiltrations, and attacks similar to the *Cheonan* sinking and the Yeonpyeong Island attack. The plan's strategic concept emphasized "proactive deterrence" aimed at deterring future North Korean provocations. It sought to avoid

serious damage from potential provocations in large part by having effective retaliatory capabilities. In similar future crises, the ROK would no longer rely on "passive" deterrent (deterrence by denial), but would immediately retaliate by using prompt, focused, and proportional retaliation (deterrence by punishment). Since then, *Defense Reform 307* has been under review by President Park Geun-hye's administration.

More recently, U.S.-ROK defense planners have continued to update existing strategies for responding to different levels of threats posed by North Korea. In particular, the strategy of proactive deterrence has been embedded into the 2013 *Combined Counter-Provocation Plan*, which aims to strengthen U.S.-ROK combined

readiness posture to "immediately and decisively" respond to future North Korean provocations similar with low-intensity conflicts short of all-out war.³⁵ At the same time, planners sought to improve strategic deterrence concepts against North Korea's advancing WMD programs by signing the 2013 bilateral "Tailored Deterrence Strategy" that "establishes a strategic Alliance framework for tailoring deterrence against key North Korean nuclear threat scenarios across armistice and wartime, and strengthens the integration of alliance capabilities to maximize their deterrent effects."³⁶ While details of the strategy are classified, General Curtis M. Scaparrotti, former Commander of the U.S.-ROK Combined Forces Command and U.S. Forces Korea, noted that "the strategy focuses on options that raise the cost of North Korean WMD or ballistic missile use; deny the benefits of their use; and encourage restraint from using WMD or ballistic missiles. The strategy provides bilaterally agreed-upon concepts and principles for deterring North Korean WMD use and countering North Korean coercion."³⁷ Press reports indicate the strategy contains options for preemptive strikes in case of imminent use of North Korea's nuclear weapons, while extending a U.S. nuclear umbrella into formal defense planning processes of the U.S.-ROK alliance.³⁸

Internally, the ROK military services also have continued formulating long-term strategic future defense planning and operational requirements, while adapting to changes in the U.S. strategy, military-technological developments, and operational conduct. In June 2016,

Figure 2. Overview of South Korea's Military Innovation Paths & Patterns

CONCEPTS		PATTERNS	PATHS
1990s	Air Force Vision 2030	Speculation <ul style="list-style-type: none"> • Study of U.S. innovation efforts • Publications describing potential new combat methods • Establishment of official organizations to study recent wars 	
	Navy Vision 2020		
	Army Vision 2010		
2000s 2010s	Omni-Directional, Advanced, Elite Force	Experimentation <ul style="list-style-type: none"> • Allocation of resources to support new warfare methods • Field training exercises with new weapon technologies • Capability development 	
	Defense Reform 2020		
	Defense Reform 307		

Source: Michael Raska, *Military Innovation and Small States: Creating a Reverse Asymmetry* (New York: Routledge, 2015), 182.

for example, ROKA Chief of Staff General Jang Jun-gyu announced at the ROKA Forces Forum that a “future of the army committee” will be established to proactively prepare for future security threats. The committee will benchmark the U.S. Army’s National Commission on the Future of the Army and provide a master plan for future weapon systems.³⁹

Barriers and Constraints Facing ROK Military Innovation

In retrospect, South Korea’s military-innovation trajectory has evolved gradually, reflecting a “modernization plus” pattern.⁴⁰ This evolutionary change is characterized as “relevant upgrades or improvements of existing military capabilities through the acquisition of new imported or indigenously developed weapons systems and supporting assets, the incorporation of new doctrines, the creation of new organizational structure, and the institutionalization of new manpower management and combat training regimes.”⁴¹ An argument can be made that South Korea has faced a number of political, strategic, operational, and tactical impediments, anchored principally in South Korea’s traditional security paradigm, which have precluded a major defense transformation and inhibited military innovation. To begin, the ROK military in the post–Cold War era had to formulate new strategic and combat doctrines that took into account three seemingly contrasting requirements. The first centered on capabilities for a wider spectrum of threats emanating from North Korea. The second concerned devising selective capabilities for a post–North Korean threat-based military force, particularly in the

context of accelerating regional military-modernization drives, actions, and strategies of Japan, China, and Russia. The third requirement dealt with preparing the U.S.-ROK military relationship, institutions, and mechanisms for an array of challenges linked to potential Korean unification scenarios: e.g., civil-military challenges of occupation while fighting an insurgency.

In this context, however, the evolving and diverse nature of inter-Korean relations over the past decade has polarized South Korea’s political arena. Korea has been beset with persisting debates on the magnitude and character of North Korean threats; terms and conditions of potential Korean unification and its implications; changes in U.S. strategy and levels of American security commitment to South Korea; and concomitant short- and long-term strategic requirements, force posture, and defense resource allocation. Two broad camps have emerged in these debates. The first camp is that of the *softliners* seeking peaceful coexistence with North Korea through cooperation and exchange, calling for a more reserved defense posture and the resolution of regional strategic instability through multilateral diplomacy. The second camp comprises the *hardliners* advocating more assertive strategic planning, force structure, and joint U.S.-ROK responses to North Korean threats and provocations. Both camps have experienced their prevalent highs and lows under different administrations and their policies toward Pyongyang (i.e., the “Sunshine Policy” of Kim Dae-Jung and Roh Moo-Huyn versus the “realist” policy of Lee Myung-bak versus Park Geun-hye’s “Trustpolitik”). The popular support for both camps shifted with North Korea’s destabilizing moves,

provocations, and crises that challenged prevailing policy assumptions and threat perceptions in the South, resulting in even wider internal divides and strategic uncertainties. In other words, the increasing fragmentation of South Korea's political arena arguably has led to an *erosion of strategic consensus*, which subsequently resulted in contrasting calibrations in South Korea's defense planning requirements. Moreover, the political will to allocate the required resources for implementing selected defense reforms has been constrained by economic pressures and imperatives to sustain South Korea's socioeconomic stability and growth. Indeed, South Korea has struggled to find finances to adequately fund the various military-modernization plans, which has resulted in delays in the procurement of selected advanced weapon platforms, systems, and technologies, particularly in air force and naval modernization programs.

At the strategic level, after nearly six decades of largely *static, defensive posture* focused on defending the DMZ and *reliance on direct U.S. support*, the ROK military has been also constrained by its own institutional rigidity, intellectual conservatism, and path dependence. South Korea has remained largely embedded in its traditional force structure and deployment centered on conventional ground forces, although this has started to change in recent years.

The institutional resistance to change may have emanated from the traditional *interservice rivalries* within the *ROK Army-dominated leadership* unwilling to shift defense resources to the air and naval forces; and substantially alter the ROK's force structure. The ROK Army's rationale, stemming from South Korea's traditional security paradigm, is that South Korea continues to confront a serious conventional threat from North Korea's robust offensive military capabilities. In the absence of timely and accurate intelligence on the evolving political and military situation in North Korea, the ROK National Command Authority and adjacent organizations must be prepared for such contingencies. Moreover, even with South Korea's qualitative superiority in the current conventional balance of forces, North Korea retains a substantial quantitative advantage in all aspects, which are amplified by asymmetric force-multipliers – ballistic missiles and WMD programs. In this line of thought, South Korea's force structure is centered on the primacy of ground forces supported by a strong U.S.-ROK alliance. Hence, the ROK Army has long been the largest military service with the primary responsibility for defending South Korea. However, this strategic

logic became increasingly questioned over the last decade amid the gradual transformation in the character of North Korea's strategies, which shifted in emphasis toward asymmetric forms of warfare that mitigate the effectiveness of South Korea's deterrence capabilities and select force improvements.

The confluence of political, economic, and strategic constraints embedded in South Korea's traditional security paradigm largely have precluded the implementation of selected defense reforms. Certainly this has been the case at the operational level, where ROK forces have been striving to overcome a range of technical and interoperability problems in conducting full-spec-

North Korea retains a substantial quantitative advantage in all aspects, which are amplified by asymmetric force-multipliers – ballistic missiles and WMD programs.

trum military operations. Specifically, these challenges include: obtaining a common operational picture and coordinating intelligence; ensuring information security; enabling cooperative command, control, and communication capabilities; maintenance of existing systems; and field deployment and interoperability of new systems. These challenges can be attributed to interservice divides, technological and operational deficiencies with U.S. forces, and arguably, the lack of direct and diverse combat experience. Notwithstanding its limited participation in selected peacekeeping missions (such as those in East Timor and Lebanon), noncombatant operations (Iraq and Afghanistan), and major joint/combined training and exercises in South Korea, including annual exercises such as the "Ulchi Focus Lens," "Reception, Staging, Onward Movement and Integration," "Foal Eagle," "Amnokgang," and "Hoguk," South Korean forces have not gained credible warfighting experience since their participation in the Vietnam War. This does not mean that South Korea has not maintained a qualitative edge over North Korea's forces, but illustrates the link between South Korea's longstanding, static, defensive posture emphasizing conflict and war avoidance, and relative overreliance on U.S. forces, with the resulting operational inertia to pursue more disruptive military reforms.

Policy Recommendations

Unless South Korea overcomes the barriers to military innovation mentioned above, it will be challenging for the U.S.-ROK alliance to integrate and take advantage of next-generation of advanced military technologies presently evolving in the context of the U.S. Third Offset Strategy – particularly in domains of anti-access and area denial (A2/AD), guided munitions, undersea warfare, cyber and electronic warfare, human-machine teaming, wargaming, and concepts development. The compelling and relatively ambitious South Korean future-oriented defense reform plans over the past two decades have been in sharp contrast to prevailing political, strategic, and operational realities such as contrasting calibrations of defense requirements, structural dependence on the U.S.-ROK alliance, static defensive force posture, and asymmetric organizational force structure, all of which have sustained the relevance of traditional security concepts and strategic culture. There has not been a disruptive innovation in South Korea's military. Instead, South Korea has experienced progressive shifts from operational and military-technological emulation to selective capability adaptation in the gradual or evolutionary process of military modernization.

There has not been a disruptive innovation in South Korea's military.

To begin with, the baseline problem for South Korea's long-term defense planning is *sustained resource allocation* into cost-intensive military technologies associated with the Third Offset Strategy, which must be balanced between current and future defense requirements for the Korean Peninsula, strategic developments in East Asia, and U.S.-ROK interoperability. The cost factors subsequently stipulate even a greater need for a more efficient allocation of scarce defense resources that must be planned in the context of short and long-term national security objectives and policies toward ensuring socio-economic stability and growth.

This elevates the importance of *defense management capacity*. Specifically, this means greater emphasis on the educational and technological proficiency of manpower, the quality and survivability of military infrastructure, the quality of combat research institutions, scope, differentiation, level of sophistication, and degree of external dependence of a nation's defense industrial base. Defense management capacity is essential in

reconciling the dual problem of financial constraints in procuring cost-intensive advanced weapon technologies and platforms, while sustaining or upgrading existing military capabilities to achieve national security objectives. As Richard Bitzinger notes, “[military innovation] demands elemental changes in the ways militaries procure critical military equipment, and reform of the national and defense technological and industrial bases that contribute to development and production of transformational systems.”⁴²

One could conclude that pursuing military innovation by South Korea requires the confluence of three sets of policy imperatives: (1) facilitating strategic and operational adaptability in defense planning; (2) identifying, predicting, and responding to military innovation, whether conceptual, organizational, or technological; and in the long term (3) implementing military innovation through changes in strategic culture. Indeed, South Korea's strategic culture has been linked to the collective defense mechanisms of the U.S.-ROK alliance aimed at preventing the breakout of another war on the Korean Peninsula. During the Cold War, the United States practically dominated South Korea's defense planning,

combined training, weapon selection, and overall direction of strategic thought. Military innovation in South Korea thus corresponded largely to military modernization, including acquiring and emulating selected military capabilities, particularly in terms of “hardware,” that would mitigate the overreliance and overdependence on the U.S. military. Internally, however, South Korea's strategic culture has been relatively conservative in pursuing military innovation.

In part stemming from traditional Korean cultural traits and language reinforcing authoritarian Confucian views through values of filial piety, loyalty, seniority, group-orientation, and a highly formal “high-context” communication style, and in part of traditional interservice rivalries dominated by the ROK Army, South Korea's military “cognitive style” has been resistant to change. Implementation would not proceed in the absence of “approved” top-down directives; operational flexibility, adaptation, and improvisation would not be encouraged nor rewarded within the organizational hierarchy.

In this view, South Korea's military modernization-plus trajectory can be explained through patterns of speculation and experimentation, but relatively incremental implementation. In other words, one could argue that South Korea's traditional strategic culture precluded greater flexibility and adaptability in translating selected defense reforms into practice. Yet this is also puzzling given the considerable magnitude and impact of the information revolution that has changed South Korea's society and propelled innovation in its economy over the past two decades. Even so, it has not altered traditional organizational force structures nor significantly changed the "cognitive template" of the military. This implies that ROK forces have struggled with organizational change and adaptation – pursuing a cultural change necessary to implement military innovation.

South Korea's traditional strategic culture precluded greater flexibility and adaptability in translating selected defense reforms into practice.

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CHAPTER 3

North Korea's Offset Strategy

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The United States has embarked on a Third Offset Strategy designed to maintain and enhance its technological and warfighting advantages, specifically to address military developments by other nations. The Third Offset rests on the judgment that the United States will wage war in a world of ubiquitous precision munitions – a high-end technology once only enjoyed by a few nations.¹ At the same time, many nations are investing in capabilities designed to negate American military advantages and exploit its vulnerabilities. Although not as sophisticated as the efforts under way in nations such as the United States, China, or Russia, North Korea is also investing in improved munitions with greater accuracy and a range of other capabilities to maintain military options to pursue internal and external aims. While North Korea is not the driving force behind the Third Offset, North Korea continues to make significant investments and improvements in a myriad of asymmetric military capabilities that present challenges to the U.S.-ROK alliance that the Third Offset Strategy will address.²

Despite North Korea's disadvantageous military balance, Pyongyang poses a serious threat that could escalate in surprising ways. North Korea's leadership likely understands it cannot prevail in a conventional head-to-head conflict against the combined forces of the United States and the Republic of Korea (ROK). This would be the case even if there were not a Third Offset Strategy. Nonetheless, North Korea's ideology, political system, and paranoid perspective toward the outside world cannot admit this reality and adopt its own grand strategy. Consequently, North Korea's strategy begins with political-military campaigns to set conditions to maximize the use of its asymmetric capabilities to preserve the regime, if not pursue unification. This strategy relies on weapons of mass destruction (WMD) for deterrence, compellence, and defense. It also draws on a range of conventional and other asymmetric capabilities for the same purpose. North Korea further relies on provocations and limited-objective military aggression to serve both external national security and internal political goals. Importantly, should a limited-objective action by North Korea escalate, North Korea may seek to exploit unexpected success to seek unification by force. Alternatively, should North Korea be put on the defensive, with the regime at risk, it may well resort to the use

of nuclear weapons with hopes that it can force a negotiated settlement that leaves the Kim regime intact.

Based on the elements of North Korea's strategy outlined above, we can anticipate that the Kim Jong-un regime will continue to use diplomatic, informational, and even legal means to set conditions more amenable to a successful use of force, whether for limited objectives or a desired end state. Conditions that North Korea is seeking include the withdrawal of U.S. forces from the Korean Peninsula, perhaps by way of a peace treaty. We also anticipate North Korea will engage in information warfare targeting both U.S. and South Korean political will and public opinion. North Korea will work to drive a wedge between the United States and the ROK. In addition, North Korea will engage in efforts to reduce American or ROK willingness to use force against North Korea or pursue unification. Further, North Korea will use cyber warfare and potentially terrorist-like special operations attacks to degrade ROK and U.S. will and military capability.

Should a conflict erupt, whether by design or miscalculation, we can expect North Korea to engage in a hybrid form of warfare. The Kim regime would use a well-coordinated array of asymmetric capabilities to shock the ROK and United States, as well as disrupt and degrade the ability of the U.S.-ROK alliance to amass forces and repel a large-scale North Korean conventional attack while disrupting the flow of U.S. and multinational reinforcements. Special operations, cyber, and missile attacks would form the major components of the asymmetric strategy, buttressed by the use of massive artillery fires. If successful, the Kim regime then would follow with a large-scale combined arms offensive designed to take significant terrain, potentially including Seoul and other key facilities that would severely increase the costs to the U.S.-ROK alliance.

This chapter explores the lessons North Korea has learned from decades of military conflict, competition, and provocation. Despite its closed nature, the North Korean regime knows itself, and at least militarily, has a sense of the strategic environment. It understands the balance of power is not in its favor. In terms of military power, capabilities, and application, North Korea is drawing on the many lessons it has learned dating back to the Korean War, and more recently in its observations about the American way of war.

North Korea's Perception of War

A more detailed look into how North Korea might conduct war can be found in the testimony given by Hwang Jang-yop, the most senior North Korean official to have defected to the ROK. Hwang rose to a senior position in the regime (13th in the power structure) and is credited with being the architect of North Korea's *juche* ideology. In 1997, Hwang defected from North Korea over differences with Kim Jong-il, warning in a 1997 press conference that even in peacetime North Korea is on a war footing beyond the imagination of citizens in democratic societies.³ Unendingly from the age of five onward, North Korean children are taught that the "Great Leader" created the perfect state. This system has shown its resiliency through weathering the large-scale famine of the mid-1990s. Although more than a million North Koreans starved to death, there was no uprising. If war erupts, as far as the North Koreans are concerned, they are defending their supreme power, a deity-like figure that surpasses mere mortal dictators such as Saddam Hussein or Muammar Gaddafi. Although Hwang may underestimate the imagination of citizens

in democracies, it is difficult to conceive of Americans or South Koreans tolerating the conditions of severe deprivation common to so many in North Korea. For instance, it is unlikely that citizens in most nations of the world would accept periods of compulsory military service running in excess of a decade during which soldiers are permitted to see their families only once or twice.

While many have grown complacent about the prospects of another major conflict on the peninsula, there are a number of scenarios through which a major conflict could come about. North Korea has long aimed to prompt the withdrawal of U.S. forces from Korea, as well as the abrogation of the U.S.-ROK Mutual Defense Treaty. If the United States pulled out of its alliance with the ROK, or at least withdrew all forces from the peninsula, the Kim regime might see this as an opportunity, perhaps its last best chance, to launch a military campaign to reunify the peninsula under Pyongyang's rule. Even if this is not an opportunistic attack, the Kim regime may be trapped by its own ideology and face internal pressures to use military force if its primary "strategic" reason for not doing so, the presence of U.S. forces, is removed. Another possibility involves the Kim regime launching a diversionary war due to mounting internal pressures. War



Conflict with Kim Jong-il would pose unique political challenges, as the Kim dynasty's leaders have cultivated a belief in themselves as deity-like figures unlike typical dictators. Here, citizens bow in reverence before statues of the Kim family. (J. A. de Roo/Wikimedia Commons)

remains a real possibility based on the unique nature of the North Korean system, the massive forces arrayed in close proximity on both sides of the DMZ, the extensive militarization of North Korean society, and the extent of the Kim regime's military preparations.

A North Korean campaign likely would commence with North Korean special operations forces dressed in ROK uniforms. This unprompted "attack" on North Korea would justify North Korean actions as defensive. North Korean special forces would infiltrate by land, sea, and air to strike targets throughout the ROK in order to disrupt South Korean defenses and cause chaos. From that vantage point, North Korea's goal would be unification by force, marked by a drive to reach Busan before the ROK could recover or multinational forces could arrive. Under this military strategy, North Korea would engage in a massive armored assault, from the outset employing artillery and ballistic missiles with chemical and/or biological warheads against the ROK, and missiles against Japan if it appeared that Japan would allow U.S. forces to use military facilities in Japan. North Korea likely would use "human torpedoes" and aircraft on suicide missions against U.S. aircraft carrier battle groups to cause maximum casualties in an attempt to turn U.S. public opinion against supporting the ROK.

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The Four Military Policies

During the Korean War, Kim Il-sung convened a meeting of the North Korean Workers' Party's Central Committee in a small town located near the Sino-Korean border, on December 21, 1950.⁴ At the meeting Kim identified eight causes that led to North Korea's battlefield failures.

- First, in the face of the U.S. military's technological and material sophistication, North Korean reserves and preparations were grossly inadequate.
- Second, the cadre lacked experience and was unable overcome hardships.
- Third, discipline was weak.
- Fourth, instead of annihilating enemy units, North Korean forces bypassed U.S. and ROK formations to rapidly exploit penetrations as prescribed by Soviet doctrine. This allowed the enemy to regroup and counterattack.
- Fifth, North Korea lacked expertise against vastly superior U.S. air, naval, and ground forces in all areas, from systems to training.
- Sixth, North Korea did not sufficiently employ special operations forces against U.S.-ROK centers of gravity and rear-area lines of communication.
- Seventh, related to the shortage in reserve forces, North Korea's logistical operations were not well organized.
- Finally, the troops did not have the proper political education and indoctrination.

The United States, the People's Republic of China (PRC), and North Korea signed the Korean Armistice in 1953, and by 1958 all PRC forces had left North Korea. This prompted Kim Il-sung to announce the "The Four Military Policies" in 1962 as a means to enable North Korea to defend itself and pursue reunification.

The first is to arm the entire population, one of the aspects of North Korea that Hwang pointed to as beyond the imagination of citizens in democratic societies. When a North Korean child turns five, he or she enters kindergarten and is taught about the "Great leader" and the Kim family. During the 11 years of compulsory education, political indoctrination is the top priority. When the student turns 14, he or she is given four hours of military training a week, approximately 80–100 hours a year. When a child turns 15, one week of field training a year is added to the curriculum. The result is that by

the age of 16, a North Korean can shoot an assault rifle, fire a rocket propelled grenade, throw a hand grenade, pitch a tent, march, and perform a range of basic military skills. Most importantly, they have been taught to believe in their system. For those living in the North Korean capital of Pyongyang, the teenage training is different. Pyongyang teenagers receive a month of training at a boot camp and become de facto soldiers. In every county, large town, and many villages, armories are stocked with weapons and ammunition. Not every single North Korean is armed, but most are trained and readily incorporated back into the country's armed forces in times of conflict.

Second, Kim aimed to fortify the entire country. During the Korean War, U.S. air forces bombed North Korea relentlessly. The North Koreans decided that from then on, every critical system and function would be underground, including weapon factories, munitions and food storage, and C4I (Command, Control, communications, and Computers

was conceivable. Additionally, North Korea received extensive support from the Soviet Union and the PRC, adding to its military power. By the late 1960s, North Korea had more and better weapons than the South, including tanks, artillery, and chemical and biological weapons, as well as more realistic training. For example, North Korea flew MiG-21s compared to South Korea's F-5s. Although the economic fortunes of the two Koreas saw a reversal over the course of the 1970s, the North's weapons superiority lasted until the mid-1990s. As the 1990s progressed, North Korea lost the superpower patronage of the Soviet Union and saw its economy go into freefall. System-wide military modernization was no longer feasible. A combination of advances in ROK military power, changes in the strategic environment, and domestic changes led North Korea to alter its military strategy to pursue its current asymmetric and hybrid approach to warfare.

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and intelligence nodes. Everything from factories that produce uniform buttons to airstrips and blast furnaces are all underground. Some analysts assess North Korea as having more than 5,000 underground facilities. With its high level of militarization, indoctrination, and fortification, North Korea presents a military challenge on an order of magnitude similar to or in excess of that posed by Japan in 1944.

The third policy centered on educating the entire military one rank above their current rank. This policy advocates that every soldier must learn the duties of his/her senior rank. This comes from North Korea's experience in a conflict that caused many casualties and gives a glimpse at the fact that they are preparing for a long war.

The fourth and final policy was to modernize the entire military. In 1962, North Korea still outperformed the ROK economically and hence large-scale military modernization

Nuclear weapons were not an explicit part of the original four military policies. Yet as early as the mid-1960s, North Korea determined the need for nuclear weapons as its ultimate strategic hedge against what it perceived to be a hostile world. The imperative of nuclear weapons and asymmetric capabilities compounded as the ROK progressed politically and economically, and the West won the Cold War. Considering the disadvantages and constraints North Korea faced, the move toward nuclear weapons represents more of a logical progression of thought. North Korea also closely studied the American way of war, seeing that nations without nuclear weapons fared poorly against the United States in conflict. Thus, North Korea's "first offset strategy" focused on achieving nuclear deterrence to halt a superior conventional force.

North Korea's Perspective on the American Way of War

During the Vietnam War the ROK rotated more than a half million troops to Vietnam. Besides the unconfirmed reports of North Korean pilots involved in the conflict, it is conceivable that North Korea sent "advisors" and/or "observers" to see the war in Vietnam. The main takeaway for North Korea in this war would be that the United States' Achilles' heel is U.S. public opinion. They also likely learned lessons about the application and growing efficacy of airpower, as well as U.S. vulnerabilities when facing irregular forces.

The Gulf War in 1990 presented a very different set of circumstances from the Vietnam conflict. Whereas television brought the horror of Vietnam into American households and gradually sapped political support, the media enabled the rapid conflict in the first Gulf War. The Western media televised the entire war, with senior allied leaders appearing on screen to explain how the war was conducted. Among the many lessons the North Koreans likely learned from the Gulf War was that it was

facilities had to be interconnected and independently defensible from all sides. The North Koreans also realized that denial and deception were essential elements of warfare.

Secondly, North Korea realized the importance of small-unit operations to disrupt force generation and sustainment operations in alliance rear areas. Therefore, the North Korea People's Army (KPA) employs small units to sustain attacks deep inside the ROK against soft targets, hiding among ROK forces and the South Korean populace. The element of surprise is critical along with ambushes and even suicide attacks. Air bases are among the key targets, but other KPA objectives include disrupting and destroying critical infrastructure such as bridges, communications equipment, and other assets that dampen the U.S.-ROK alliance's ability to reinforce its defense or conduct counterattacks. Additionally, North Korea is also targeting public and political will to continue the fight.

Third, the KPA emphasizes deception operations. Iraqi forces built fake facilities and positions that led the U.S.-led coalition to attack and waste munitions. The Iraqis threatened the use of chemical and biological weapons and delegated the use of such weapons to tactical commanders, in part to inhibit U.S. forces by requiring them to take

North Korea recognizes the necessity to disrupt the U.S.-ROK alliance's use of airpower through missile strikes and special-forces attacks.

suicidal to amass armored forces in the face of American airpower and increasingly precise missiles. Thus, North Korea recognizes the necessity to disrupt the U.S.-ROK alliance's use of airpower through missile strikes and special-forces attacks.

The North Koreans also learned the Iraqis were successful in protecting their forces with underground facilities. This deepened their belief that they must be able to conduct sustained operations underground to include movement, command and control, logistics, and counterattack operations. Enduring an air assault and then counterattacking became the point of emphasis. All

additional precautions against a potential chemical attack. For example, American forces donned nuclear, biological, chemical protective gear, causing great discomfort to soldiers and decreasing their combat effectiveness. The North Koreans also have studied how the United States and the ROK use deception operations in the Gulf War and other conflicts. The United States deceived the Iraqi military into thinking that coalition forces would conduct an amphibious landing on the shores of Kuwait, causing the Iraqis to tie down five divisions away from the coalition's main attack. We can expect the North Koreans to at least be wary of deception operations.

Finally, the North Koreans have learned the importance of sustainment. North Korea stockpiles and disperses stores of weapons, ammunition, spare parts, equipment, and other materiel. Often North Korea does this in hardened underground facilities that are further protected by elaborate denial and deception efforts. While there is reason to question how North Korean stockpiles have held up, particularly food and medical supplies, there is ample reason to believe that the North Koreans can sustain a defense in depth of their territory, even if they may lack sufficient materiel to sustain offensive combat operations.

Overall, North Korea has likely drawn the following conclusions:

1. Never go to war with a fully committed United States, as no country can compete with fully committed U.S. power and resources.
2. Do not go to war with the United States without nuclear weapons.
3. Do not let the United States build up its forces undisturbed nor permit the United States to rely on force-generation sanctuaries in the region (e.g. Japan/United Nations Command rear bases).
4. The U.S. technological advantage in airpower is nearly beyond North Korea's ability to counter or defend against.
5. Use U.S. public opinion against the United States. Exploit freedom of speech and American sensitivity to collateral damage.
6. Exploit the openness of democratic societies by using special operations forces to disrupt, degrade, and destroy lines of communication, intelligence capabilities, sustainment nodes, and theater mobility assets.

With these lessons learned in mind, this chapter now outlines elements of North Korea's own current and emerging grand strategy and offset strategy.

North Korea's Offset Strategy

North Korea's nominal ideological goal is to reunify the Korean Peninsula under its rule. In reality, however, the Kim regime is focused on ensuring its survival as the only ruling political force on the northern half of the peninsula. For the regime, both goals require the ability to militarily deter, defend against, or possibly defeat the United States and the Republic of Korea. Nuclear weapons and the means to deliver them are essential in this regard. North Korea is already using nuclear weapons and other WMDs to weaken American resolve to defend the ROK among other effects. Only with nuclear weapons and long-range ballistic missiles can North Korea hope to preserve the Kim regime and pursue its strategic end state of unifying the peninsula on its terms and preserve the power and privilege of the ruling elite. But North Korea's perspective on how to militarily pursue its goals has shifted, perhaps starting in the mid-1990s.

1. Weapons of Mass Destruction

In 1961, Kim Il-sung ordered the research of chemical weapons during the Second Korean Workers' plenary congress. Stockpiles, estimated between 2,500–5,000 tons, are distributed throughout North Korea under the control of frontline forces.⁵ North Korea's Ministry of the People's Armed Forces (MPAF) has a subordinate nuclear and chemical directorate responsible for all related matters; and every corps-size unit has a chemical section. Each corps' chemical section has protective responsibilities and operates chemical battalions.⁶ The chemical battalions plan attacks with chemical weapons and control the chemical platoons at the regiment level.

The North Koreans maintain eight chemical/biological battalions, two active and six in reserve, and conduct two large-scale exercises a year. Brigade Scud missile units can strike all of South Korea with chemical munitions. It is believed that North Korea has four weapon-research facilities, nine production facilities, and six storage facilities throughout North Korea, and can produce 18–20 tons of lethal agents each day. These include VX nerve, GB/CG respiratory, and blister agents. Biological agents include Anthrax, bubonic plague, smallpox, and yellow fever.⁷

North Korea commenced its nuclear program in the 1950s and by the 1960s, with the help of the Soviet Union, the North Koreans built the IRT-2000 research reactor, and then continued research on the use of uranium and graphite. By the 1980s, they began earnest efforts on a

nuclear weapon program, including a move in the 1990s to uranium enrichment by a chemical exchange process and fast-breeder reactor. By the late 1990s, North Korea was extracting plutonium, starting to enrich uranium, and beginning the development of nuclear warheads.⁸ North Korea is now believed to have 5–20 nuclear weapons,⁹ with the potential to expand its arsenal considerably in the coming years.

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2. Rockets and Missiles

Naturally, a nuclear program begets a rocket and missile program. The North Koreans are no exception, already possessing a robust rocket and missile arsenal, and working assiduously to enhance its current capabilities and develop additional systems. The conventional estimate puts the North Korean missile force at around 1,000 of various ranges and capabilities. Even if we were able to neutralize 90 percent of these missiles it would still mean that 100 missiles might reach their targets, making a robust counter-missile and missile defense system critical for the Republic of Korea.

North Korea possesses a large arsenal of Scud missiles. The Scud A is 11.2 meters long and weighs 5,385 kg. The Scud B has a one-ton warhead and a 300-kilometer range that reaches Seoul. It is believed the North Koreans have been modifying the type B to the Scud C since 1988. The Scud C model has a 700–800 kg warhead but has an extended range of 500 kilometers. It is also believed that the North Koreans manufacture four to eight Scuds every month, and since the 1990s have been exporting these technologies to Iran and helping construct Iranian Scud factories. Syria also is believed to have received Scud Cs with launchers from North Korea in 1991.

As the North Koreans were developing their Scud C, they started to modify their Scud B as well. The Rodong missile, sometimes referred to as the Scud D, is believed to have an 800–1,000 kg warhead with a range of 1,000–1,300 kilometers. With this range it can strike anywhere on the Korean Peninsula as well as strategic targets in Japan. The first detection of the Rodong was in 1993, when a test flight flew for 500 kilometers. It is believed to have become operational in 1996 and sold to Iran, Syria, and Libya. The Rodong utilizes four Scud engines for launch, something that resembles the technology used

by the former Soviets in the SS-N-4/R-13 and SS-N-5/R-21. The Rodong seems to have adapted its technology from proven Soviet technology such as the quad rocket engines. During the midst of the collapse of the Soviet Union in 1992, 60 former Soviet scientists were detained at the airport in Moscow before departure to North Korea. These scientists were from the V. P. Makayev Experimental Design Bureau, and were believed to be experts in the design of submarine-launched ballistic missile technology.

The Taepodong-2 is a two-stage rocket but with a new first-stage rocket engine. Range is estimated to be 2,000–3,500 kilometers, but some estimates put its effective range at 4,000–6,000 kilometers. If this is accurate, it is a de facto intercontinental ballistic missile (ICBM). Although the length of the missile is different, it is almost certain that Chinese technology (from the Chinese CSS-2 or the CSS-3) was used for the Taepodong-2. The second stage of the Taepodong uses the rocket engine of the Rodong. The first test for the Taepodong was detected in 1994. North Korea is increasing the frequency of its missile testing, claiming six Musudan tests in 2016. Debate continues among many experts about the current level of capability and reliability of North Korea's missile forces. Nobody debates the North's commitment to resourcing these programs, however, and recent tests suggest they are increasing the range and accuracy of their missiles.¹⁰

Pyongyang's most recent efforts focused specifically on the Musudan missile, which is a transportable intermediate range ballistic missile (IRBM) with a known range of 4,000 kilometers – far enough to reach Guam. There have been six launches within the unprecedentedly narrow time frame of 70 days from April 15 to June 22.¹¹ Only the sixth launch provided plausible results by flying 400 kilometers, though it was launched with an unusually high angle to reach an altitude of 1,000 kilometers before reentering Earth's orbit. The trajectory suggests the test had two purposes: demonstrating a credible IRBM capability and testing reentry technologies for a future ICBM.¹² Some claim that the Musudan is not merely an IRBM program, but also an effort to replace the outdated Rodong platforms that compose the ICBM.

3. Drones and Unmanned Aerial Vehicles (UAVs)

After first acquiring the Soviet Tu-143 Reys, it is estimated that North Korea has five to six variants of unmanned aerial vehicles. Additional D-4 Chinese drones were imported and copied, and estimates put up to 300 North Korean-made Bang-Hyun 1s and 2s in

operation. In 2010, during the shelling of Yeonpyeong Island, PCHELA-1 Russian-made UAVs were used to transmit targeting data and imagery for refined fires.¹³ Logically, North Korea is likely to have a more capable system by now. On April 15, 2012, during the Kim Il-Sung's birthday parade, the North Koreans unveiled their UAV resembling the U.S. Streaker (MQM-107), which could have been smuggled in from Syria. North Korea exposed more UAV activity following the third nuclear test in 2013, confirming suspicions that they are continuing with UAV development. The improvements include better lightweight material, a larger payload and range, and greater accuracy. These small and lethal weapons are posing a severe challenge to the ROK Army.

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As with many North Korea-related issues, the actual purpose of these UAVs is partly speculative. Although some think they could be used for direct attack, the North Korean drones lack the payload and accuracy to be effective. Even in their reconnaissance role, however, these drones could disrupt extended-range data link and fidelity with their sensors. The most probable uses would be as decoys and for short-range reconnaissance, and possibly preprogrammed flight within South Korean territory. One of the most concerning uses of drones and UAVs would be for a biological attack, namely anthrax, which would have a catastrophic effect.

4. GPS Jamming and Electronic Warfare

Since March 2016, dozens of GPS interference events occurred in the border area with North Korea, with earlier instances of GPS interference dating back to 2011.¹⁴ At that time, the ROK Ministry of National Defense (MND) briefed the ROK National Assembly's Armed Services Committee that the North Koreans were developing a GPS jammer that could reach 100 kilometers or more into South Korean territory. The MND disclosed North Korea had been importing vehicle-mounted GPS jammers from Russia since the early 2000s. North Korea deployed these systems along the DMZ in two or more locations. The MND also disclosed that in the Pyongyang area, North Koreans employ an electronic support (ES) and electronic attack (EA) unit at the regiment level. In addition, each of the forward corps

have an ES/EA unit with more than 20 various EA/ES and radars from the former Soviet Union. The National Assembly members also posed questions concerning electromagnetic-pulse weapons. There was no direct evidence to support North Korean possession of such weapons, but it is feasible that North Korea would pursue them.

Although the attacks in March 2016 did not have a direct effect on military forces, they did affect civilian GPS operation. The 2016 GPS jamming activity differed from previous tests in that it occurred along the entire DMZ instead of just in the west. North Korea has yet to fully show its GPS jamming frequencies. This is a serious challenge to precision-guided munitions and requires countermeasures to address this new dimension of the North Korean threat.

5. Cyber Warfare

Aside from all-out war and WMDs, North Korea's cyber threats are the most potent. With the difficulties in attribution and often non-kinetic impact, North Korea can seek to retain plausible deniability with respect to any particular attack. But North Korea's focus on cyber warfare is increasingly obvious. According to information from defectors, North Korea selects children from grade school who show excellence in math and science and develops them as cyber warriors. Estimates put the number of cyber warriors in the thousands, perhaps upwards to three thousand.¹⁵ Attacks occur on a daily basis against government agencies, private organizations, and individuals.

The first known attack by the North is estimated to have taken place on July 7, 2009. Targets included the Blue House, the National Assembly, Naver, the U.S. Department of Treasury, the U.S. Federal Emergency Management Agency, and various other sites in South Korea and the United States. The next attack, via a distributed denial of service, occurred on March 4, 2011, against the Blue House, the Korean National Intelligence Agency, Korean banks, and other Internet sites. One month later, on April 12, Nonghyup Bank closed due to an attack by North Korea that resulted in millions of dollars in damage. It is believed North Korea wanted to see how the ROK would react to the attack in order to enhance its capabilities in the future. On June 9, 2012, a user with the nickname "IsOne" infiltrated the *JoongAng Daily* newspaper, destroyed data, and changed the newspaper's home page.

On March 20, 2013, 48,000 computers belonging to KBS, MBC, YTN and the Shinhan and Nonghyup banks were attacked, paralyzing these systems. On June 25 of

the same year, at 9:30 in the morning, the Blue House and the prime minister's office home page were hacked, as were an additional 11 media sites and 16 political and government organizations. On November 24, 2014, in retaliation for the making of the movie *Interview*, Sony Pictures Entertainment was hacked. In December 2014, the Korea Hydro & Nuclear Power Company suffered an attack that included extortion from the hackers.¹⁶

In short, the North Koreans are developing increasingly sophisticated cyber weapons and methods that they will use during steady state conditions, causing concern about potentially more damaging capabilities they may use in the event of war.

6. Other Activities

North Korea is continuing to improve upon its conventional weapons as well. A good example is its RPG weapon system. A truly inexpensive, reliable, multipurpose system, it is used as an anti-vehicle/tank weapon but also breeches obstacles and can even shoot down helicopters. The North Koreans have developed various warheads including lethal hyperbolic warheads that can have a devastating effect on personnel in confined spaces. The mobile 122mm rocket launcher system is another example. Cheap, effective and disposable, it is being manufactured and deployed all along the front line. The old fleet of MIG-19/21 aircraft still being flown by the North Korean Air Force is another interesting aspect of North Korean weapon strategy. These aircraft could be used as decoys, remote-control bombs or even as modern-day kamikaze airplanes.

Furthermore, North Korea is working to greatly enhance its command, control, and communications infrastructure. Fiber optic land lines are in place for communications, as well as a new series of frequency-hopping radios. These systems significantly increase the capability of North Korean operations, as well as making communications more secure. Such developments also make it more difficult for the U.S.-ROK alliance to respond to impending attacks.

Conclusion

North Korea has been very practical in its development of an offset strategy. Pyongyang's goal of unifying the Korean Peninsula by force has not changed in the past 70 years, despite lacking the military capabilities to achieve that ambition. North Korea's advantage lies in its indoctrinated subjects that democracies cannot match. For whatever reasons, North Koreans can survive years of famine, leading to the deaths of more than a million people, and still blame it on the United States.

Lessons learned from the Korean War, the Vietnam conflict, the Gulf War, and the wars in Iraq and Afghanistan now deeply inform North Korea's doctrine, weapons development, and overall strategy. North

Lessons learned from the Korean War, the Vietnam conflict, the Gulf War, and the wars in Iraq and Afghanistan now deeply inform North Korea's doctrine, weapons development, and overall strategy.

Korea continues to present an increasingly formidable threat, not only to the Korean Peninsula but also to the entire region and even to the world through its volatility. The only thing that stands between the ultimate North Korean goal of unification is the United States and the U.S.-ROK alliance. Therefore, North Korea will endeavor to weaken the alliance through any means, including the guise of a "peace treaty" to reduce American presence in Korea before undertaking any major military adventure. While it may not use the same terminology as the Pentagon, the fact remains that North Korea hosts a dynamic, potent, and evolving military force.

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CHAPTER 4

Strengthening South Korean Defense

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This chapter analyzes how the U.S. Third Offset Strategy affects the defenses of the Republic of Korea (ROK). How the ROK responds to and even initiates its own version of an offset strategy will be important for years to come. Meanwhile, what makes the Third Offset Strategy so timely is the effect that tomorrow's modernization decisions may have on today's volatile security environment on the Korean Peninsula. In 2016, North Korea successfully tested a nuclear device, launched a "satellite launched vehicle" that may be a "covert" test for a three-stage ballistic missile, deployed its first open-ocean submarine and an accompanying submarine-launched ballistic missile (SLBM), and fielded a multiple rocket launcher (MRL) capable of hitting targets far beyond Seoul.¹ Given these North Korean upgrades, a critical question is, how will a Third Offset Strategy change the balance of military power on the Korean Peninsula? Furthermore, how well prepared are the ROK armed forces to afford, assimilate, and use leading-edge technologies?

As the ROK and United States strive to develop offset strategies, North Korea will adjust accordingly, as it has in the past. For example, as U.S. troops were preparing to move to new bases south of Seoul in order to avoid North Korean "first-strike" artillery units along the DMZ, North Korea was developing an improved MRL system that could reach Camp Humphreys, the main relocation garrison.² After addressing the impact of the Third Offset on the balance of military power, as well as the ROK's readiness to adopt a Third Offset Strategy of its own, this chapter examines paths North Korea may pursue to circumvent a U.S.-ROK alliance Third Offset Strategy. The chapter concludes by addressing key political and military challenges affecting alliance implementation of Third Offset-associated technologies and concepts of operations.

Impact on the Military Balance of Power on the Peninsula

As Seoul and Washington look to the future of the Korean Peninsula over the next five to 15 years, an essential issue is how these two allies can continue to deter North Korea's increased and developing military capabilities. The reason an all-out attack on the South has been deterred is likely because Pyongyang fears that its forces will not only meet failure in unifying the peninsula, but also could ultimately face total destruction.

One of the key concerns for the U.S.-ROK alliance is the growth of North Korea's ballistic missile capabilities. North Korea continues to develop a full array of missiles: SLBMs; medium-range and intermediate-range ballistic missiles (MRBMs and IRBMs); and potential ICBMs, including the successfully tested Taepodong missile and the untested mobile transporter-erector-launcher, known as the KN-08.³

The decision to deploy the Terminal High Altitude Area Defense (THAAD) system to Korea illustrates how advanced technologies can affect the military balance of power. A successful deployment would hold both political and operational benefits in preserving deterrence, but it is worth recounting how the chief obstacles to an alliance decision to improve missile defenses have been mostly political in nature.

Following North Korea's successful launch of the three-stage Taepodong in December 2012, the U.S. Department of Defense declared it would increase its ICBM ballistic missile defense (BMD) in East Asia. Early plans in 2013 included plans to upgrade BMD in Alaska and California, and continuing initiatives to deploy more early-warning systems to Japan.⁴ By 2014, it had become clear that the United States was considering the possibility of deploying a THAAD system battery on the Korean Peninsula.⁵ Meanwhile, the ROK decided to upgrade to the badly needed point defenses by spending \$1.3 billion on the PAC-3 system by 2020.⁶

In June 2014, South Korea announced it did not intend to buy THAAD from the United States (though the United States did not offer to sell it and was considering only deploying it to Korea). By October 2014, the United States and South Korea were in talks to consider deploying the THAAD system to the Korean Peninsula. By February 2015, Chinese officials publicly voiced objections to the deployment of a THAAD system on the peninsula. In March 2015, U.S. officials announced that THAAD would expand its BMD force to seven batteries.⁷

During the same month, U.S. Assistant Secretary of State Daniel Russel remarked that “the US has a responsibility to consider a system that can deter North Korea’s missile threats.” He further dismissed China’s concerns, saying, “Well, I find it curious that a third country would presume to make strong representations about a security system that has not been put in place and that is still a matter of theory.”⁸ Also in the same month, according to a South Korean military source quoted in the press, there now was a plan to deploy THAAD to the Korean Peninsula in emergencies.⁹

During mid-April 2015, the Commander of United States Forces Korea (USFK), General Curtis Scaparrotti, testified that THAAD “would give us a high-tier defense and so therefore rather we would have a layered defense

billion), to be delivered in 2018–2021.¹⁵ The F-35, and the resulting increased capabilities it will give to the ROK’s ongoing hope to build an advanced indigenous fighter (the KF-X), will change all of the paradigms of air superiority in any conflict that occurs on the Korean Peninsula – and thus will be a key factor in the balance of power that exists there.

There are other initiatives that South Korea is undertaking that relate to Third Offset strategies. For instance, South Korea reportedly is considering acquisition of Israel’s “Iron Dome” anti-rocket system, which might protect citizens in heavily populated Seoul from North Korean artillery.¹⁶ Drones are another area of interest to South Korea, which was the first U.S. ally in Asia to acquire the America’s highly sophisticated RQ-4 Global

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and those systems would enhance the capability of our present Patriot systems that are on the peninsula today.”¹⁰ It became obvious in 2016 that the THAAD system would be vital for BMD, when North Korea successfully tested the Musudan missile flying at a speed that most experts judge is too fast for the PAC-3 (the existing on-peninsula system) to intercept.

In 2016, talks continued between Seoul and Washington regarding the deployment of the THAAD system. While there have been objections to the deployment of THAAD to South Korea from both China and Russia, U.S. and ROK officials have emphasized that the defensive system will not be used against either China or Russia.¹¹ In July 2016, talks between Washington and Seoul agreed on deploying THAAD to the Korean Peninsula, and Seongju was subsequently named as the future deployment site.¹² This system will be an upgrade to other systems that exist on the peninsula, and will enhance BMD for the U.S.-ROK alliance. Even so, the THAAD system reportedly lacks the speed to intercept the Musudan missile, suggesting more advanced defenses may be required to keep pace with the North Korean missile threat.¹³

A second dimension of the North Korean threat centers on its large if antiquated air force. The ROK hopes to change the balance of power in the air by modernizing its own aging fleet of combat aircraft, which includes F-4 and F-5 fighters that the United States no longer flies.¹⁴ In September 2014, South Korea agreed to buy 40 Lockheed-Martin F-35 jets (worth roughly \$7

Hawk unmanned surveillance aircraft.¹⁷ Moreover, South Korea plans convert its fleet of MD 500 helicopters to UAVs.¹⁸ Modernization also applies to South Korea’s offensive arsenal, and in November 2015 Seoul opted to add Harpoon Block II antiship missiles to its naval firepower to deter North Korean maritime aggression.¹⁹

Is the ROK Military Ready for the Third Offset?

Advanced military systems only will be effective to the extent that they can be fully integrated and sustained. Yet it is an open question as to how prepared the ROK armed forces are to afford, assimilate, and use leading-edge technologies. In this regard, a successful Third Offset Strategy requires defense policy reforms.

Among the significant changes recently undertaken by South Korea’s military is the decision to authorize pre-emptive strikes against imminent North Korea attacks. This “kill-chain” system plan includes the possibility of early strikes against North Korea’s nuclear and missile facilities. As Hyeong-wook Boo has written, “The North Korean leadership would consider a decapitation strike more threatening than a nuclear attack against any of their cities.”²⁰

Some reforms focus on improving military efficiency. For example, South Korea established a Ground Operations Command by merging two of its three Army

headquarters. The command should be further strengthened with the help of the ROK Air Support Operations Center.²¹ Other organizational reforms have been more daring, such as the plan to create a unit to “strike the enemy’s core strategic targets” within South Korea’s Special Warfare Command. These “core strategic targets” presumably would include such things as long-range missile sites and nuclear facilities. This unit would enable the ROK to strike highly strategic North Korean targets capable of carrying out WMD operations.²² It is likely that the new unit, when formed, would integrate with U.S. forces already trained and equipped to capture or destroy North Korean WMDs in the case of war.²³

South Korea also has been adjusting its rules of engagement to help deter and counter North Korean provocations, such as those near the Northern Limit Line.²⁴ South Korea is now better equipped than it was in 2010 to respond swiftly to sudden artillery attacks.²⁵ But enhancement to the South’s artillery systems, deployment, and combat planning has not ended there. In response to North Korea’s recent tests of its new 300mm multiple launch rocket system (MLRS) – a system likely to be deployed along the DMZ – South Korea is developing a system that integrates the Chunmoo MLRS, the Army Tactical Missile System, and the ROK Air Force SLAM-ER cruise missile, to counterattack any sophisticated artillery attack from Pyongyang. These military attack systems would also be integrated with and supported by the ROKISR assets, including UAVs and counter-artillery radar systems.²⁶

Many other South Korean defense plans revolve around high-technology systems designed to thwart North Korea’s quest for cheaper, asymmetric approaches. Key among these systems will be such highly sophisticated systems as spy satellites and long-range surface-to-air (L-SAM) missiles.²⁷ But these organizational and technological initiatives are also expensive. Recent difficulties in increasing the defense budget suggest Korean decision-makers face difficult tradeoffs in the years ahead.²⁸

North Korea’s Response to the Third Offset

Although South Korea has taken important steps to advance its capabilities to counter the North Korean threat, Pyongyang has not been idle. North Korea is estimated to have spent close to a quarter of its GDP on its military from 2002 to 2012 – the highest percentage in the world. Some of this has been paid for by arms exports, which account for more than 10 percent of North Korea’s total exports.²⁹ However, anecdotal reports about malnourishment in certain military units suggest a far less ready and capable North Korean military force.³⁰ Will North Korea’s military programs, despite some shortcomings, enable it to successfully counter U.S.-ROK Third Offset strategies?

Pyongyang understands the sharp restrictions on its current capabilities. North Korea’s motivations for its military development programs are well summarized in the 2015 DoD document, *Military and Security Developments Involving the Democratic People’s Republic of Korea: 2015*: “North Korea uses reunification with South Korea as a key component of its national identity narrative to validate its strategy and policies, and to justify sacrifices demanded of the populace. However, North Korea’s leaders almost certainly recognize that achieving reunification under North Korean control is, for the foreseeable future, unattainable.”³¹ The tap between declaratory and actual North Korean policy, in other words, suggests the desire for acquiring military systems to counter superior forces.

Missiles are the heart of North Korea’s own military modernization efforts under Kim Jong-un. North Korea’s successful test of the Taepodong in January 2016 revealed several important developments. A secret underground railway has been built to enable more covert, short-notice launches. The missile also appears to have improved range and reliability. Though some analysts have downplayed the improvements to the latest version of the Taepodong (which the North claims is a satellite launch vehicle known as the Kwangmyongsong-4), North Korea is clearly seeking to build an ICBM capable of striking the United States.³²

There are many other developments in North Korea’s ballistic missile programs. One key example is a road-mobile ICBM – to date not test launched – that has the range to hit the West Coast of the United States. This missile system, known as the KN-08, recently was formed within North Korea’s corps-level unit known as

the Strategic Forces Corps. The unit is brigade-sized, which could mean that several KN-08 systems already have been integrated into it.³³ North Korea also recently displayed what it described as a nuclear warhead for the missile. The former Commander of U.S. Northern Command, Admiral Bill Gortney, stated in April 2015 that North Korea has the ability to reach the United States with an ICBM.³⁴ During the same time frame, North Korea tested the reentry vehicle nose cone for the KN-08. According to reports from several analysts, both the displayed reentry vehicle and nuclear warhead appear to be legitimate and capable aspects of developing missile programs. North Korea's engine tests in 2016 revealed a new engine for the missile – an engine that may be based on an 80-ton rocket booster built in collaboration with (and likely to proliferate to) the Iranians.³⁵ The North Koreans in 2015 put on parade what may be a radically modified version of the KN-08. This version of the missile may have more advanced capabilities, and has been designated the KN-14 by the Pentagon.³⁶

As North Korea develops new land-based ballistic missile programs, the military continues to maintain the readiness of its older systems, including both short-range Scud³⁷ and medium-range Nodong ballistic missiles.³⁸ In 2016 North Korea tested a new missile, the Musudan. It reportedly was transferred from North Korea to Iran in 2005, and then test-launched by the Iranians in 2006. However, the Musudan had never been launched from North Korean soil until April 2016.³⁹ Several launches over a period of time produced mixed results. During one of the launches, the missile is said to have exploded on the launch pad, killing and injuring several North Koreans. Three other tests did not have results as catastrophic, but none of the test launches that occurred during April 2016 was deemed successful.⁴⁰ North Korea conducted two more Musudan tests in June, and one of these did appear to be successful. It reached an altitude of more than 1,400 kilometers, perhaps to avoid flying over Japan, but proving that the missile likely has a range of 3,500 to 4,000 kilometers, enough to hit the U.S. territory of Guam. Analysts now have reported other advances in the Musudan, such as grid fins, which appear to be of a purely North Korean design, and possibly new engines. The Musudan also flew at a speed and altitude that clearly keeps it safe from South Korea's Patriot PAC-2 or upgraded PAC-3 systems.⁴¹ Thus, THAAD will be a welcome addition for the U.S.-ROK alliance. It should be pointed out that in two short months, North Korea went from the missile blowing up on the launch pad to a successful launch that proved menacing capabilities.

North Korea also is in the process of testing and developing an open-ocean submarine and sea-based ballistic missile threat. The submarine appears either to be directly related to or a remake of the old Soviet Golf-class submarine. The Golf can stay submerged for up to 70 days – which means it could potentially conduct round-trip missions from a North Korean port to the Hawaiian Islands.⁴² Since 2014, North Korea gradually has advanced the testing of both the submarine and the missile system. Beginning with underwater SLBM launches from a beneath-the-surface barge, and then launching the SLBM from the submarine, the North Koreans now appear to be moving forward in an effort that will give them the dual-track capability of a blue-water submarine, carrying a ballistic missile that potentially could be armed with a nuclear warhead. Although initial test launches of missiles went awry

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and actually damaged the submarine, later tests saw the missile fired several miles from out of the water. Testing and improvement of this system is ongoing, and the submarine and missile system will pose a new kind of threat to the United States.⁴³

Artillery always has been a key component of North Korea's offensive capabilities. Recent years have shown that this trend is likely to continue. In 2015, it was revealed that changes had occurred in the artillery units posted along the DMZ. These changes in the bunkers will make it more difficult for ROK or U.S. forces to engage in counter-battery fire against their positions.⁴⁴ Thus, it appears the recent changes with forward-deployed North Korean artillery were directly related to countering the ROK-U.S. modernization efforts, if not Third Offset Strategies.

Perhaps North Korea's most compelling development in artillery is its new 300mm multiple rocket launcher. The system appears to be very similar to the Russian BM-30 300mm MRL system and related Chinese derivatives. If deployed along the DMZ, it has the range to strike targets as far away as 60 miles south of Seoul. The system reportedly has been tested with fragmentation-mine shells and underground penetration shells. Each launcher is capable of carrying eight rockets. The tubes are divided into two sets of four

tubes on each launcher.⁴⁵ Since 2014, it has been tested numerous times – including during large-scale exercises in 2016. Kim Jong-un reportedly attended artillery drills during the same time period.⁴⁶

While the foregoing programs represent some of the chief North Korean military modernization efforts, there is no doubt that most see North Korea's nuclear program as the biggest threat to regional and international security. North Korea now has successfully tested a nuclear device four times. Its plutonium program is well known and has been assessed to have had weapons since at least the early 1990s. At least two of the nuclear tests have been plutonium – the third test remains unknown and could have been either plutonium or highly enriched uranium (HEU).⁴⁷ There was ample evidence that North Korea was receiving HEU program components from Pakistan during the late 1990s. To quote former-U.S. Ambassador Robert Gallucci, “. . . our intelligence community detected significant numbers of components for a gas centrifuge uranium enrichment program being transferred from Pakistan to the DPRK during the late 1990s through the early part of this decade.”⁴⁸ Thus, North Korea has a long history of both plutonium and HEU weaponization programs, and the evidence suggests that both may have been tested at least once.

The North Koreans claimed the January 2016 test was of a hydrogen device, yet the evidence suggests otherwise – though it may have been a test of a device that was different than the previous three tests. To quote a report from the Korea Institute for Defense Analyses, “. . . it is highly likely that this test was not a hydrogen bomb test or even a failed one, contrary to what the North says . . . [but possibly] a boosted fission weapon, using deuterium and tritium, which is a technology essential for increasing its yield and reducing the size of a nuclear warhead in order to allow such a warhead to be mounted on a missile, in addition to being an intermediate process in the development of a hydrogen bomb.”⁴⁹ Regardless of what type of nuclear weapon the North tested in January 2016 and then again in September 2016, advances in its nuclear program are sure to help Pyongyang counter U.S.-ROK Third Offset Strategies.

Implementation Challenges for the Alliance

The U.S.-ROK alliance faces significant hurdles in implementing Third Offset Strategies.

Unless the U.S.-ROK alliance has well-coordinated command and control, integration of systems and personnel, and strong political bonds at the highest levels, Third Offset Strategies will fall far short of their intended effect. Fortunately, the alliance has managed several challenges, including ones to command and control, contingency plans, basing, and a new combined forces combat division.

The issue of wartime operational control (OPCON) has in the past been a matter of some controversy. Under current agreements between the United States and South Korea, during wartime, when agreed to by both allies' national command authorities (NCA), some (but not all) ROK forces would transfer to the authority of the Combined Forces Command (CFC). The CFC currently is commanded by a U.S. four-star general, and during wartime he would answer to the NCA of both Washington and Seoul.⁵⁰

The issue of wartime operational control has in the past been a matter of some controversy.

Moves to disband the joint CFC surfaced from the government of Roh Moo-hyun beginning in 2006, but they were dropped by his successors. During 2013, both allies agreed that eventually the CFC (or whatever the combined command would be called in the future) should be commanded by an ROK general. They also agreed that in 2014, the decision about the timing of changes to the CFC would be delayed until “conditions” allowed in 2014.⁵¹ During the October 2015 summit meeting between President Barack Obama and President Park Geun-hye, and the subsequent U.S.-ROK

Military Committee Meeting and Security Consultative Meeting, the two governments publicly endorsed a “conditions-based” OPCON transition plan as “a well-designed pathway to implement a stable transfer of wartime OPCON of combined forces from the U.S. to the ROK.”⁵²

This is where the status of wartime OPCON sits today. Some analysts contend “the issue is resolved for all intents and purposes.”⁵³ Yet a future leader, perhaps after the next South Korean election in December 2017, may wish to revisit the issue of wartime OPCON, even before fundamental changes in the conditions on the Korean Peninsula.

Largely as a result of renewed cooperation within CFC and the alliance as a whole, during 2015, Washington and Seoul agreed to establish a joint defense strategy committee to better deal with strategic North Korean threats such as nuclear weapons and ballistic missiles. Also in 2015, Washington and Seoul agreed to establish an operational plan to better counter North Korea’s road-mobile missiles such as the Musudan and the KN-08. The newly formulated committee reportedly agreed to focus on the “4D” concept, which stands for, “detect, defense, disrupt, destroy,” the necessary actions to meet the challenge of North Korea’s nuclear weapons and missiles.⁵⁴ The new wartime contingency plan established by the U.S.-ROK alliance is now called OPLAN 5015. The plan reportedly reflects changes in the American force structure, and evolving strategies. It also addresses the upgraded North Korean threat from WMDs. The new plan is said to be the replacement for OPLAN 5027, the longtime war plan for full-scale conflict on the peninsula.⁵⁵

As a direct result of talks that made transition of PCON conditions-based, changes were made regarding the turnover of Yongsan Garrison in central Seoul back to the Korean government, and the move south to Camp Humphreys for all units on the base. This change in plans went into effect soon after the U.S. and ROK governments agreed that transitional changes to the CFC would be conditions-based. Most units currently stationed on Yongsan base are expected to be moved to Camp Humphreys by 2018.⁵⁶ On the USFK website, the latest update reflects what is now expected of the move south for most units – but not CFC, when it states, “CFC will remain in Yongsan and maintain the necessary personnel and infrastructure

required to command and control operational forces, as the CFC will retain its wartime leadership role until Washington and Seoul agree that conditions are conducive for a stable transition of wartime operational control (OPCON) to the ROK military.” The site provides more detail when it states, “Exact numbers are currently under discussion between the US and Korea. USFK will determine the minimum facilities needed to support the CFC headquarters and support the personnel who remain at Yongsan Garrison until wartime OPCON transition is complete. OPCON transition will be conditions based, so there is no date established.” Thus, at least for now, there will be a continued important contingent remaining in Seoul, with a much smaller footprint.⁵⁷

Perhaps the most important initiative involving Third Offset Strategies implemented by the U.S.-ROK alliance is the formulation of a combined combat division in the northern part of the country facing North Korea. During November 2013, USFK Commander Scaparrotti stated that a plan to make 2nd Infantry Division a combined-arms unit including a large number of South Korean troops, was under review. This came along with an announcement that a plan to keep American troops north of Seoul was also under consideration. At the end of July in 2014, it was announced that the South Korean Joint Chiefs and Pentagon officials agreed to form a task force that would determine how to organize the combined division, which would remain located far north of the Han River. On June 3, 2015, a combined U.S.-ROK division was officially established. It is commanded by an American two-star and a Korean deputy. This division will enhance combined operations within the CFC, enable deterrence against North Korea, and bring U.S.-ROK fighting forces closer together. According to a former CFC staff member who continues to live and work in Korea and recently visited the 2nd Infantry Division Command Group, American soldiers in the division are now wearing patches that say “2ID Combined Division.”⁵⁸ Thus far, this combined division has trained in ways that will make combined operations more effective, seamless, and transparent.⁵⁹ It is the latest initiative in an alliance that is evolving and growing in its capabilities.⁶⁰

Conclusion

It is evident Third Offset Strategies have the potential to keep the balance of power on the Korean Peninsula in favor of the U.S.-ROK alliance. ROK armed forces continue to develop and emphasize leading-edge technologies into this new paradigm, but the issue remains

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with the National Assembly's hesitancy to invest in expensive new systems that ultimately could be game changers in conflict. This is important because North Korea has not hesitated to respond to U.S.-ROK capabilities with new developments of its own. The most important takeaway, however, is that the alliance remains strong. As long as a strong U.S.-ROK alliance with a practical command-and-control system and effective leadership exists, Third Offset Strategies will remain the key focus of allied power in coming years.

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CHAPTER 5

Enhancing U.S. Power Projection

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Given that South Korea is the only country on the entire Asian continent where the United States continues to deploy ground forces and air assets, the U.S. alliance with the Republic of Korea plays a critical role in supporting America's power projection in Northeast Asia and by extension, in East Asia. The focus of this chapter is on how the Third Offset Strategy will affect U.S. power projection capabilities on the Korean Peninsula. The chapter is organized around three broad questions. First, how will future U.S. power projection capabilities built largely to cope with rising Chinese military power affect the alliance? Second, what operational burdens and challenges could the alliance face following regime collapse or other major political turbulence in North Korea? Third, what impact might the Third Offset have on South Korea's own medium- to longer-term force modernization and defense reform pathways?

These questions attempt to identify some of the dynamics that could be triggered by the implementation of a Third Offset, combined with the ROK armed forces' own offset strategies and programs to cope more effectively with North Korea's growing asymmetrical capabilities. In short, this chapter seeks to capture the strategic ramifications of the Third Offset for the U.S.-ROK alliance and Northeast Asia.

The Future of U.S. Power Projection in Asia

For the past seven decades, the United States has been able to maintain unprecedented influence on the world stage through a combination of fortuitous geography, the harnessing of unrivaled military power, a virtually insurmountable technological lead, and a fundamentally pragmatic political ideology. The United States' ability to project power at both ends of the Eurasian landmass – in the European continent through NATO and in the Western Pacific through a series of bilateral alliances—helped to prevent the Soviet Union from expanding its hegemony in Europe and ensuring U.S. strategic supremacy in Asia.

Yet this very paradigm is being contested by a confluence of developments. These developments include the drawdown in the U.S. defense budget after more than a decade of costly wars in Afghanistan and Iraq, the rise of much wealthier and militarily capable allies and the corresponding need for a more equal distribution of common defense burdens, and a growing public concern regarding the actual benefits of maintaining a global strategic presence, and most importantly, assuming the primary security responsibility in Europe, Asia, and the Middle East.

From both global and Asian perspectives, the single most important development that will affect and hinder the United States' capability to project power going into the 2020s and beyond is China's growing military capabilities and comprehensive defense reforms. China is undertaking its own version of a revolution in military affairs. In short, for the first time since its founding in 1949, the People's Republic of China (PRC) will have the capacity to project power along and well beyond the first island chain. Unlike the U.S.-Soviet contest throughout the Cold War when the Soviet Union – even at its height – was unable to compete with the United States economically and technologically, the PRC has grown into a theater peer. Hence, China is gaining the ability to contest the United States across the Western Pacific heading into the 2020s.

In November 2015, PRC President Xi Jinping announced the beginning of a major overhaul of the People's Liberation Army (PLA) including the transition

from military regions to theaters, the creation of a separate army headquarters (PLAA), a new strategic support force, and streamlined roles and missions under the overarching authority of the Central Military Commission.¹ Earlier, Xi announced a planned reduction of PLA personnel by 300,000 in coming years in order to bring the total PLA force level to under two million. These efforts are designed to create a new PLA command system to ensure greater nimbleness, agility, and cohesiveness.² As China's May 2015 defense strategy white paper noted, "in line with the evolving form of war and national security situation, the basic point for PMS [preparation for military struggle] will be placed on winning informationized local wars, highlighting maritime military struggle and maritime PMS. The armed forces will work to effectively control major crises, properly handle possible chain reactions, and firmly safeguard the country's territorial sovereignty, integrity and security."³

The PLA's moves to transform itself into a more modernized armed force with requisite doctrinal, technological, and operational changes have profound implications for the United States. The ability of the United States to maintain an effective deterrent and defense posture in the Asia-Pacific, particularly in

overarching perception of the credibility and sustainability of the United States' warfighting potential on the part of key adversaries such as North Korea and strategic rivals and possible foes such as China and Russia.⁴

China's growing ability to undertake joint campaigns and more aggressive anti-access, area-denial (A2/AD) operations poses an immense challenge to the United States' ability to maintain credible political and military postures throughout major crises and lower intensity conflicts in Northeast Asia and the East China Sea. Although the PLA is also likely to face budgetary constraints due to lower levels of economic growth, the PLA enjoys a range of geographic and operational advantages over the United States in the Western Pacific. Increasingly, China is devoting resources to degrade Japanese forces and augmenting its Taiwan-focused forces in order to ensure that, should the need arise, the PLA would be able to conduct operations that could withstand U.S. military interventions.

If the United States' ability to credibly project power in and around the East China Sea becomes incrementally weakened over time, Japanese and South Korean forces would be able to pick up some of the slack, but the operational edge would tilt inexorably in favor of

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Northeast Asia, will have a direct bearing on Korean, Japanese, and Taiwanese security. At stake is the long-term sustainability of the United States as an indispensable military power in the Asia-Pacific.

China's military modernization greatly affects how the ROK and the United States jointly respond to a range of contingencies on the Korean Peninsula. These contingencies include potential regime collapse in North Korea, as well as possible Chinese or even Russian military operations in direct support of North Korea prior to and following regime collapse, or in response to U.S.-ROK actions in an acute crisis is going to depend not only on situation-specific operational capabilities of U.S. and ROK forces. Equally important to the impact of PLA modernization on alliance contingency response, however, is the

Chinese forces. Such a turn of events would have spill-over effects into the South China Sea where absent the U.S. 7th Fleet, none of the Southeast Asian countries have the military capability necessary to sustain naval and air operations against Chinese forces. China's ability to more effectively contest the United States throughout the first island chain, and over the medium to longer term, into the second island chain, will result in the de facto weakening of the United States' military presence in the Western Pacific. Consequently, the United States' ability to retain its status as a dependable global power will be severely affected in the event of a significantly reduced military posture in Asia or, as is more likely, the inability to effectively degrade China's increasingly sophisticated and longer-range power projection capabilities.

Northeast Asian Perspectives on the Third Offset

As noted above, the most important strategic shift over the next two to three decades lies in China's growing A2/AD capabilities that could significantly constrain, deter, or even defeat U.S. military actions in the Western Pacific. According to the most recent assessment made by the U.S. Department of Defense, some of the key platforms the PLA is actively working on include antiship ballistic missiles, land-attack cruise missiles, nuclear submarines, modern surface ships, and an aircraft carrier.⁵ "Current trends in China's weapons production not only enhance China's capabilities to cope with contingencies along its periphery, such as a Taiwan crisis, but will also enable the PLA to conduct a range of military operations in Asia beyond China's traditional territorial claims."⁶

Partly in order to respond to this and related strategic developments, the DoD has emphasized the Third Offset to maximize the opportunities offered by cutting-edge technologies and next-generation power projection platforms. Given that the strategy is only at its conceptual phase, significant uncertainties remain, such as whether the incoming U.S. administration in January 2017 will continue to stress the Third Offset, including the allocation of budgetary resources specifically earmarked for technologies and programs associated with the initiative.

It remains to be seen whether high technologies, including conceptual architectures such as more intensive artificial intelligence-driven kinetic systems, will be able to thwart or even jump over China's increasingly robust A2/AD assets and strategies. At any rate, the question lies more in the realm of conceptual studies and scenario planning than concrete platforms.⁷ Moreover, a pronounced gap between U.S. and allied forces' military technology research-and-development capabilities means that even if the United States and core allies were to maximize the opportunities tendered by the Third Offset, it is far from clear whether or not the Third Offset would enhance South Korean and Japanese deterrence and defense capabilities. At the same time, although it is beyond the scope of this chapter to delve into the finer dimensions of Chinese military strategy into the 2020s and beyond, no other geopolitical factor will affect the contours and ultimate outcome of the Third Offset more than China's parallel offset strategy. Critically, the pace and depth of China's strategy also will influence

force-modernization paths for key allied forces, especially the ROK military and the Japan Self-Defense Force (JSDF). As one study notes:

[U]nless the United States military and intelligence communities can somehow overturn the laws of physics, economics, and geography simultaneously, the U.S. remains at a disadvantage relative to China in terms of the fundamentals of military conflict in the Asian littoral. The United States is attempting to project power half a world away against a continental-sized power. This necessitates the U.S. to expend more resources to bring its military power to bear across the Pacific Ocean. Simple logic dictates that the long lines of communication tethering the forces at sea to the American homeland or to bases located in the Asia-Pacific region (often within range of Chinese missiles) will be vulnerable—not just to kinetic measures but to cyber operations that threaten telecommunications and computing systems enabling the United States to operate its netted, joint force.⁸ [Emphasis added.]

The ability of the United States to enhance its power projection capabilities into the 2020s and 2030s also is going to depend on transition paths of South Korean and Japanese forces, two of the most capable, advanced, and interoperable allied forces in the region. Specifically, rapidly aging and declining populations in Japan and South Korea already are resulting in manpower shortages for the ROK armed forces and JSDF. Moreover, economic challenges to growth persist in both countries.

As a result, while the defense budget will be configured on the basis of key threat assessments, the prevailing political consensus, alliance management dynamics, and mid- to long-term force modernization programs, both South Korea and Japan will face growing social welfare costs and enhanced competition between defense spending and social welfare entitlement programs.⁹ Hence, South Korea and Japan have to undertake their own offset strategies that will enable their respective forces to retain credible deterrence and defense capabilities while balancing their social needs. Korean and Japanese innovations are necessary not only to address existing national security threats such as a nuclear-armed North Korea and an increasingly robust Chinese military footprint, but also to mitigate concerning demographic and budgetary trends.

In order to maximize the opportunities of the Third Offset, it makes sense to pinpoint common strategic denominators such as the need for enhanced early-warning capabilities against nuclear weapons and

asymmetrical threats and, on a case-by-case basis, improving interoperable capabilities between U.S., ROK, and Japanese forces. While the lion's share of the next-generation platforms and systems that will be built and improved through the Third Offset will be geared primarily for U.S. forces, enough flexibility should be maintained in the strategy to distribute benefits for allied forces and joint operations. Therefore, the United States should seriously consider launching both third-offset bilateral and multilateral research-and-development collaboration with key allies and partners. This collaboration should focus on a range of technologies and related operational systems that could serve as realistic force multipliers rather than relying almost exclusively on high-end technologies that, in all likelihood, only the United States would be able to fully exploit. In this regard, the United States could consider a multi-tiered Third Offset program geared principally toward boosting the deterrence and defense capacity of allies and partners. For example, Tier 1 programs could be designated almost exclusively for U.S. forces; Tier 2 programs could be crafted for allies with advanced militaries such as Japan, South Korea, and Australia; and Tier 3 programs could aim for wider dissemination encompassing other Asian allies and partners.

One of the most important factors that will determine the contours of the Third Offset lies in the United States' ability to forge a long-term, bipartisan defense consensus. Emerging from a bruising 2016 presidential election year, this new American defense consensus must include a holistic national security strategy that incorporates the

lesser degree, Russia), threats from rogue states, and jihadi terrorist groups such as the Islamic State, to name just a few of the most obvious strategic challenges. As the 2014 *Quadrennial Defense Review* noted:

Under sequestration-level cuts, the United States would continue prioritizing efforts to sustain and complete our rebalance to the Asia-Pacific region, including our focus on ensuring strong relations with our allies and partners. . . . *Reduced capacity, however, would create challenges in maintaining current levels of presence, particularly aircraft carriers, across the Pacific. The scale, number, and complexity of U.S. exercises in the region and with our allies and partners would also significantly decrease over time if resource levels did not increase.*¹¹ [Emphasis added.]

The United States faces two additional constraints as it seeks to maximize its power projection capabilities in the Asia-Pacific region. First, unlike the United States, China doesn't have global security commitments, nor does it have to project power well beyond its shores. Hence, China's critical area of operations over the next two to three decades is likely to remain within the so-called second island chain, although as a world power China clearly has ambitions to enhance its influence in the Indian Ocean. As the 2016 DoD's annual report to Congress on Chinese military power emphasized, "as China's global footprint and international interests grow, its military modernization program has become more focused on investments

One of the most important factors that will determine the contours of the Third Offset lies in the United States' ability to forge a long-term, bipartisan defense consensus.

opportunities and limitations of emerging technologies. Yet such an effort is going to become increasingly cumbersome and politically divisive given the increasingly politicized nature national security discourse in the U.S. Congress and political divergences on prioritizing relatively declining defense resources.

For example, the February 2015 *U.S. National Security Strategy* report identified eight key strategic priorities including catastrophic attacks on the homeland, threats/attacks against U.S. citizens and allies, global economic crisis; pandemic, climate change, energy dislocations, and spillover impact from failed states.¹⁰ In addition to responding to these threats, however, the United States has to factor in the longer-term geopolitical and geoeconomic competition with China (and to a

and infrastructure to support a range of missions beyond China's periphery, including power projection, sea lane security, counterpiracy, peacekeeping, and humanitarian assistance/disaster relief (HA/DR).¹²

The second constraint derives from the fact that, although it lacks allies and partners, China has greater maneuverability in pursuing key strategies since it doesn't rely on the capabilities or assistance of other states. Although the web of key allies in the Asia-Pacific region in addition to new security partners such as India and Vietnam provides the United States with an operational edge, coordinating allied forces in any major crisis or war is going to be significantly constrained by political roadblocks and major discrepancies in the military capabilities of treaty allies and partners.

High-Tech Panacea or Genuine Force Multiplier?

In November 2014, then-Secretary of Defense Chuck Hagel announced the Defense Innovation Initiative or a “game-changing third ‘offset’ strategy.” The new effort was deemed akin to the first offset of the 1950s under the “New Look” strategy and a second offset strategy that emerged with the advent of smart weapons and network-centric warfare in the 1970s. Hagel argued that while the United States was immersed in two major wars after September 11, 2001, America’s adversaries weren’t complacent. Hence, it was imperative for the United States to retake the technological, doctrinal and operational advantages by maximizing the opportunities tendered by “cutting-edge technologies and systems – especially from the fields of robotics, autonomous systems, miniaturization, big data, and advanced manufacturing, including 3D printing.”¹³ With specific reference to China and Russia, Hagel mentioned:

And while we spent over a decade focused on grinding stability operations, countries like Russia and China have been heavily investing in military modernization programs to blunt our military’s technological edge, fielding advanced aircraft, submarines, and both longer range and more accurate missiles. They’re also developing new anti-ship and air-to-air missiles, counter-space, cyber, electronic warfare, undersea, and air attack capabilities.¹⁴

In an earlier speech Hagel gave in September 2014, he touched on many of the same themes but accentuated the fact “we are entering an era where American dominance on the seas, in the skies, and in space – not to mention cyberspace – can no longer be taken for granted. *And while the United States currently has a decisive military and technological edge over any potential adversary, our future superiority is not a given.*”¹⁵ [Emphasis added.] Subsequently, Deputy Secretary of Defense Robert Work stated in a speech in January 2015 that the margin of technological superiority the United States has enjoyed throughout most of the post-1945 era is eroding and that overcoming this growing deficit was one of the biggest challenges facing the Pentagon. Specifically, Work stressed that America’s adversaries were playing catch-up with the United States including modernized nuclear weapons; new antiship and anti-air missiles; long-range strike missiles; and counter-space, cyberwarfare, electronic warfare, and special operations capabilities.¹⁶

In a subsequent address at the Center for a New American Security in January 2015, Deputy Secretary Work stated that the Defense Science Board identified five major technological building blocks that could serve as the backbone of the Third Offset Strategy. The first building block is autonomous, deep-learning systems with specific reference to utilizing big data to improve early warning capabilities. The second building block derives from enhancing human-machine collaboration and decisionmaking, such as the new F-35 helmet that provides unprecedented real-time information and intelligence to the pilot while speeding up operations and reactions. The third building block includes upgrading assisted human operations (as opposed to enhanced human operations), such as increased automation and access to real-time intelligence. The fourth building block is advanced human-machine combat teaming, or using machines to make better decisions and to enhance manned and unmanned cooperative operations. The fifth and final building block centers on new types of network-enabled semi-autonomous weapons to operate in electronic warfare and cyber environments.¹⁷

In the same speech, Work alluded to similar programs that were undertaken in the Soviet Union where the emphasis was placed on conceptualizing totally automated solutions and argued that democratic societies are much better placed to engage in and ultimately emerge victorious in a major technological competition. For example, Work stated that “[W]e believe the advantage we have as we start this competition is our people, the tech-savvy people who’ve grown up in a democracy, in the iWorld, will kick the crap out of people who grow up in the iWorld in an authoritarian regime.”¹⁸

Democratic societies are much better placed to engage in and ultimately emerge victorious in a major technological competition.

At the heart of the Third Offset and the emphasis on the growing importance of artificial intelligence is the need to build a more “heterogeneous mix of manned and unmanned vehicles of all kinds . . . [and] instead of architectures designed for a specific kind and size of force, you want systems that can scale up and down as the force changes.” Hence, the Third Offset seeks to develop “a highly distributed network that stays up despite physical attack, jamming, and hacking.”¹⁹ As DARPA director Arati Prabhakar noted:

We want to get to where we respond and react faster than human timescales . . . The way we do that is by, first of all, scouring the spectrum in real time and, secondly, applying some of the most amazing frontiers of artificial intelligence and machine learning, techniques like reinforcement learning. [Then we] use those to build systems, onboard systems, that can learn what the adversary is doing in the electromagnetic spectrum, start making predictions about what they're going to do next, and then adapt the onboard jammer to be where the adversary's going *before* they get there.²⁰

It is premature to make definitive conclusions about the opportunities and limitations of the Third Offset. But detractors have noted that the strategy is being marketed as a false panacea for overcoming declining defense dollars. Proponents hope that it “will do for the military what is already being done for parking garages, fast food restaurants and retail stores: reduce the need for human beings.”²¹ For example, given that the Department of Defense under the current Budget Control Act would face a \$1 trillion cut over the next decade, the Third Offset overpromises on the expectations that could arise from harnessing new frontiers such as enhanced artificial intelligence. As Dan Goure has argued, “the bigger danger is that DoD will become enamored of its new offset strategy and cut current programs and forces in anticipation of great results emerging from its investments in automation, big data and robots. There is a long history of the Pentagon and the White House promising huge leaps forward in military capabilities for future systems that are just PowerPoint slides, but cutting real capabilities now.”²² The underlying assumption behind the Third Offset is the belief that it will enable the United States to regain a significant technological edge vis-à-vis the two most prominent geopolitical rivals going into the 2020s and beyond: China and, to a much lesser extent, Russia.

The Third Offset Strategy and Ramifications for Korean Defense

From a South Korean perspective, how the Third Offset is going to fit into its mid- and long-term defense trajectories is going to depend on four interrelated but sequentially different dimensions. These trajectories are: (1) benefits that would result in enhancing the ROK forces' operational capabilities; (2) strengthening U.S.-ROK joint operation capabilities or “cross-pollination” stemming from Third Offset-driven innovations; (3) direct and indirect applications flowing from joint U.S.-ROK military-to-military and civilian-to-military R&D programs; and (4) Third Offset-led innovations and capabilities that, on a selective basis, could supplement and support the ROK's future force-related defense reforms, including reconfiguration of the ROK armed forces in the event of unification.

South Korea's net benefits flowing from Third Offset-driven platforms and weapon systems in the short to medium term likely are to be focused primarily on upgrading upcoming capabilities. In particular, these short-range benefits would include the ROK Air Force's decision in 2014 to procure 40 F-35A combat aircraft for phased deliveries by 2021. But given that many of the Third Offset platforms will come online at best in the 2020s and 2030s, the net benefit to ROK forces will be limited for the foreseeable future to enhancing interoperability between ROK and U.S. forces and in conducting joint operations through the 2nd Infantry Division/ROK-U.S. Combined Division.

One area where Third Offset-driven programs could result in more tangible benefits is in the area of cyber defense since North Korean, Chinese, and even Russian cyber attacks could significantly denigrate the ROK's defense capabilities. In order to partly address such



ROK forces seek to capitalize on technological superiority in the short term through platforms like the F-35A combat aircraft pictured here. (Master Sgt. Donald R. Allen/U.S. Air Force)

concerns, the United States and South Korea teamed up in May 2016 to jointly develop artificial intelligence–based technologies to counter a range of cyber threats. High-level officials from the South Korean Ministry of Science, IT, and Future Planning and the U.S. Department of Homeland Security noted in a joint statement that the two countries “recognize the desirability of sharing and securing sensitive or proprietary information, as appropriate, to ensure continued cooperation and collaboration in cybersecurity matters and, wherever possible, coordinated responses to new or emerging threats.”²³ The fact that civilian governmental organizations and the private sector are vulnerable to cyber attacks has obvious national security implications. Accordingly, the Ministry of National Defense (MND) and the Ministry of Science, IT, and Future Planning have agreed to enhanced inter-ministerial cooperation. This collaboration includes the possible creation of a cyber reserve force and closer coordination on intelligent CCTV border monitoring, joint response to GPS jamming, and a special warfare–centered combat skills augmentation plan.²⁴

Yet the ROK’s core security concern lies in responding more effectively against North Korea’s growing WMD capabilities. In particular, Seoul is focused on North

Korea’s nuclear and missile threats, even more so after Pyongyang’s sixth and partially successful testing of the Musudan (Hwasong-10) intermediate ballistic missile in June 2016.²⁵ As a case in point, the Park Geun-hye administration has to reach a decision on whether it intends to put into place key countermeasures before a successor government takes office in February 2018. For example, after North Korea’s fourth nuclear test in January 2016 and its long-range missile test, Seoul and Washington announced on February 7, 2016, that they were beginning formal consultations on the viability of the THAAD (terminal high altitude area defense) system that China has vociferously opposed as being harmful to its strategic interests.²⁶ North Korea’s fifth nuclear test in September only hardened the positions of the U.S.-ROK alliance on the one side and China on the other.

But as Ron Lyon and others have argued, the THAAD system in South Korea primarily would be useful against short- and medium-range ballistic missiles. Notwithstanding China’s argument that the THAAD system would be used to track Chinese missiles, deployment in South Korea would not add much value to already existing U.S. surveillance assets. “The United States already has a THAAD battery deployed on Guam,

two AN/TPY-2 radars deployed in Japan (at Shariki and Kyogamisaki), space-based assets, plus a range of ship-borne radars and larger land-based radars in other parts of the Pacific theatre.”²⁷ Other options that could be considered is to focus on the development of South Korea’s own L-SAM that is slated to be completed by 2023.²⁸ However, in such an instance, South Korea would still be vulnerable to North Korea’s multiple-rocket launchers and the Korean Air and Missile Defense (KAMD) system is primarily going to be designed to intercept longer-range missiles.²⁹

As a result, operational dividends flowing from Third Offset-related systems will begin to appear over a longer time frame. Even then, benefits likely are to emerge in highly specific capabilities, such as augmenting the ROK military’s early warning and surveillance requirements to focus much more sharply on PLA forces, possibly in a post-unification environment. Yet even under those circumstances, the degree to which the ROK military would be able to maximize the opportunities provided through Third Offset systems would be critically dependent on a range of factors, such as how the ROK military is likely to transition in the aftermath of a North Korean collapse and equally important, changes in the U.S.-ROK alliance, including the composition of U.S. forces in a unified Korea.

Even if one assumes that the ROK will take the lead in the unification continuum, including the formation of a unified Korean government largely under the imprimatur of the ROK, the PRC is apt to be fundamentally opposed to the stationing of U.S. ground forces in a unified Korea or the stationing of U.S. forces north of the 38th parallel. In other words, the political conditions under which the ROK is likely to transition into a unified Korean Peninsula are fraught with uncertainties. It would be a colossal mistake to assume that the ROK and the United States will be able to conduct a range of operations in areas north of the 38th parallel without some sort of Chinese or joint Sino-Russian military intervention. At the very least, there would be key preconditions such as an agreement not to station any U.S. forces in territories that were held by North Korea, the dismantlement of all nuclear weapons and related capabilities, and an ROK pledge not to deploy weapons that could be construed as “strategic” systems against the PRC or Russia.

Under such conditions, it is highly debatable whether dividends from the Third Offset would be useful since geoeconomic considerations, rather than advanced military technologies, will have far greater strategic consequences. Over the longer term, however, the Third Offset could provide select benefits to a reconfigured

ROK military –assuming that the ROK military will be able to take the lead throughout the unification phase and further, and that the ROK will continue to its strong alliance with the United States. Specifically, one of the core factors that will enable the ROK military to “execute integrated offensive operations in an informatized, high-tech network-focused environment”³⁰ is the degree to which the ROK armed forces will be able to enact critical structural reforms and have the ability to transition to a technology-intensive, innovative force.

Notwithstanding MND emphasis on a range of structural reforms since the early 1990s, the ROK military continues to be dominated by an army-centric strategic culture and a heavily bureaucratized defense planning structure. These factors have hindered critical defense reforms. Indeed, ever since the restoration of democracy in 1987 under five-year single-term presidencies, one key trade-off is that while the MND and the armed forces have fully accepted civilian control, the military establishment has consistently emphasized only marginal, if not cosmetic, structural reforms to avoid and to postpone the streamlining of an excessively top-heavy and overly bureaucratized power structure.

Technology and ROK Over-the-Horizon Military Challenges

A unified Korea and its significantly different subregional dynamic involving the United States, China, Japan, and Russia would present the biggest challenges for the ROK military. While the path to unification is likely to be highly volatile and imbued with prolonged uncertainties, a post-unification ROK military will have to be fundamentally restructured.

A whole of government effort will be needed to effectively manage a transition to a unified Korea, but insofar as intrinsically military steps are concerned, the following factors must be taken into consideration: (1) the process and outcome of the demobilization and deconstruction of the Korean People’s Army (KPA) and all subsidiary forces; (2) effective control and destruction of all nuclear facilities, materiel and programs in addition to chemical and biological weapons; (3) demining operations across the DMZ and the dismantling and destruction of all prepositioned weapon systems; (4) dismantling of all military units, military academies, and training facilities; (5) fundamental restructuring and dismantling of defense industries; and (6) controlling and safeguarding of intelligence offices with particular

reference to those with military implications. At the same time, however, the ROK military also will have to undertake humanitarian assistance and, if necessary, support civilian policing missions until such time that order and stability can be fully restored in the former North Korean territory.

In parallel with such arduous efforts, the ROK military will have to undertake the most significant structural reforms, including a downsizing of the armed forces. Assuming for the moment that the KPA and related forces and militias would be disbanded, the ROK military faces two simultaneous tasks: fundamentally restructuring its forces while reconfiguring the U.S.-ROK Combined Forces Command (CFC) together with the United States. While only conjectural and primarily speculative assumptions can be made at this time, the appropriate size and composition of the USFK in a unified Korea, optimal C4ISR systems, and the roles and missions for a reconfigured USFK among other critical tasks would have to be considered when the clear and present danger is eliminated. But as noted in a previous section, the PRC is likely to fundamentally oppose the stationing of any U.S. ground forces in a unified Korea and Beijing's overarching preference would be to ensure the lightest U.S. military footprint in a unified Korea.

Although it is understandable that the South Korean MND can only allude to very general principles insofar as post-unification scenarios are concerned given the highly sensitive and politically charged dimensions relating to contingency plans, the *2014 Defense White* paper only mentions that:

The ROK military also makes systematic preparations for unification by cultivating professional personnel and enhancing military capabilities in conjunction with the ROK government's unification policy. The ROK will manage the security situation on the Korean Peninsula in a stable manner and set the conditions for unification by thoroughly preparing for any types of situations that could occur within the framework of the inter-Korean relationship.³¹

While the ROK military has to begin concrete planning for a range of contingencies including post-unification tasks, Seoul and Washington also have been working through the Combined Defense Transformation to ensure a relatively seamless transition relating to the reversion of wartime OPCON to the ROK. During the Roh Moo-hyun administration, the ROK and the United States agreed in September 2006 to transfer wartime OPCON to the ROK by April 2012, but the Lee

Myung-bak administration and the Bush administration decided to adjust the timing to the end of 2015. Subsequently, when the Park administration began in February 2013, the United States and the ROK agreed to undertake wartime OPCON on "conditions-based wartime operational control transition." As it is currently conceived, OK and U.S. forces are working toward building a future command structure whereby the ROK military is able to fully lead theater operations and "the ROK military developed the Allied Korea Joint Command and Control System (AKJCCS), which is required to lead combined operations, and works to build interoperability between the AKJCCS and the ROK-U.S. C4I systems."³²

The ROK military has been focusing on its own offset strategies that encompass certain familiar characteristics with the U.S. Tailored Deterrence Strategy.

The ROK's overriding goal is the build a "full-spectrum" national defense posture. This posture is premised on a robust U.S.-ROK Combined Defense System with special reference to a "Tailored Deterrence Strategy" (TDS) to effectively undertake countermeasures against growing North Korean WMD threats, including nuclear weapons and ballistic missiles. The MND has stated that the central imperative lies in retaining and modernizing capabilities "to shatter North Korea's will to provoke, and to proactively respond to any potential, transnational and non-military threats. In addition, the ROK military has been implementing an effective defense reform, aiming to develop the force structure into an elite one and to build a highly efficient and advanced defense management system."³³

Hence, the ROK military has been focusing on its own offset strategies that encompass certain familiar characteristics with the U.S. TDS. As an example, the ROK MND has stressed what it calls "reverse asymmetric weapons systems," or countermeasures that are designed to "neutralize" North Korea's nuclear weapons and other WMDs. Some of the key weapon programs under development are high-power microwave weapons and electromagnetic-pulse bombs that the MND says could be developed by the early 2020s.³⁴ The MND stressed that these weapons were "soft-kill" weapons designed

to “paralyze social infrastructures” and that it was planning to fully exploit the advantages provided by high technologies.³⁵

Part and parcel of such a strategy is the MND’s emphasis on the so-called “kill chain” or the advantages flowing from the on-going Korean Air and Missile Defense (KAMD) system that is designed to counter North Korea’s growing arsenal of asymmetrical systems. The MND hopes to operationalize the KAMD by the early 2020s. However, key deficiencies remain in the KAMD, such as the fact that North Korea’s nuclear and ballistic missile technologies have been proceeding at a much more rapid rate than previously assumed, and as one defense analyst noted back in 2014, “even if South Korea invests heavily in its ISR capabilities, the sheer size of North Korea – and the fact that much of its military infrastructure is underground – suggests Seoul will be hard-pressed to supply the blanket surveillance it would need to function.”³⁶

Overall, while the ROK armed forces have made significant inroads since the early 1970s when South Korea first embarked on building up its domestic defense industries and boosting its indigenous defense capabilities, the military’s emphasis on the “kill chain” and an array of reverse asymmetrical weapons systems suggest that high technology systems over-promised what they can actually deliver. But the ROK’s military’s fundamental quandary lies in the fact that it has to handle three critical ongoing missions, such as countering North Korea’s growing WMD arsenal, implementing mid- to long-term defense modernization programs, and preparing for the eventual reversion of wartime OPCON. On top of these tasks, the ROK military also has to take into consideration the much more complex, drawn-out, volatile, and intense requirements stemming from major contingency operations in the advent of a North Korean collapse, restructuring the Combined Defense System including the CFC, and reformatting its defense strategy when its forces will face the PLA and, tangentially, Russian forces, for the very first time in a post-unification security environment.

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CHAPTER 6

North Korea's Missiles: A Precision-Guided Problem for Extended Deterrence

DR. MIRA RAPP-HOOPER

Much has been written about North Korea's growing nuclear arsenal: By 2020, the Hermit Kingdom could have anywhere from a few dozen to a hundred of the world's most dangerous weapons. It also may have multiple means by which to deliver them, and the ability to hold several key U.S. allies, and possibly the American homeland, at risk. As they have grown more common in recent years, North Korean missile tests often are referred to as "provocations" – but they are much more than this. Pyongyang's development of sophisticated ballistic and cruise missiles serves as a reminder that the proliferation of precision munitions is not reserved for major powers. Indeed, North Korea may use its ballistic and cruise missiles to attempt to prevail in a conventional conflict against the United States and its allies, either through political coercion or through direct anti-access challenges. U.S. military planners therefore must consider Pyongyang among the adversaries who may inflict serious damage on U.S. forces in conventional conflict, and work closely with South Korea and Japan to strengthen extended deterrence and defense in the face of these challenges. To do so, the United States and its allies will need to develop a credible conventional warfighting posture, along with sufficient capabilities and plans. This chapter offers some recommendations to that end.

By 2020, the Hermit Kingdom could have anywhere from a few dozen to a hundred of the world's most dangerous weapons.

North Korea as a Precision-Guided Challenge

North Korea's missile programs have threatened its neighbors since the late 1990s. In recent years, however, the Pentagon has begun to use the moniker "Third Offset Strategy" to guide its future force investments, and presents a useful framework through which to examine the missile challenge from Pyongyang. The United States' Third Offset – following the first offset in the early nuclear age and the second in the 1970s – is designed to help ensure that the U.S. military can operate successfully in a world of ubiquitous precision munitions.¹ Where North Korea is concerned, this means the United States must be able to sustain a credible conventional defense posture in Northeast Asia, and to uphold its security guarantees to South Korea and Japan, despite North Korea's growing nuclear and missile arsenal.

Devising a credible conventional alliance warfighting posture under the specter of a nuclear North Korea is challenging because the United States and its allies do not completely understand the full extent of Pyongyang's nuclear capabilities nor the conditions under which it would use them. In the last several years, the North has claimed to have a second-strike capability – the ability to absorb a nuclear first strike and still retaliate in a devastating manner against an adversary. This may presently be implausible, but Pyongyang could realize it within a decade.² If Pyongyang ultimately hopes to secure regime survival with its nuclear weapons, an assured retaliation posture is a sensible objective. If and when North Korea does possess a second-strike capability, nuclear war enters the realm of the possible, substantially raising the prospective costs of fighting.

If and when North Korea does possess a second-strike capability, nuclear war enters the realm of the possible, substantially raising the prospective costs of fighting.

A North Korean second-strike capability would have several elements. First, it would require Pyongyang to have such a sufficient number of nuclear weapons that it could lose some early in a conflict and maintain the ability to respond. Additionally, it would need to have geographically disbursed weapons to reduce their



The deployment of Terminal High Altitude Area Defense missile defense systems, pictured here, are prompted by proliferating concerns over developing North Korean force projection and nuclear capabilities. (Ralph Scott/U.S. Department of Defense)

vulnerability to first strikes. Finally, it would need to have multiple types of reliable delivery vehicles.³ Expert estimates of the size of North Korea's arsenal vary substantially. Some suggest it will have a few dozen weapons by 2020; another estimates the number as high as 100. Defense officials in the United States also disagree over how close North Korea is to being able to mate a warhead to a delivery vehicle.⁴

Even if one assumes that North Korea seeks a second-strike capability to guarantee regime survival and has few incentives to use nuclear weapons, North Korea can still pose a substantial threat to the region through its burgeoning missile arsenal. In any conventional war, the United States and South Korea have incentive to signal to Pyongyang that they do not intend to overthrow the regime, lest North Korea be tempted to escalate a conventional war to the nuclear threshold. But short of a large-scale nuclear exchange, Pyongyang may use its missiles to try to prevail in a conventional conflict with the United States and the ROK, either through coercion or by interfering with the flow of forces to the peninsula. North Korea's growing missile stockpile therefore presents a considerable deterrence challenge for the United States at the conventional warfighting level.

Taking Stock of North Korea's Stockpile

North Korea has placed emphasis on its missile programs since the 1990s, but with Kim Jong-un's ascent, its delivery vehicles appear to be a top priority. The young Kim has ordered more than 50 missile launches since taking power. Kim's launches may be used to send signals – defiance in the face of U.S.-ROK military exercises, or consternation with Seoul's mid-2016 Terminal High Altitude Area Defense (THAAD) missile defense deployment announcement. But they also demonstrate Kim's strong desire to make meaningful technical progress and increasing the range of his precision reach.

In 2014, North Korea announced that it had perfected a short-range ultra-precision KN-02 Tosca missile.⁵ This vehicle has a range of up to 200 kilometers, is believed to be quite accurate, and is its only solid-fueled – and therefore more mobile and highly ready – missile.⁶ North Korea's short-range missiles primarily are threats to South Korea and to U.S. and ROK bases on the peninsula.

A centerpiece of the North's program is the Nodong medium-range missile with a range of 1,000 kilometers. The Nodong is considered to be a well-developed technology, and was last fired on August 2, 2016, landing in Japan's exclusive economic zone.⁷ The Musudan IRBM missile has a range of 2,500–4,000 kilometers, putting it easily in range of Japan, and possibly even Guam.⁸ In spring and summer of 2016, North Korea tested the Musudan six times. Five of the tests were believed to be failures, but a sixth was proclaimed a partial success by the South Korean Ministry of Defense.⁹ At the very least, this spate of Musudan tests leads analysts to believe that Kim Jong-un is attempting to advance the program, and this also may advance the KN-08 ICBM program.¹⁰

North Korea also has several active ICBM programs. Most analysts agree that its Eunha-3 space launch vehicle is functionally a Taepodong ICBM. Successful Eunha tests in December 2014 and February 2016 suggest Pyongyang is making progress on its Taepodong. In 2016, it appeared to make further steps in that direction, completing re-entry vehicle tests, which are not part of space launches.¹¹ The Eunha-3/Taepodong-3 variants have a 10,000-kilometer range, while the Eunha-2 and Taepodong-2 variants have 6,000–9,000-kilometer ranges.¹²

North Korea has not flight-tested but continues to advance its KN-08 road-mobile missile, which has a range of 7,500–9,000 kilometers. Its engines are based on the Musudan, so the rapid-fire 2016 Musudan testing likely also has implications for the KN-08.¹³ Analysts have predicted the KN-08 could become operational by 2020, even without extensive flight testing.¹⁴ The road-mobile nature of the KN-08 makes it more survivable than many of North Korea's other systems. Finally, the KN-14 is a liquid-fueled ICBM based on the KN-08, and may have a range of 8,000–9,000 kilometers.¹⁵ All of North Korea's ICBMs place the continental United States within striking range.

Pyongyang also has been attempting to develop its submarine-launched ballistic missile (SLBM), the KN-11, for some time. Analysts disagree over whether its spring 2016 SLBM test was successful, and the range of this variant is unknown at this time.¹⁶

North Korea's ballistic missile program receives the lion's share of international attention, but Pyongyang also has been working on a KN-09 antiship cruise missile (derived from the Russian Kh-35), which could present substantial access challenges for the United States and its allies if it becomes operational.¹⁷ The Russian Kh-35 also can be modified to perform land-attack missions.¹⁸ With this vast array of missiles, North Korea presents the United States and its allies with profound political and operational challenges.

Decoupling and Anti-Access in the PGM Age

During the Cold War, the United States and its allies often worried about “decoupling” – the possibility that Soviet nuclear threats could attenuate the link between security provider (the United States) and security receivers (Europe). By the mid-1960s, when Moscow achieved the ability to strike the U.S. homeland with ICBMs, NATO allies worried that the United States could no longer credibly claim that it would use nuclear weapons on Europe's behalf. Protecting Europe would invite retaliation against the U.S. homeland, which, by definition, was of greater value to U.S. leaders than the Transatlantic Alliance. Later in the Cold War, when the Soviet Union reached “parity” with the United States in its nuclear stockpile and delivery vehicles and deployed shorter-range missiles in the European theater, these anxieties flared again. With these new deployments, the allies feared that the Soviets could launch a catastrophic attack on Western Europe, leaving the United States with inappropriate (and catastrophic) response options.¹⁹

The essence of the decoupling problem was that Soviet advances in strategic delivery vehicles created new political dilemmas – ways in which extended deterrence could be tested and alliance cohesion undermined. Soviet missile developments caused severe alliance angst because they held at risk to different degrees the vital security interests of different NATO members, revealing the uneven political stakes that are inherent in an extended deterrence relationship.

As North Korea rapidly grows its missile capabilities, it may present the United States, South Korea, and Japan with 21st-century decoupling dilemmas, even if those missiles are not yet nuclear-tipped.²⁰ With its short- and medium-range missiles North Korea can threaten South Korean population centers and U.S. and South Korean bases below the 38th parallel. If a conventional conflict breaks out, it may be able to threaten those targets to coerce Seoul, giving it reason to end a conflict on terms favorable to Pyongyang, even if these are highly disadvantageous to the alliance and the political balance on the peninsula.

With medium- and intermediate-range ballistic missiles, Pyongyang may force Tokyo or even Washington to pause before allowing their bases to be used to support a conflict under way, despite the fact that Seoul and Tokyo may have a profound interest in continuing it. With its intercontinental ballistic missiles, North Korea could

threaten the U.S. homeland in hopes of reducing its role or sidelining it from a conflict on the peninsula, despite the fact that it otherwise would have a clear interest in continuing to thwart a conventional advance.

Given that South Korea, Japan, and the United States are likely to have relatively little information about the Kim regime's warfighting calculus in an actual conflict, it would be difficult for any party to dismiss these missile threats. Moreover, any target of a North Korean threat must contemplate the possibility that Pyongyang's miniaturization efforts have advanced more quickly than believed. Despite the fact that North Korea may not have miniaturized a nuclear warhead, the United States and its partners must contemplate how its rapid and diverse missile proliferation may hold their interests, and therefore, their alliances, at risk in a conventional conflict.

In addition to using its missiles for coercive political purposes, North Korea also may use its delivery vehicles to present the United States and its allies with formidable anti-access challenges. North Korea may not only threaten bases in South Korea, Japan, and on Guam, but actually

As North Korea rapidly grows its missile capabilities, it may present the United States, South Korea, and Japan with 21st-century decoupling dilemmas, even if those missiles are not yet nuclear-tipped.

use those missiles to prevent or delay the flow of forces onto the Korean Peninsula, and to disrupt logistics and resupply. North Korea could use its cruise and antiship ballistic missiles to impede the flow of forces approaching the peninsula and to disrupt the movement of alliance forces already in theater.²¹ Indeed, North Korea's missile developments pose profound implications far below the nuclear threshold, if they target the troops, bases, systems, and supply lines that the allies rely on to wage a conventional conflict. To accomplish these warfighting goals, North Korea's missiles will have to be accurate, and there is good reason to believe that many of them are not yet at an operational level. But these trends underscore the importance to the United States and its allies of fashioning a credible approach to conventional warfighting on the peninsula in a fraught environment.

Recommendations

To combat North Korea's ability to use its military arsenal for political coercion and access denial in a conventional fight, the United States and its allies must send signals that suggest that they are able to prevail in a conventional conflict. This includes updates to their force posture via hardening and dispersion, revisiting their conventional objectives, plans, and approaches, and investments in technologies, some of which are associated with the Third Offset. They include the following:

1. Harden and Disperse Bases in South Korea:

The United States and Republic of Korea currently are completing a base realignment plan that will relocate U.S. forces to 47 installations concentrated around two major hubs on the peninsula. As other analysts have noted, this may be politically desirable in that it reduces the U.S. military footprint, but it creates clear operational vulnerabilities in wartime.²² The allies should invest in hardening

these locations against cruise missiles, but they cannot be hardened against nuclear strikes. They also should make contingency plans for dispersal in wartime to ensure that North Korea cannot inflict devastating counterforce damage against these two sites.

2. Ensure Base Access in Japan:

Since the 1994 North Korean nuclear crisis, Washington and Tokyo have held conversations about the support role that Japan might play in a conflict on the Korean Peninsula, and the 1997 and 2015 U.S.-Japan Defense Guidelines reflect Japan's increased willingness to assume this burden. Even though the Japanese public remains wary of conflict, Japan must expressly give its wartime

consent for the United States and South Korea to rely on its bases. The United States and Japan should regularly discuss the role that bases in Japan would play in a Korea contingency, including the use of both American and Japanese bases. They also should discuss granting ROK forces access to Japanese bases for logistics, refueling, and resupply to reduce their vulnerability on the peninsula. In the emerging missile environment, dispersal within Japan may be critical to the flow of forces, but it is not guaranteed.

3. Prepare for Combat-Credible Limited Wars: To demonstrate to North Korea that it will not deny the United States and its allies access in a conventional conflict and to dissuade it from reaching for nuclear weapons or nuclear threats out of fear of regime change, the United States and its allies must demonstrate that they are preparing to fight limited wars. This means reevaluating their operations and war plans in light of these emerging challenges. This includes developing limited objectives and contingency plans. It also may include new approaches on how best to surge forces, the balance between short- and long-range strike capabilities, and the possibility of dispersed doctrine and command and control.²³

4. Invest in Multilayered Missile Defense: In mid-2016, President Park Geun-hye took the important step of announcing the decision to deploy a THAAD ballistic missile defense system to South Korea. The THAAD battery of six launchers, 48 interceptors, radar, and fire-control system can shoot down short-, medium-, and intermediate-range missiles, but it does not cover the entire country. Indeed, it primarily will be used to protect major military installations and excludes Seoul.²⁴ South Korea already possesses a Patriot-2 system, and this may be used for the capital, but the system is outdated. In addition to the THAAD deployment, South

Korea should continue with plans to upgrade to a PAC-3 system and Aegis SM-3 and SM-6 interceptors.²⁵ It should work closely with its U.S. ally to design this multilayered missile defense strategy.

5. Encourage ROK-Japan Intelligence Sharing: South Korea has been taking meaningful steps to improve its ISR capabilities and should continue to do so. Intelligence cooperation between Seoul and Tokyo is essential, however, particularly in an environment in which North Korea may use missile threats of varying ranges as political wedges. South Korea and Japan have agreed to share data in principle, but progress on this issue awaits the full implementation of their 2015 Comfort Women agreement, which aims to settle painful historical issues between the two. Seoul and Tokyo must continue to invest in their own ISR capabilities as well as to prioritize intelligence sharing and broader trilateral military cooperation on North Korean nuclear and missile threats, if they are to offset Pyongyang's growing anti-access and coercive capabilities.

In the mid-1960s and late-1970s, NATO was able to surmount deterrence and defense challenges presented by the Soviet Union's advanced delivery vehicles in part through the expansion of conventional warfighting capabilities and concerted allied assurance efforts.²⁶ These aimed to convince both the Soviet Union and the Europeans that NATO could credibly fight below the nuclear threshold in more limited conflicts. As the United States and its allies contemplate warfighting in the shadow of North Korea's missiles, it is essential to recall that major powers do not monopolize anti-access technologies, and that precision munitions can be used to rend alliances as well as to disrupt force flows. U.S., ROK, and Japanese responses will need to be just as tailored if they are to meet these rapidly emerging challenges and allow the allies to prevail in a conventional conflict.

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CHAPTER 7

Deterrence: A Korean Perspective

DR. HYEONG-WOOK BOO

Few scholars and practitioners in South Korea understand the current U.S. effort to create the Third Offset Strategy, and even fewer the potential implications for the Korean Peninsula. This may reflect the ongoing debate within the United States about the importance, scope, and likelihood of success in harnessing advanced technologies and new concepts of operation to strengthen America's power projection capabilities in the face of proliferating technologies. Because the Third Offset Strategy remains more rhetorical and aspirational, it is only natural that the Republic of Korea's defense establishment is just beginning to consider its implications for security on the Korean Peninsula.

European national security debate over the Third Offset Strategy appears to be advancing even faster than that in Asia. This is no doubt due to Russia's assertive military posture in Ukraine and along its periphery. Moscow's use of hybrid warfare mixed with the deployment or threatened deployment of advanced air defense and missile systems, as well as its leading-edge cyber capabilities, are creating concerns in Europe's northern states, especially the Baltic republics. But Russia's intervention in Syria, both directly and indirectly through the provision of advanced air defense systems, raises important questions about whether the United States could or would project its military power to confront such capabilities. It is precisely this kind of deteriorating cost-exchange ratio that is promoting American officials to develop a strategy for offsetting the ubiquity of long-range precision strike and other capabilities that call into question U.S. power projection capabilities. But even though analysis of the Third Offset Strategy will remain speculative until such time as the United States can point to something tangible, the ROK defense community needs to deepen its own thinking with regard to how such a strategy could affect fundamental concepts such as deterrence. This chapter seeks to catalyze a debate in South Korea and more broadly about how a third U.S. offset alters concepts of deterrence on the peninsula.

Korean Security and the First Two Offset Strategies

America's first two offset strategies had a substantial impact on South Korean security. When the United States instituted its first offset strategy in the 1950s centered on establishing an early nuclear advantage, a fledgling South Korea was still trying to rebuild the country in the aftermath of the Korean War. Hostilities may have ceased with the 1953 Armistice, but the residual damage and subsequent poverty posed a monumental challenge. Per capita income between the newly divided Koreas may have been equally low in 1953, but an influx of Soviet and Chinese assistance, coupled with the North's mineral resources and preexisting industrial base, quickly elevated the authoritarian North. Meanwhile, South Korea experienced political turmoil and prolonged economic difficulties until the mid-1970s. This growing chasm between economic and political realities in the two Koreas created profound security questions.

North Korea's founder Kim Il-sung could well imagine achieving a favorable conventional military balance that would allow a resumption of war in pursuit of a unified peninsula under his rule. South Korean military planners recognized the precariousness of deterrence and security during this period, which spanned from 1953 until the mid-1970s. U.S. President Dwight D. Eisenhower's "new look" policy that emphasized building up a nuclear arsenal to offset superior Soviet conventional capabilities in Europe also would bring tremendous advantages of deterrence on the Korean Peninsula. U.S. nuclear assets quickly became the great equalizer that nullified North Korea's growing conventional military capabilities. Indeed, Kim family leaders would internalize this lesson about how nuclear weapons might constrain an adversary from acting, which resulted in a decades-long investment in nuclear weapons that continues to this day.

Notwithstanding the deterrence benefits of what later would be dubbed the "First Offset Strategy," South Koreans wanted even greater reassurance and a more airtight extended deterrence. From Seoul's perspective, boots on the ground remained indispensable as a tripwire force that would bring the Americans into any conflict.

The gap between U.S. and ROK security thinking at the time of this First Offset Strategy is one that has spurred alliance debate ever since. Nuclear deterrence is potent, but there is nothing like forces on the ground to signal commitment. Multiple South Korean governments have fought strenuously to ensure a sufficient U.S. force

presence on the peninsula to preserve deterrence. For instance, the ROK's dispatch of troops to support the United States in Vietnam was largely based on President Park Chung-hee's effort to forestall any reduction in United States Forces Korea (USFK) troops.¹ By sending some 300,000 ROK forces to Vietnam from 1964 to 1973, President Park preempted the American excuse to draw down its presence on the peninsula in order to fight in Vietnam. Even so, this brief retrospective on the First Offset Strategy must acknowledge that this period in U.S.-ROK relations experienced its ups and downs. Thus, while the First Offset Strategy helped to deter war on the peninsula, America's reliance on nuclear weapons did not provide a silver bullet when it came to reassurance. People, and not just technology, are critical to the maintenance of extended deterrence.

In hindsight, the Second Offset Strategy reflected an even more complex period in Korean Peninsula security and the U.S.-ROK alliance. This complexity can be dated to the mid-1970s but arguably continued up until this past decade. By the mid-1970s, Soviet nuclear modern-

"return to normalcy," that contributed to Kim Il-sung's (and Joseph Stalin's and Mao Zedong's) miscalculation that Washington would not put up a serious fight in defense of its ROK ally. The offset strategies had to be serious enough not to allow the Soviet Union, North Korea, and other adversaries to imagine that international aggression would entail low risk and little cost. But Washington and Seoul looked at the same perennial defense question of "how much is enough" through different lenses.

South Korea arguably was the first American ally to test the robustness of deterrence in the Second Offset Strategy. As a presidential candidate, Jimmy Carter proposed gradually withdrawing America's 32,000 troops from the Korean Peninsula. During his administration, President Carter proceeded to develop plans to reduce U.S. forces on the peninsula, partly based on more favorable major-power relations and partly based on his desire to distance himself from a non-democratic ally.³ Predictably, Carter's move to reduce U.S. forces met with fierce resistance, both from U.S. defense circles and

People, and not just technology, are critical to the maintenance of extended deterrence.

ization programs were rapidly eroding America's lead in nuclear weapons, and if the United States could not rely on escalation dominance, how could it ensure that it could still deter a Soviet conventional strike? Piling on this negative trend, the Vietnam War sapped American political will as well as its economy. The United States was in retrenchment, as reflected by a significant reduction in the size of the U.S. armed forces. U.S. Secretary of Defense Harold Brown countered these unfavorable developments with cutting-edge technological investments. In particular, U.S. defense programs were steered toward investments in emerging technologies that would enable a precision-strike regime comprising long-range weapons networked together with advanced information systems.² Together, these systems could offset the Soviet nuclear parity and massive conventional capabilities that threatened Western Europe.

As with the First Offset Strategy, the Second Offset Strategy was primarily concerned with achieving sufficient deterrence and security while simultaneously keeping the costs of defense down. But modernization to avoid military engagement can create a perception of weakness. It was largely war weariness after the end of the Second World War, coupled with America's desire to

the ROK. Neither President Carter nor President Park concealed their feelings: The American leader made it clear the United States would not defend such allies just because of their stance against communism.⁴

The Second Offset Strategy adopted during the Carter administration had a tremendous effect on the direction of ROK defense planning. The United States, in effect, sought to replace troops with precision-guided munitions (PGMs) and other high technology and advanced weapons platforms to maintain deterrence on the peninsula. In other words, the United States would adapt the Air-Land Battle Concept it was developing for the European theater by offering up advanced airpower to be combined with ROK ground forces. Hence, the second offset strategy brought about a fairly clear division of labor in the U.S.-ROK alliance. This division of labor more or less continued for the next three decades before the ROK realized the need to build a more comprehensive set of defense capabilities.

The second offset strategy worked on the peninsula in large part because the ROK started to achieve significant economic separation from North Korea. A thriving economy allowed South Korea to build up a formidable defense capability, and the United States proceeded to

sell Seoul a wide array of advanced defense systems in the 1980s and the early 1990s. At the same time, a stagnating North Korean economy prevented across-the-board military modernization. Pyongyang became increasingly dependent on the military assistance of his great-power patrons in Moscow and Beijing.

In 1994, against the backdrop of this increasingly favorable shift in the ROK's security landscape, Kim Il-sung died. Diplomatic breakthroughs were soon overtaken by Kim Jong-il's decision to invest further in nuclear weapons as insurance and leverage against the U.S.-ROK alliance. While the allies had decided in 1992 to withdraw all tactical nuclear weapons from the peninsula, North Korea under Kim Jong-il would soon be making the decision to accelerate the development of nuclear weapons. As In-bum Chun argues elsewhere in this volume, nuclear weapons are an integral part of North Korea's own offset strategy. Pyongyang's offset strategy via a nuclear threat became more palpable after its first nuclear test in 2006, and in many ways has extended North Korea's leverage and threat despite continued ROK and U.S.-ROK military advances.

North Korea's initial offset strategy included more than nuclear weapons, and thus the nuclear program was not the only problem that the allies had to face. North Korea cleverly sought offset measures in its own way, delving into asymmetric strategy and introducing asymmetric threats. As the allies invested in expensive PGMs and complex command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) networks, North Korea sought out cheap countermeasures to undermine the allies' efforts. The non-nuclear offset strategy of North Korea included chemical weapons, biological weapons, a vast number of long-range artillery aimed at the Seoul metropolitan area, and special forces that could infiltrate the South from tunnels or covert sea and air insertions.

North Korea's asymmetric offset strategy promised to drive up the costs for the U.S.-ROK alliance while guaranteeing deterrence and leverage for North Korea. This security predicament endures to the present. In nominal dollars, the 2014 South Korean defense budget is reportedly about 30 times the size of that of North Korea.⁵ Although the ROK economy is vastly larger than that of North Korea, the wide discrepancy in defense spending still creates political discord in democracies such as South Korea and the United States. Some in the ROK thus call for reducing defense budgets, whereas some prominent voices in the United States are decrying the cost of defending allies such as South Korea. Moreover, the problem of dealing with North Korea's asymmetric threats factored into the 2014 decision to delay the return of wartime operational control (OPCON) from the United States to South Korea.

The Emerging Security Environment

Kim Jong-il's death in December 2011 brought his son, Kim Jong-un, to power. This third-generation Kim paradoxically appeared both more belligerent and wedded to nuclear weapons, and potentially more vulnerable and unstable. It is proving to be a dangerous combination.

The environment around the Korean Peninsula also is changing. Despite some recent setbacks, China continues to rise economically and militarily. In contrast, the United States still has not fully recovered from the 2008 global recession, nor has it extracted itself from prolonged ground wars in the Middle East. In the meantime, the international community continues to pass the buck when confronting North Korea's nuclear weapon programs. Pyongyang's developments, at least those proclaimed or demonstrated, include five nuclear tests, successful three-stage rocket tests, mobile land- and sea-based platforms, and the presumed ability to miniaturize a nuclear warhead fitted to a reentry vehicle.

Meanwhile, ROK-China relations improved considerably during the first half of the Park Geun-hye administration. President Park's visit to China in 2015 to participate in China's commemoration of the 70th anniversary of Japan's defeat in World War II was a clear demonstration of the momentum behind Seoul-Beijing relations. President Park's main interest, however, was to win China's support to exert real influence over North Korea in order to change Pyongyang's behavior with respect to nuclear weapons, provocations, and inter-Korean relations. This ascendancy in ROK-China relations created some concerns in the United States. This concern dates back to 2013, when during Vice President Joseph Biden's visit to South Korea he noted that "it has never been a good bet to bet against America."⁶

Despite these regional dynamics and changes in strategic environment, North Korea has continuously sought a breakthrough to consolidate its power and advance its military goals. The fourth nuclear test in January and fifth in September 2016 posed strategic ramifications for security on the peninsula. Some of Pyongyang's nuclear and missile developments are enumerated in other chapters of this volume, but it is worth reiterating that North Korea is shrewdly pursuing a decoupling strategy, driving a wedge between South Korea and the United States. For instance, Pyongyang may hope to decouple the American extended deterrence from South Korea by deploying long-range nuclear missiles capable of

striking U.S. targets. Such a deployment, which, based on recent events, seems just a matter of time, could make any U.S. president think long and hard before rushing to attack North Korea. That situation, even if only conceived as plausible in the North Korean mindset, might lead to a tragic miscalculation, far worse than that of 1950 when nuclear weapons were not a part of the calculation. The fear of decoupling is the main reason why some South Korean national security officials and politicians have debated redeploying nuclear weapons back onto the peninsula.

Notwithstanding a growing sense of insecurity on the part of the South Korean general public, there is no simple fix or technological breakthrough that can quickly alter the asymmetric strategy and balance of terror that North Korea has introduced in recent years. The formidable U.S. military forces are still mostly a result of early Cold War defense spending, and those assets are getting older even while a Budget Control Act has imposed caps on military

The stakes are high, because extended deterrence from the United States provides the surest way of deterring an ever-more threatening North Korea. Korean doubts about American staying power were exacerbated by the rapid drawdown of U.S. forces in Afghanistan and Iraq. Those recent wars also revealed to potential adversaries crucial intelligence about U.S. weapon systems, combat capabilities, tactics, doctrine, and military strategy. Forewarned is forearmed, and these windows into current U.S. military capabilities give opponents like North Korea new potential avenues for circumventing American military superiority. Surely there can be little doubt that military planners in North Korea, having learned clear lessons from previous conflicts, have updated their own tactics with these latest U.S. wars in mind. In isolation, such early knowledge would be of less concern, but when combined with U.S. budgetary pressures, North Korean asymmetric investments and China's policy activism become gravely serious. In an era without

There is no simple fix or technological breakthrough that can quickly alter the asymmetric strategy and balance of terror that North Korea has introduced in recent years.

spending. These limitations, occurring as North Korean programs continue to advance, are calling into question the reliability of U.S. extended deterrence in the eyes of many South Koreans. For instance, as some scholars have argued, the American nuclear umbrella is increasingly problematic for the ROK because Pyongyang's burgeoning nuclear weapon potential means any attack might trigger a nuclear war.⁷ In fact, the concern that any nuclear attack might prompt or widen a nuclear war is driving the United States further into developing long-range conventional precision-strike forces.⁸

While the United States has promoted limited, layered missile defenses as a means of shoring up extended deterrence, China has sought to block improvements to such defenses on the peninsula. Specifically, China has pressured the United States and the ROK over the deployment of a Terminal High Altitude Area Defense (THAAD) system to complement point defenses such as the Patriot Advanced Capability-3 (PAC 3) batteries already set to replace less capable PAC 2 anti-missile defenses. Even though Seoul and Washington have remained determined not to concede their security to Beijing's demands, at the very least China has complicated alliance modernization.

In short, there has been a growing concern inside the ROK about whether the United States will be able to maintain its military supremacy in the coming years.

U.S. military primacy, will extended deterrence hold under all circumstances? Even the most logical Koreans who trust alliance capabilities have some doubts.

In this situation, South Korea has pursued a multifaceted strategy. First, Seoul still counts on the U.S. nuclear umbrella to deter a North Korean nuclear attack. To avert Chinese pressure over missile defense cooperation with the United States, the ROK has invested heavily in a Korea Air and Missile Defense (KAMD) system. Seoul is reluctant to stoke trouble with its largest trading partner, China. Because of North Korea's continuing nuclear tests and multiple missile launches, including the mobile Musudan medium-range ballistic missile, Seoul stepped up engagement with the United States on the decision to deploy a THAAD system. Even without THAAD, however, the ROK has boosted its missile defense capability through its KAMD system, which in turn was made possible in part because of technologies that South Korea acquired after the collapse of the Soviet Union. Overcoming the skepticism of critics, the ROK has made significant strides in fielding an effective local missile defense system. The Korean Agency for Defense Development has successfully tested mid-range surface-to-air missiles and is pursuing a program to improve their performance.⁹ Also, the South Korean military invests in kill-chain systems capable of preemptively

striking North Korean missile launchers should they be preparing to go on the offensive. This system also includes satellites and communications networks, as well as advanced PGMs.

While the security environment around South Korea was deteriorating, the United States started to discuss the Third Offset Strategy. But the discussions largely bypassed issues related to deterrence on the Korean Peninsula. In fact, the relationship between the Third Offset Strategy and Korean security is a relatively recent phenomenon, of which this volume may be considered a rare early example.

Unfortunately, the Third Offset Strategy is occurring in a fundamentally different context from America's previous two offset strategies. In hindsight, U.S. military and economic preeminence was hardly in doubt during the 1950s and 1980s. Today, however, even a resilient United States cannot ignore the reemergence of China, whose economy appears destined to be the world's largest. Even with a slower rate of growth, China is

In an era without U.S. military primacy, will extended deterrence hold under all circumstances?

increasingly a leader in high technology and is moving from fast follower to possible technological innovator. This would pose big consequences for military modernization, as the United States cannot expect to have a monopoly in critical systems associated with the Third Offset Strategy. These technologies include artificial intelligence, unmanned systems, and additive manufacturing such as 3-D printing. China's technological prowess in these and other areas is different from America's leading edge in nuclear technologies in the 1950s or PGMs in the 1980s. From a Korean perspective, however, the key question centers on the impact of the Third Offset Strategy and its associated technologies on Korean security.

The Impact of the Third Offset Strategy on Korean Security

Just as the first two offset strategies had important consequences for Korean security, it follows that the Third Offset Strategy could prove to be of equal or even greater consequence. A crucial question is how much if at all the Third Offset Strategy will enhance America's global strategy, way of war, and dependence on forward power projection even in the face of ubiquitous precision-strike weapons and other asymmetric responses. One cannot measure the future nor predict it. Thus, a good starting point would be to examine the analysis of other countries' cases and review their arguments regarding the potential impact of the Third Offset.

A first area emerges from the European debate over whether or not the Third Offset centers on existing technological gaps between U.S. and allied states' capability. Such gaps also exist between the United States and the ROK, and as with Europe could be expensive to narrow. Certainly this appears to be the case in the European context, where most NATO members have been reluctant to spend sufficient amounts on defense to keep up with America's defense modernization programs.¹⁰ A failure to close the technological gap raises critical questions about interoperability. This assessment would be also true in the case of U.S.-ROK alliance. When it comes to technological gaps, the gap between the ROK and the United States would be larger than those of some NATO members. Thus, the Third Offset could well impose a huge challenge for the ROK armed forces, unless South Korea is willing to invest heavily in selected defense research-and-development programs.

Moreover, the Third Offset most likely will ignite new alliance controversies regarding the transfer of sensitive advanced technologies. South Korea could come to expect such technology transfers as an essential alliance benefit and security necessity. But withholding or hesitating over such transfers could undermine alliance trust. The ROK is unlikely to be satisfied with simply exercising in a two-tier alliance moving forward. Yet high-technology transfers raise notoriously delicate political and commercial issues.

Another concern is the potential impact of the Third Offset on U.S. troop presence. Should the Third Offset be pursued to reduce U.S. troop presence, then it is highly likely that many Koreans would view that tradeoff negatively. In South Korea, the number of U.S. soldiers is a vital

issue. People may not believe that high-tech weapon systems would protect the country from North Korean invasion. After all, many South Korean people believe that the outbreak of the Korean War can be attributed to a decision by the United States to withdraw troops and security support for the defense of South Korea. This impression endures to this very day – people believe the presence of American soldiers is the ultimate deterrent.

From creating a wider technology gap in the alliance, raising ultra-sensitive issues regarding the transfer of high technology, and stirring a debate over possible reductions in U.S. boots on the ground, the Third Offset will face many challenges in convincing Korean officials and public about the potential benefits of a new, technologically oriented strategy.

In addition, while the Third Offset may promote a stronger capability for winning a war, it may come at the expense of undermining the more essential goal of maintaining deterrence.

First, the South Korean public almost surely will raise new questions about the reliability of extended deterrence and the possibility of alliance decoupling. These issues have been hotly discussed concomitant with enhancements to North Korea's nuclear capabilities. Perhaps counterintuitively, launching the Third Offset will only trigger more doubts within South Korea about America's future commitment and power. Every step the United States takes to create conventional means of responding to North Korea's nuclear arms will suggest to some influential Koreans that the United States is no longer prepared to defend the ROK with nuclear deterrence. Some South Koreans already think the United States would prefer strictly conventional military responses to even North Korean nuclear aggression. The Third Offset may make even more Koreans think they have a wavering American ally.

A second problem with the Third Offset is that it could make a nuclear North Korea even more trigger-happy than it is. Pyongyang may field a nuclear arsenal, but that arsenal is sure to be at risk from a preemptive strike, which in turn may cause North Korea's leadership to adopt a use-it-or-lose-it posture in the event of a crisis. If the North Korean leadership thinks the United States has the capability to neutralize its vital weapons, then in a crisis or a period of confusion

it could logically conclude that it can only prevail by striking first.¹¹ In this situation, how can the United States demonstrate the Third Offset's value in deterring a nuclear war in the peninsula? In fact, this question leads to another important issue. For instance, Elbridge Colby argues that the Third Offset creates a nuclear blind spot, because North Korea's willingness to use nuclear weapons may rise as a consequence of the need for the United States to demonstrate the effectiveness of a conventional Third Offset in denying or defeating an adversary's nuclear weapons.¹²

The third problem for deterrence posed by the Third Offset concerns the possibility of improving war-fighting capability at the expense of deterrence. The Korean Peninsula is the world's most militarized area. Even a small conventional skirmish could escalate into full-blown war. Given the consequences of a massive conventional or possibly nuclear war, the first-order goal should be to deter war from breaking out in the first place. Because the Third Offset Strategy promises stronger means of deterrence in the long run, it may inadvertently open up questions about deterrence in the short run.

In sum, it is still too early to tell whether the Third Offset will prove to strengthen or weaken deterrence on the Korean Peninsula. In the U.S. context, one can see that the Third Offset might create a breakthrough. The concept of the Third Offset represents a truly American way of revolutionizing the military status quo. With their substantial budgets, able engineers and experts, vast infrastructure, and innovative culture, Americans can realistically hope for positive results from the pursuit of the Third Offset. However, we need to keep in mind that even in the United States, many commentators question the impact of the Third Offset on deterrence. Thus, U.S. defense planners should focus on demonstrating the Third Offset's capabilities in answering those questions, meeting policy goals, and providing reassurance to concerned allies. Simply doing nothing in the face of a rapidly changing security landscape also is a threat to deterrence. Despite all those questions and worries, the bottom line is that the U.S.-ROK alliance should fully engage in an expert discussion about whether or not (and if so, how) the Third Offset is the best way to strengthen America's extended deterrence in the years to come.

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CHAPTER 8

ROK Space Security and the Third Offset

DR. DANIEL A. PINKSTON

The future of security on the Korean Peninsula may well reside in space. Having succeeded in launching a satellite into orbit, North Korea has announced plans to put a man on the Moon.¹ Independently, the Republic of Korea is a developing space power with space security interests commensurate with the country's increasing space vulnerabilities. In recent years, the South Korean public has become more aware of the ROK space program while policy-makers have revised domestic space law and supported institutional capacity building to enhance ROK space security. South Korea's national security policy addresses a full spectrum of threats, but North Korea remains the greatest threat to ROK security.² To counter Pyongyang's existential threat, Seoul is becoming more dependent on space-based assets to help mitigate its insecurity.

North Korea's asymmetric challenges are not the primary motivation behind the Third Offset, but U.S. and ROK innovations and cooperation in the realm of space security will play an important role in the allied response to potential instability on the Korean Peninsula. Although North Korea's threat to U.S. and ROK space-based assets is limited, those assets also are vulnerable to other man-made and natural threats in an increasingly hostile space environment. Furthermore, as North Korean military capabilities expand, U.S. and ROK space assets will become more important for managing a broad spectrum of threats on the peninsula.

ROK space security policy has been formulated in the shadow of the mutual defense treaty and bilateral alliance that has endured since the end of the Korean War.³ Peculiar aspects of the alliance and path dependence over six decades now have implications for ROK space security and how Seoul and Washington will coordinate space policies and assets to achieve common goals.⁴ The United States and ROK share many common interests and goals, but there are several disparities in their interests and capabilities in the realm of outer space.

Current U.S. space security policy is articulated in a number of statutes and Obama administration policy papers. Some of these publications or guidelines are mandated by Congress, and therefore will be reviewed and revised by the new presidential administration. Some publications address space security tangentially but establish and reinforce a broader context for the role of space policy and space-based assets in U.S. grand strategy.⁵ More specific space security policy guidelines are expressed in the "National Space Policy of the United States of America" and the "National Security Space Strategy."⁶

As a global power with global interests, the security of space-based capabilities is critical to several core national objectives and military missions:

- Ensuring the security and resilience of the global economy⁷
- Maintaining U.S. global communications and military operations⁸
- Nuclear deterrence, extended conventional deterrence, and the nuclear umbrella for allies⁹
- Deterring aggression or defeating aggression if deterrence fails¹⁰
- Resisting attempts at coercion or anti-access/area-denial (A2/AD) challenges¹¹
- Defending against regional ballistic missile threats
- Sustaining a battle management command, control, and communications architecture¹³
- Maintaining global intelligence, surveillance, and reconnaissance (ISR) capabilities¹⁴
- Operating effectively in cyberspace and outer space in order to conduct high-tempo operations.¹⁵

In 2014, then-Secretary of Defense Chuck Hagel identified six core national security interests.¹⁶ The secretary and the Joint Chiefs of Staff prioritized 12 military missions to support U.S. national security interests:

- Maintain a secure and effective nuclear deterrent
- Provide for military defense of the homeland
- Defeat an adversary
- Provide a global, stabilizing presence Combat terrorism
- Counter weapons of mass destruction Deny an adversary's objectives
- Respond to crisis and conduct limited contingency operations
- Conduct military engagement and security cooperation
- Conduct stability and counterinsurgency operations
- Provide support to civil authorities
- Conduct humanitarian assistance and disaster response.¹⁷



As South Korea continues to grow its space program for civilian uses, the technology as well as human capacity and resources could potentially serve dual purposes militarily. The KSLV-II, pictured here, is one component of the South Korean space program's ongoing research and development efforts. (Korea Aerospace Research Institute)

All of these missions are dependent on the security of U.S. space-based assets and platforms. Furthermore, the Secretary of Defense estimated that the risk of interstate conflict in East Asia will increase over the next decade and that American technological advantages will deteriorate. If conflict were to erupt on the Korean Peninsula, it could begin with symmetric attacks to undermine U.S. superiority in the cyber and space domains.¹⁸ North Korea's ballistic missiles, WMDs, cyber warfare capabilities, and improving precision-strike capabilities threaten American advantages in the global commons, and therefore could degrade the U.S. military's ability to conduct operations in the entire Northeast Asia region.¹⁹

Sustained and assured access to the global commons, including outer space, requires collective action among the United States and its allies and partners. ROK assets in outer space, at ground stations, and on airborne platforms could provide redundancy and resiliency if U.S. space assets were to be compromised. Washington also intends to work with other regional allies to ensure access to outer space so that the United States can fulfill its alliance commitments and maintain stability on the Korean Peninsula.²⁰

ROK Space Program

South Korea is an emerging space power with commensurate dependence and vulnerabilities. The ROK has passed three important space milestones: launching its first satellite in August 1992, putting the first South Korean astronaut (Yi So-yeon) into outer space in April 2008, and sending up the first satellite launch with an indigenous Naro-1 space-launch vehicle (SLV) in January 2013.²¹ The Korea Aerospace Research Institute (KARI), the ROK space agency, currently is developing the KSLV-II space launch vehicle, which is designed to launch a 1.5-ton payload into low Earth orbit.²² KARI has been expanding the facilities at the Naro Space Center to support the development of larger space launchers, satellites, and the necessary infrastructure to support an indigenous space program.²³

South Korea is a signatory to the Outer Space Treaty,²⁴ the Rescue Agreement,²⁵ the Liability Convention,²⁶ and the Registration Convention.²⁷ Seoul also is a member of the Missile Technology Control Regime²⁸ and subscribes

to the guidelines under the International Code of Conduct against Ballistic Missile Proliferation.²⁹ Several domestic statutes and executive orders have established the institutional framework and regulatory guidelines for the ROK space program and space security policy.³⁰ The ROK government is a presidential system with strong executive powers, particularly in the realm of national security affairs. The president's leadership style and personal interests matter for the amount of government attention and resources allocated to the space program and space security, but policy guidelines are drafted by the Korea National Space Committee (KNSC), which is under the Office of the President.³¹ KARI, established in 1989, is the national agency that manages the space exploration program.³²

The KNSC is chaired by the Minister of Science, ICT and Future Planning, and must include a Vice Foreign Minister; and the Vice Minister of Trade, Industry and Energy. The committee can comprise up to 15 members appointed by the president, and the law recommends that it include members from other relevant government agencies such as the National Intelligence Service, but nongovernmental specialists also are eligible for appointment.³³ The Space Development Promotion Act, revised in June 2014, also established the Space Development and Promotion Working Committee and the Satellite Information Applications Working Committee (both chaired by the vice minister of Science, ICT and Future Planning) to support the KNSC. The ROK president has discretionary powers to determine how the KNSC and its subordinate working committees are managed and operated.³⁴

The KNSC is required by law to draft basic space plans, satellite information application plans, and basic preparation plans for space hazards. The Space Development Promotion Act also stipulates that the KNSC must prepare a medium- and long-term "basic preparation plan for space hazards" (hereafter "space security plan" or SSP);³⁵ the first draft of a ten-year SSP (2014–2023) was completed in May 2014. Subsequently, the ROK government began issuing periodically updated implementation plans, and has published updated plans/reports in September 2014, February 2015, and February 2016. The plans are drafted through an interagency process led by the Ministry of Science, ICT and Future Planning (MSIFP).³⁶

By law, the SSP and updated implementation plans must address the following issues or items:

- Monitoring and protecting the space environment
- Providing forecasts and warnings of space hazards
- Research and development for ways to forecast and provide warnings about space hazards
- International cooperation for forecasting and warning about space hazards
- Other necessary measures needed to prepare for space hazards.³⁷

Since the publication of the first SSP draft in 2014, a series of events has raised South Korean awareness of space hazards and the need to enhance space security and space situational awareness. First, the Sewol ferry disaster in April 2014 shocked the nation and triggered a reassessment of security and safety throughout the ROK government.³⁸ While the ferry accident did not affect the SSP directly, the psychological impact almost certainly caused bureaucrats to take security more seriously.

Second, two meteor showers raised public awareness of natural space hazards to Korea. The first occurred in February 2013 when a large meteor partially burned up in the atmosphere and rained down several meteorites over the Chelyabinsk region of Russia. The event was captured on several video cameras, and the explosion was estimated to have been the equivalent of 500 kilotons of TNT, causing significant damage and injuries.³⁹ The second meteor shower occurred over Korea in March 2014, leading to the discovery of two meteorites in the area of Jinju, South Gyeongsang Province.⁴⁰

Finally, two man-made events in 2015 (and one in 2014) raised concerns about the vulnerabilities of the ROK's space-based assets and pushed Seoul to accelerate its efforts to formalize space security cooperation with Washington. In January, Korea's Science and Technology Satellite 3 (STSAT-3) experienced a near collision with space debris from American and Russian satellites that had collided in February 2009.⁴¹ And in May 2015, Russia's Progress M27-M resupply ship for the International Space Station deorbited

after the Russian space agency Roscosmos lost control of the spacecraft shortly after launch on April 29.⁴²

The STSAT-3 satellite already had experienced a close encounter in September 2014 when it passed within 44 meters of debris from an old Soviet satellite.⁴³ On 2 January 2015, the U.S. Joint Space Operations Center (JSpOC) informed the ROK Air Force and the Satellite Technology Research Center at the Korea Advanced Institute of Science and Technology (KAIST) that a piece of space debris was estimated to pass within 23 meters of the STSAT-3.⁴⁴ The ROK government quickly formed a response team with staff from KARI, KAIST, and the Korea Astronomy and Space Science Institute (KASI).⁴⁵ Fortunately, the satellite avoided collision.

After forming the ad hoc group to address STSAT-3's near collision in January, the Space Development and Promotion Working Committee met on February 12 and decided to establish the Space Hazards Countermeasure Office (SHCO) and the Space Hazards Countermeasures Unit.⁴⁶ The interagency SHCO is chaired by the MSIFP first vice minister and includes specialists from government agencies and nongovernmental research institutes.⁴⁷

As the ROK government was establishing the institutional arrangement to respond to space debris and natural objects, it was necessary to create the technical and institutional foundations to provide space situational awareness to policymakers. In January 2015, the government selected the government-funded KASI and its Center for Space Situational Awareness (CSSA) as the civilian entity responsible for tracking space objects.⁴⁸ The CSSA functions as Korea's "national space situational awareness organization" and is responsible for space situational awareness (SSA) and research, the development of SSA-related technology, the installation and operation of SSA facilities, and international collaboration on SSA.⁴⁹

CSSA is developing optical and radar technologies for detection and tracking, to estimate orbits and to catalog space objects including satellites, debris, and asteroids.⁵⁰ The center is in the process of establishing a global optical network with five sites to track one-ton objects in low Earth orbit with a resolution of 0.5 meters. The first two sites have been installed and are undergoing testing in Morocco and Mongolia. Three more sites are planned for Korea, Israel, and the United States.⁵¹ CSSA also is conducting research on passive surveillance radars with the aim of deploying a radar network for integration with the optical surveillance system.⁵²

Korea's civilian SSA-related programs ostensibly do not have direct military applications, but much of the

technology is dual-use. The capacity building in the civilian sector will help build a pool of human resources that can transition to military-related SSA programs if necessary. Furthermore, the ROK government is building a database of space objects that could be utilized to help identify military objects in a crisis or conflict.

Military Applications

In December 2014, Seoul, Tokyo, and Washington signed a trilateral agreement to share intelligence and tracking data on North Korean ballistic missiles.⁵⁸ This marked the first time that South Korea and Japan signed such a military cooperation agreement, which later enabled the three countries to conduct their first ballistic missile defense exercise "Pacific Dragon" near Hawaii in June 2016.⁵⁹ The exercise enabled the three countries to enhance interoperability of their sea-based Aegis missile tracking systems, which are mid-course intercept capabilities and would constitute part of a layered missile defense system when combined with lower tier Terminal High Altitude Area Defense (THAAD) and Patriot interceptors.

In July 2015, the ROK Air Force established the Space Operations Center to track military satellites and analyze military threats in outer space. The ROK Air Force plans to install an electro-optical tracking system at Osan Air Base by 2019, but in the meantime will use data provided by the U.S. Strategic Command and the JSpOC.⁶⁰ Once the ROK Air Force stands up its SSA capabilities, the two sides can exchange data and provide redundancy and resiliency in support of ISR and operations around the peninsula.

U.S.-ROK space cooperation is not controversial in the realms of SSA, remote sensing for science applications, climate change, environmental degradation, North Korea-related ISR, search and rescue operations, and most civilian applications. Of course, private firms and the two governments have some disagreements over proprietary information and some details on export controls. The greatest controversy or challenge currently lies in space-based applications for missile defense. Despite the trilateral missile information-sharing agreement signed in 2014,⁶¹ the South Korean public is divided over Seoul's role or participating in regional missile defense cooperation.

Opposition sentiments were revealed in July 2016 when Seoul and Washington announced their decision to deploy a THAAD missile battery to Seongju, North Gyeongsang Province.⁶² Local residents protested for

the usual “not-in-my-backyard” reasons, but a large number of outsiders converged on Seongju and Seoul to protest the THAAD deployment for policy reasons. Opponents claim THAAD will exacerbate an arms race in East Asia, do little to enhance South Korean security, worsen already badly strained inter-Korean relations, and antagonize Beijing, which is Seoul’s number one trading partner. However, THAAD opponents generally ignore the magnitude of North Korea’s nuclear and ballistic missile threat, even as Pyongyang has accelerated its programs to develop nuclear weapons, long-range ballistic missiles, and submarine-launched ballistic missiles in defiance of UN Security Council resolutions and in the shadow of bellicose threats against Seoul, Tokyo, and Washington.

THAAD opponents generally fall into two camps. Leftists discount the North Korean threat and ROK intelligence assessments. Some are sympathetic to the North and refuse to believe Pyongyang would use force against the South because both sides share a common national identity. Others are distrustful of the ROK government (particularly the NIS) and the ROK military because of

To ensure continuous surveillance and early warning of North Korean missile launches, KARI researchers are exploring the possibility of placing an early warning satellite into geosynchronous orbit above the peninsula.⁶⁶

The ROK aims to deploy these systems by the middle of the next decade. Research and development is expensive, however, and the technologies are complex. Even if the development and deployment time lines are met, the ROK is vulnerable to North Korean missile attacks and coercion every moment leading up to these innovations. There also is a political-economy aspect of KAMD, as Seoul has an import-substitution orientation to support domestic defense contractors. The U.S.-ROK alliance faces the classic entrapment and abandonment fears, but the alliance also creates a moral hazard problem whereby the ROK can rely upon the U.S. security guarantee to further its import-substitution goals in the defense sector.⁶⁷

The U.S. must develop Third Offset strategies and technologies to counter North Korea’s growing asymmetric threats. Space-based capabilities and cooperation with friends and allies will be critical to deploy those

The greatest controversy or challenge currently lies in space-based applications for missile defense.

injustices under the authoritarian government prior to democratization. Opponents on the extreme right are opposed to THAAD because they believe it is insufficient for managing the North Korean threat, and instead will prolong U.S. wartime operational control (OPCON) and constrain Seoul within the bilateral alliance framework. They believe the best alternative is for Seoul to obtain its own nuclear deterrent. In their view, this is the only way to balance against the North Korean threat and deal with Beijing’s objections against the U.S. military presence in East Asia.

The ROK government has decided that the best way to manage its difficult security predicament is to develop and deploy its own Korea Air and Missile Defense (KAMD) system.⁶³ Missile defense on the Korean Peninsula is difficult because of geography. KPA Strategic Forces can strike South Korean targets in about three to ten minutes after the missiles are launched.⁶⁴ The technical demands for early warning, detection, tracking, and intercepting incoming missiles are very daunting. The South Korean defense establishment claims that the ROK needs a layered KAMD with Aegis destroyers, L-SAM, PAC-3s, and KM-SAM (Cheolmae-2) systems with supporting command and control systems, radars, etc.⁶⁵

assets and execute Third Offset strategies. The legal and institutional frameworks are being created to support the sharing of space data and intelligence, as well as combined space operations. There are opportunities for extensive bilateral and multilateral cooperation between the ROK and the United States in the realm of space security, and both sides are committed to doing so.

The ROK and the United States seek a peaceful and stable region and world, but as the two sides cooperate on space security to achieve their common objectives, Seoul will face a trilemma over KAMD. First, national security requirements in the shadow of North Korea’s asymmetric threats along with the technical requirements of missile defense create a strong incentive to share the costs of developing and deploying missile defenses. Integration into a U.S.-led space security and missile defense network can reduce costs and provide redundancy and resiliency in a hostile environment.

Second, South Korea must balance its obligations under the mutual defense treaty with the United States. When the treaty was signed in 1953, few people if any thought about the ROK’s commitment to aid the U.S. in case of attack. Until recently, the ROK was only a consumer of security, but now the ROK is an advanced

country and a technology leader with a robust economy. Seoul's successful development has created an opportunity to expand their security cooperation beyond the peninsula as outlined in the 2009 "Joint Vision of the Alliance."⁶⁸ South Koreans opposed to the deployment of missile defenses in the ROK often complain that Seoul should not become integrated into a U.S. missile defense system and that KAMD should only address the ROK's narrow defense needs. However, Seoul has a treaty obligation to assist the United States if under attack, which includes data and intelligence on U.S. adversaries.

Third, the ROK does fear entrapment and does not share all security interests with the United States, which is a global power. As a middle power, Seoul fears being entrapped in a big power conflict and being forced to choose sides. This is readily apparent in Seoul's relationships with Beijing and Washington, and the controversy surrounding the

decision to deploy a THAAD battery to South Korea. Ideally, the ROK desires good relations with both China and the United States. However, U.S.-ROK bilateral cooperation on space security has the potential to create friction between Seoul and Beijing in the future. This trilemma likely will have an impact on bilateral space cooperation and the trajectory of the Third Offset on the Korean Peninsula.

As North Korean nuclear, missile, and conventional force developments threaten to alter the balance of power on the peninsula, South Korea will increasingly look to its growing capabilities in space to preserve deterrence and offset Pyongyang's weapons. An ROK ally with increasing space-based capabilities, in turn, should open up new opportunities for U.S.-ROK alliance cooperation, especially with regard to important missions such as early warning and missile defense. At the very least, the domain of space is likely to become even more vital to alliance security in the years ahead.

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GLOSSARY

2ID	2nd Infantry Division
ADD	Korean Agency for Defense Development
ATACMS	Army Tactical Missile System
BMD	Ballistic Missile Defense
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance
CAD	Command Automation Directorate
CFC	Combined Forces Command
CND	Creative National Defense
COT-P	Conditions-based Operational Control Transition Plan
CSPO	Combined Space Operations
CSSA	Center for Space Situational Awareness
DDOS	Distributed Denial of Service
DMZ	Demilitarized Zone
DPRK	Democratic People's Republic of Korea
DRP	Defense Reform Plan
EA	Electronic Attack
EAD	Enemy Attack Directorate
EMP	Electro Magnetic Pulse
ES	Electronic Support
FE	Foal Eagle
FEMA	Federal Emergency Management Agency (US)
FOTA	Future of the ROK-US Alliance Policy Initiative
GOC	Ground Operations Command
GSD	General Staff Department
HEU	Highly Enriched Uranium
ICBM	Intercontinental Ballistic Missile
ICOC	International Code of Conduct against Ballistic Missile Proliferation
ICT	Information and Communications Technology
JSPOC	Joint Space Operations Center (US)
KAIST	Korea Advanced Institute of Science and Technology
KAMD	Korea Air and Missile Defense
KARI	Korea Aerospace Research Institute
KASI	Korea Astronomy and Space Science Institute
KFX	Korean Fighter Experimental
KNSC	Korea National Space Committee
KPA	Korean People's Army (DPRK)
LSAM	Long-range Surface-to-Air-Missile
MCM	Military Committee Meeting
MLRS	Multiple Launch Rocket System
MND	Ministry of National Defense (ROK)
MOU	Memorandum of Understanding
MPAF	Ministry of People's Armed Forces (DPRK)

MRBM	Medium-Range Ballistic Missile
MRL	Multiple Rocket Launcher
MSAM PIP	Mid-range Surface-to-Air-Missile Performance Improvement Program
MSIFP	Ministry of Science, ICT and Future Planning
MTCR	Missile Technology Control Regime
NBC	Nuclear, Biological, Chemical
NCA	National Command Authorities
NIMBY	Not In My Back Yard
NIS	National Intelligence Service (ROK)
NKAF	North Korean Air Force
NLL	Northern Limit Line
OPCON	Operational Control
OPLAN	Operation Plan
PAC-3	Patriot Advanced Capability-3
PGM	Precision-Guided Munitions
PLA	People's Liberation Army (PRC)
PPP	Purchasing Power Parity
PRC	Peoples' Republic of China
RGB	Reconnaissance General Bureau
RL	Rocket Launcher
ROK	Republic of Korea
RPG	Rocket Propelled Grenade
RSOI	Reception, Staging, Onward Movement and Integration
SATREC	Satellite Technology Reserach Center (US)
SCHO	Space Hazards Countermeasure Office
SCM	Security Consultative Meeting
SHCU	Space Hazards Countermeasures Unit
SLAM-ER	Standoff Land Attack Missile-Extended Range
SLBM	Submarine-Launched Ballistic Missile
SLV	Space-Launch Vehicle
SSA	Space Situational Awareness
SSP	Space Security Plan
STSAT-3	Science and Technology Satellite 3 (ROK)
TEL	Transporter-Erector-Launcher
THAAD	Terminal High-Altitude Area Defense
UAV	Unmanned Aerial Vehicle
UFL	Ulchi Focus Lens
USFK	United States Forces Korea
WMD	Weapons of Mass Destruction

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