SSQ STRATEGIC STUDIES QUARTERLY

SUMMER 2019 VOL 13, NO. 2

SSQ Strategic Studies Quarterly

https://www.af.mil/

https://www.aetc.af.mil/

https://www.airuniversity.af.edu/

Strategic Studies Quarterly

An Air Force–Sponsored Strategic Forum on
National and International Security

VOL. 13 NO. 2 SUMMER 2019

Policy Forum

Feature Article

Perspectives

Book Reviews

The Missile Defense Review: Insufficient for Complex and Integrated Attack

The 2018 *National Defense Strategy* calls renewed strategic competition with major powers the central challenge of our time. The 2019 *Missile Defense Review* (MDR) represents the Trump administration's attempt to adapt US missile defense policy, posture, and programs to this challenge. Upon the document's public release in January 2019, President Trump stated that it marked "a new era" for missile defense. Unfortunately, actions within the review fall short of meeting both current and emerging threats, particularly with respect to layering and integration. Much remains to be done before that new era of missile defense can begin.[1]

Countering missile threats from major powers like Russia and China is no small undertaking. In the words of Acting Secretary of Defense Patrick Shanahan, "the scale a nd urgency of change required to renew our conventional and missile defense overmatch must not be underestimated."[2] Indeed, reorienting US missile defenses to contend with renewed great power competition is a comparatively greater task than that facing the field of nuclear deterrence.[3] Although the 2018 *Nuclear Posture Review* differs from its predecessor in describing Russian and Chinese capabilities and intent, in the end it recommends only two modest supplements to the inherited program of record.[4] The relative conservatism of such changes reflects that US nuclear forces have always been tailored not only to major powers like Russia and China but also to past policies as a hedge against geopolitical change.

By contrast, the United States has for a quarter century been pushing active defenses against longer missiles apart from any explicit connection to Russia and China. Despite a few caveats in the 2010 *Ballistic Missile Defense Review* and some programs to defend against antiship missiles, the focus across the Bush and Obama administrations was on limited ballistic missile threats from rogue states.[5] Changing US policy, posture, and programs to counter missile threats from major powers will require more than a few modest supplements.

Although the MDR begins an important new conversation and indicates the nature of what kinds of adaptation are required, the review and the 2020 defense budget submission lack the necessary scale and urgency of change to adequately contribute to deterrence and defense goals in rela-

tion to Russia and China. The MDR has considerable continuity with the past program of record when a greater degree of redirection is needed. Apart from a handful of incremental improvements to current missile defense elements, more discussion of space-based assets, and some studies on countering hypersonic glide vehicles, the administration's post-MDR program of record remains focused on ballistic missile threats.[6] The MDR furthermore does not address significant portions of the 17-element tasking posed by Congress for a missile defeat review in the National Defense Authorization Act of 2017. Other shortcomings include insufficient attention to survivability, integration, air defense layering, and mobility. As of now, the MDR and the administration's subsequent budget proposals are ill-suited to the challenge of sophisticated aerial and missile attack from major powers and therefore misaligned with the current *National Defense Strategy*.

Beginning the Conversation

The MDR contains several salutary themes and concepts necessary to start a conversation about adapting missile defenses to great power competition. These include the contributions of missile defense to broader deterrence and defense goals, offense-defense integration, the stabilizing character of defenses, the importance of the space domain, and the need for flexibility and adaptability. Perhaps the most foundational section of the MDR is that devoted to the diverse roles for missile defense. Active and passive defenses contribute to deterrence, assurance, diplomacy, protection in the event of deterrence failure, and freedom of maneuver for military operations. By creating options and raising the threshold of successful attack, missile defenses contribute to stability.

This fulsome discussion of the roles for missile defense builds upon past observations in formal policy documents. The 2010 *Ballistic Missile Defense Review*, for instance, noted that "US missile defenses are critical to strengthening regional deterrence."[7] NATO's 2010 Strategic Concept made missile defense a core alliance mission, and its 2012 "Deterrence and Defence Posture Review" called for an "appropriate mix of nuclear, conventional, and missile defence capabilities."[8] The 2019 MDR goes further, stating that "missile defense systems constitute a cornerstone of our efforts to deter a missile attack from a rogue state on the US and make a clear contribution to our alliances."[9] Elevating it to "cornerstone" status appears to be a deliberate contrast with past declarations that the ABM Treaty's prohibitions were a "cornerstone of strategic stability."[10]

The MDR also emphasizes the value of the space domain for the missile defense mission.[11] The single most important recommendation of the MDR is its endorsement of a space-based sensor layer to provide birth-to-death tracking and discrimination of both ballistic missiles, which spend most of their time outside the atmosphere, and hypersonic glide vehicles, which can skim across it. The MDR also initiates a six-month study of space-based interceptors, backed up by some modest funding in the 2020 budget request.

Debating Strategic Stability

In terms of the relationship of missile defenses to the strategic nuclear forces of Russia and China, the MDR represents considerable continuity with the past. The current *National Security Strategy* states that "enhanced missile defense is not intended to undermine strategic stability or disrupt longstanding strategic relationships with Russia or China."[12] The MDR likewise specifies that "the United States relies on deterrence to protect against large and technically sophisticated Russian and Chinese intercontinental ballistic missile threats to the US homeland."[13] At the same time, the MDR avoids explicit use of the phrase "strategic stability" and declines to disavow the utility that active defenses might have for strengthening strategic deterrence.

The collective conclusion of the *National Security Strategy*, the *National Defense Strategy*, and the MDR is that the United States will ambitiously pursue active and passive missile defenses, in conjunction with attack operations, to counter regional missiles from any source, including Russia, China, North Korea, and Iran. Although the MDR does not use the phrase, one might call this an effort to defend against "nonstrategic" Russian and Chinese missiles, although if such missiles are nuclear-armed the line between strategic and nonstrategic would be difficult to draw.

Much public debate about the MDR thus far has been characterized by two competing narratives about the future attempt to counter strategic attack. One camp sees the MDR as not going far enough to alter the role of missile defense in relation to strategic nuclear attack, noting the absence of programmatic movement on space-based interceptors. Another camp interprets the MDR's extended essay about the utility of space-based defenses as the harbinger of radical change, and thus expects the United States will do too much.[14]

Both sets of criticisms are distinct, however, from a simpler point about nonstrategic missile threats from Russia and China. Putting aside the decision to rely on deterrence to counter Russian and Chinese ICBMs, the

MDR falls short of its own terms by failing to pursue concrete actions to adequately contend with complex regional missile threats well below the strategic level. At least in principle, both the MDR and the other strategy documents seem to endorse a vision of robust theater missile defenses. But neither the MDR nor the president's 2020 budget are adequate to this task.

Not Just about Ballistic Missiles Anymore

For two decades, the specter of rogue state ballistic missile threats has largely driven the missile defense policy conversation. That conversation now needs to change both in terms of the actors and the variety of threats. In the MDR's preface, Acting Defense Secretary Patrick Shanahan notes that "military superiority is not a birthright." America's onetime monopoly on precision strike capabilities has faded, and all aspects of military operations must adjust accordingly. American power projection is not uniquely challenged by ballistic missile attack, as one might have said in the 1990s. Nor is today's threat best defined by reference to the appearance of, say, hypersonic glide vehicles, advanced cruise missiles, or any category of delivery systems, however novel. The defining characteristic of the current and emerging threat is instead from what is known as complex and integrated attacks from across a broad spectrum of air and missile threats.

Missiles of various kinds play an outsized role in the current and emerging operational context, and in particular antiaccess and area-denial strategies. At the MDR's rollout event, Shanahan pointedly remarked that the United States faces a rather missile-rich environment. Missile threats, he said, are "growing disproportionately to other capabilities. Writ large, the rest of the world is not developing new fighter and bomber aircraft; they are developing missiles."[15] The 2019 review's most visible change from the 2010 *Ballistic Missile Defense Review* is the removal of "ballistic" from its title. The MDR catalogues numerous cruise missiles and hypersonic glide vehicle programs of Russia, China, North Korea, and Iran—both those fielded and in development—and also discusses adversary air and missile defense systems.

The mission of countering maneuvering glide vehicles requires new overhead sensors not merely for launch detection but also for continuous tracking. Due to the curvature of the earth, the tracking mission can only be done from above. Unfortunately, the budget submitted for fiscal year 2020 allocates limited funding to a space sensor layer, calling into question whether the Trump administration plans to field it anytime in the foreseeable future.[16]

A new missile age of sorts has begun to emerge, one characterized by an increased global supply and demand for a spectrum of increasingly capable air and missile delivery systems and the means to counter them.[17] This spectrum includes guided rockets, artillery, and mortars; unmanned aerial vehicles (UAV); a range of land attack and antiship ballistic and cruise missiles; increasingly maneuverable ballistic missile reentry vehicles; hypersonic glide vehicles; antisatellite weapons; and active air and missile defense interceptors. In short, this spectrum comprises all aspects of altitude, speed, propulsion type, range, and mission.[18] The challenge of dealing with this spectrum lies not with the diversity or the sophistication of any one of these categories, however, but with imaginative operational concepts for their lethal combination.

Rather than being limited to any one category of air or missile type, complex and integrated attack is the use of any or all these various delivery systems and platforms simultaneously or in sequence, mixing and matching them to lethal effect. Aerial attacks from all directions would furthermore be coordinated with cyber operations, electronic warfare, and other forms of nonkinetic attack—some of which may even be managed from additional aerial or missile airframes. The MDR notes that potential adversaries are "integrating offensive missiles ever more thoroughly into their coercive threats, military exercises, and war planning."[19] Missiles are said to have a "prominent role" in China's modernization plans and to be "a critical enabler of Russia's coercive escalation strategy."

Such operational integration has been on display for years. In the summer of 2017, US forces discovered a North Korean UAV that crashed into a tree. Aboard was a camera used to surveil the Terminal High Altitude Area Defense (THAAD) missile defense battery stationed in South Korea. If that UAV had instead carried an explosive device and flown into the face of the single radar on which the THAAD battery depends, the THAAD capability on the peninsula could have been effectively eliminated. Iran has used unmanned platforms to provide battle damage assessment and potentially relay targeting coordinates for ballistic missile strikes.[20] Even nonstate actors like Yemen's Houthi militants brag about using UAVs to target Patriot radars in the Yemen missile war.[21] If North Korea and Iran can innovate and employ a combined arms approach for air and missile platforms, the capability of Russia and China to do so is likely much greater. Russia has used UAVs in Ukraine and Syria to provide time-sensitive targeting data for both artillery and missile strikes. Joint and combined US forces face a more complex and contested aerial

threat environment than ever before. Adaptations to missile defense operations must presuppose nothing less.

Unmet Metrics of Sufficiency

The central metric of sufficiency for US integrated air and missile defense (IAMD) should be how well it relates to the threat of complex, integrated air and missile attack. With respect to countering regional missile threats from major powers, the MDR's adaptation of US missile defenses falls short in terms of four criteria: survivability, integration, air defense layering, and mobility. These characteristics represent some basic standards against which to judge the sufficiency of missile defense efforts relative to the threat from major powers and therefore MDR's alignment with the *National Defense Strategy*. Adaptation to better meet these criteria will be critical for missile defense to contribute meaningfully to US and allied defense goals.

Survivability

In the face of complex and integrated attack, today's Ballistic Missile Defense System (BMDS) is all too susceptible to suppression. Survivability figures prominently in the *Nuclear Posture Review*, but it is almost absent from the MDR. A form of the word appears seven times in the MDR, of which three refer to missile defense elements: once regarding past improvements to the survivability of Patriot radars in the face of jamming and twice to describing the Aegis Combat System as survivable. These three references, however, are limited to past actions. Even while noting that North Korea is making its own missiles more survivable, the MDR does not make a single recommendation to improve the survivability of today's active missile defenses. By contrast, the new Army vision for air and missile defense is quite blunt: "The most stressing threat is a complex, integrated attack incorporating multiple threat capabilities in a well-coordinated and synchronized attack. These attacks include off-axis approaches for [cruise missile] and lethal [unmanned aerial systems] to neutralize our defensive capabilities and attack our critical assets."[22]

Had the MDR grappled more with the challenge to air superiority, it might have applied the *National Defense Strategy*'s recommendation for forces that "can deploy, survive, operate, maneuver, and regenerate in all domains while under attack" and the further recommendation of "transitioning from large, centralized, unhardened infrastructure to smaller, dispersed, resilient, adaptive basing."[23] Although not specified in the MDR, the Pentagon's reported

focus on a proliferated low earth orbit (pLEO) architecture for the space sensor layer represents one important effort to achieve resilience—complicating an adversary's targeting problem through numbers and redundancy.[24] The MDR would have done well to consider how other active missile defense elements could themselves be more distributed, mobile, and survivable in the face of adversary surveillance and targeting.

The references to the Aegis system point to a path not taken. The latest baseline of the Aegis Combat System contains a layered air and missile defense system in a single platform. Although not the only solution, the deployment of some form of Aegis Ashore capabilities could relieve the stress on Aegis ships to defend forward bases. Existing Aegis Ashore facilities to support the European Phased Adaptive Approach (EPAA) could evolve to include air defenses, or the EPAA could be adapted to add Aegis-based or other forms of air defense at other locations.

Instead, despite all that has happened with Russia in the past decade, the MDR does not adjust the EPAA to contend with Russian aerial threats. The MDR has a follow-on study about operationalizing the test Aegis Ashore site to protect Hawaii from ballistic missile threats but no such study for possible Aegis air defense deployments for Pearl Harbor or Guam. In its pursuit of multi-mission Aegis Ashore sites for both air and missile defense, Japan may soon overtake the United States.

Besides active force protection for fixed assets, the path to survivability lies with the fundamentals of passive defense: deception, dispersal, and distribution.[25] The MDR acknowledges that "DoD efforts to reduce vulnerability to regional missile strikes will also include investments in the passive defense elements of hardening, dispersal, deception, redundancy, and enhanced resilience of bases, logistics, and other key facilities and functions."[26] This reference to generic DOD efforts, however, applies to bases, logistics, and facilities. The MDR seemingly does not endorse hardening, dispersal, deception, redundancy, and enhanced resilience of active missile defense elements themselves.

Integration

Another prominent theme in the MDR is integration, references to which appear no less than 76 times in the document. Integration has become one of the Pentagon's common buzzwords, but "to integrate" simply means "to make whole." The specific meaning of integration for air and missile defense therefore depends on what is being combined or incorporated and what kind of new whole those things create.

Most of the MDR's references to integration concern what might be called synchronizing active defenses with attack operations, marking a degree of interest in operational maturity and a welcome shift from the past practice of describing active missile defenses as "purely defensive." A secondary usage is integrating active and passive defenses. A third use is its general relation to diplomacy. The review mentions neither the deepest kind of integration, integrated fire control, nor several current programs of record, namely the US Army's Integrated Air and Missile Defense Battle Command System (IBCS) and the US Navy's Naval Integrated Fire Control–Counter Air (NIFC-CA) concept.

Both the IBCS and NIFC-CA seek to create fire control quality networks for information sharing among various elements—the "any sensor, best shooter" concept. Although further integration has long been an aspiration, currently fielded air and missile defense systems all too often operate in stovepipes and do not pass information of sufficient quality to coordinate engagements. To advance joint integration more broadly, the National Defense Strategy Commission recently endorsed the idea of a Pentagon-wide official with authority to advance missile defense integration and interoperability.[27]

Although the MDR touts the need for integration, it fails to lay out concrete goals or the path by which further integration can be achieved. Nor does it encourage the integration of joint air and missile defense–related assets of the several military services. Indeed, it specifically lacks the five- and ten-year milestones for integration and interoperability improvements as required by Congress.[28]

Air Defense

One aspect of integration almost entirely absent from the MDR is also one of the most urgent: active and passive air defense. Integrated air and missile defense includes active defense, passive defense, and attack operations to counter both air and missile threats. The MDR refers to IAMD as something advanced by the Joint Staff and pursued by other nations, but it does not seem to itself embrace the IAMD concept. Without air defense, the MDR's approach to integration seems more akin to what US Strategic Command (USSTRATCOM) calls "integrated missile defense."[29] This concept differs from that of integrated *air* and missile defense found in recent Joint Staff doctrinal publications and in the services' development of new operational concepts, particularly multidomain operations, distributed maritime operations, and multidomain command and control.[30] The near absence of air defense in the MDR stands in contrast to

the character of the threat and the asymmetric character of complex and integrated attack.

Today's missile defense architecture relies on some assets without adequate force protection from aerial threats. The Aegis Ashore site in Romania, for instance, cannot defend itself from so much as a helicopter attack. The entire EPAA architecture is in turn almost entirely dependent on a single TPY-2 radar based in Turkey. These resources exemplify what USSTRATCOM commander Gen John Hyten calls "big, fat, juicy targets."[31] If critical nodes in the missile defense kill chain are not themselves protected from aerial attack, the BMDS will be suppressed. When asked about the MDR's lack of attention to air defense, senior officials have said that it is up to geographic combatant commanders to provide air defense for BMDS elements.[32] But such commanders cannot magically defend the small handful of fixed, energy-emanating, ground-based radars upon which the BMDS depends, nor can they immediately create the means to defend against UAVs, cruise missiles, fixed- and rotary-wing aircraft, artillery, or other aerial threats. It is incumbent on a policy document to lay out the need to protect the BMDS from asymmetric air attack, thus driving the requirements for capabilities that could then be developed and delivered to the combatant commanders.

Another important component of the *Missile Defense Review* should have been the provision of defenses for both the homeland and regional forces against the high-end asymmetric aerial threat from cruise missiles and other aerodynamic vehicles. The only cruise missile defense plan described by the MDR is a preexisting, three-phase effort for the US national capital region. This initiative is important, but cruise missiles threaten US forward-deployed forces around the world, too. Neither the MDR nor the 2020 budget submission move forward at the speed of relevance on either a space sensor layer or new interceptor development, both of which will be necessary to defeat hypersonic glide vehicles.

Frustration with the joint force's lack of cruise missile defense led Congress to require an interim near-term capability, prompting the Army to request funding for Iron Dome.[33] But in its global role, the United States will face more sophisticated threats than those confronted by many of our allies. These lower-tier air defense efforts must be further encouraged. Given that the MDR initiates 12 follow-on studies, there might have been room for at least one on integrating air defense with missile defense and another for the protection of BMDS elements from asymmetric or nonballistic attack.

Further illustrating the MDR's lack of attention to air defense is its omission of the Army's Maneuver Short-Range Air Defense (M-SHORAD) and IBCS programs as well as the services' current kinetic- and directed-energy efforts for countering UAVs. A broad policy document like the MDR could have highlighted such capabilities and looked to coordinate services' efforts rather than leaving individual branches to address stand-alone stovepipe problems. Without an air defense layer against cruise missiles and UAVs, missile defenses will not be "comprehensive."

Mobility

Better transportability and mobility are also critical in the current strategic environment. The MDR's emphasis on the desirability of mobility echoes a similar discussion in the 2001 *Nuclear Posture Review* as well as the *National Defense Strategy*'s theme of dynamic force employment. The problem with the MDR's discussion, however, is that it touts a characteristic that does not really exist. Apart from Patriot launchers and Aegis ships, the rest of the BMDS is not actually that mobile. THAAD batteries, TPY-2s, and numerous other elements supporting the Ground-based Midcourse Defense (GMD) system for the homeland are largely in concrete or not quickly transportable. Assets like the Sea-Based X-Band (SBX) radar can take a long time to move across the Pacific Ocean.

Moreover, what sounds like mobility on paper often turns out to be rigidity in practice. Many of those Patriot batteries do not move around much, limited by political commitments and confined to the defense of high-value fixed sites such as airfields or ports. Multi-mission Aegis destroyers equipped with ballistic missile defense capabilities are to some extent tethered to the defense of islands or other defended assets.[34] The longer-ranged Standard Missile-3 IIA interceptor, improved launch-on-remote and engage-on-remote capability, and the MDR's ambitious plan to equip the full fleet of Aegis destroyers with ballistic missile defense capability will help alleviate some of the strain and thereby enhance Aegis mobility.

Adm Phil Davidson, commander of Indo-Pacific Command, recently testified that "in this day and age, if it is fixed on the planet, it is dead."[35] Similar reasoning must also be applied to BMDS elements. Precisely because our adversaries have broken the past monopoly on precision strike, the missile defense enterprise will require increased mobility, deception, distribution, and protection. More imaginative concepts for networked, dispersed elements and a roadmap toward enhanced interceptor and sensor mobility could have been pursued. Airborne sensor assets, for

instance, could create options that are lower emitting, unpredictable in their location, and more survivable. The Missile Defense Agency currently uses UAV-mounted multispectral balls to monitor intercept tests and is exploring the utility of laser-based sensors for missile tracking. The 2010 *Ballistic Missile Defense Review* likewise planned for a UAV-based airborne infrared (ABIR) sensor to support the EPAA. Despite their mobility and survivability benefits, such systems are not discussed in the MDR. The MDR does, however, endorse integrating the F-35 sensor suite into the BMDS to permit the opportunistic detection and tracking of missile launches. Continued evolution of the missile defense sensor architecture should include exploration of more mobile, lower-emitting, and more survivable sensors.

Waiting for the New Era

At the rollout ceremony for the MDR, President Trump stated that "the United States cannot simply build more of the same or make only incremental improvements."[36] With a few exceptions, however, the recommendations of both the MDR and the 2020 budget submission remain largely incremental or more of the same program of record preexisting the *National Defense Strategy*. Together, they signal that the administration does not intend to undertake the scale and urgency of change necessary to adapt missile defenses to the challenge of great power competition—at least not anytime soon.

The 2019 MDR significantly expands the operational concept for missile defense, but it does not answer the impending needs of the developing threat environment. Although well-enough suited to limited ballistic missile threats from North Korea and Iran, the missile defense posture and programs envisioned by the MDR are insufficient to contend with the full range of complex and integrated attacks by Russia or China. Today's air and missile defense systems contain insufficient layering and integration and too many single points of failure. To better contribute to regional deterrence and defense goals envisioned by the *National Defense Strategy*, US missile defenses will require improved survivability, integration, air defense, and mobility. In the absence of such change, the new era of missile defense will have to wait. **SSQ**

Thomas Karako
Senior Fellow and Director
Missile Defense Project
Center for Strategic and International Studies (CSIS)

Notes

1. The author thanks fellow CSIS Missile Defense Project team members Wes Rumbaugh, Ian Williams, and Shaan Shaikh for their comments on and contributions to this article.

2. Office of the Secretary of Defense, *Missile Defense Review* (Washington, DC: Department of Defense, 2019), ii, https://media.defense.gov/2019/Jan/17/2002080666/-1/-1/1/2019-MISSILE-DEFENSE-REVIEW.PDF.

3. President, Memorandum, "Rebuilding the U.S. Armed Forces," *Federal Register* 82, no. 20 (1 February 2017), https://regulations.justia.com/; and Thomas Karako, "Missile Defense and the Nuclear Posture Review," *Strategic Studies Quarterly* 11, no. 3 (Fall 2017): 48–64, https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-11_Issue-3/Karako.pdf.

4. Department of Defense, *Nuclear Posture Review* (Washington, DC: DOD, 2018), https://dod.defense.gov/.

5. Department of Defense, *Ballistic Missile Defense Review Report* (Washington, DC: Department of Defense, 2010), https://dod.defense.gov/Portals/1/features/defenseReviews/BMDR/BMDR_as_of_26JAN10_0630_for_web.pdf; and Sam LaGrone, "Navy, Missile Defense Agency Succeed during SM-6 Ballistic Missile Defense Test," *USNI News*, 30 August 2017, https://news.usni.org/.

6. Thomas Karako and Wes Rumbaugh, "Masterpiece Theater: Missed Opportunities for Missile Defense in the 2020 Budget," *CSIS Briefs*, 29 March 2019, https://www.csis.org/analysis/.

7. Department of Defense, *Ballistic Missile Defense Review Report*, 7; and Brad Roberts, "On the Strategic Value of Ballistic Missile Defense," *Institut Français des Relations Internationales Proliferation Papers* 50 (June 2014), https://www.ifri.org/sites/default/files/atoms/files/pp50roberts.pdf.

8. North Atlantic Treaty Organization, *Active Engagement, Modern Defence: Strategic Concept for the Defense and Security of the Members of the North Atlantic Treaty Organization* (Brussels: NATO Public Diplomacy Division, November 2010), 16, https://www.nato.int/nato_static_fl2014/assets/pdf/pdf_publications/20120214_strategic-concept-2010-eng.pdf; and North Atlantic Treaty Organization, "Deterrence and Defence Posture Review," press release, 21 May 2012, https://www.nato.int/.

9. Department of Defense, *Missile Defense Review*, 2.

10. "Press Briefing by Robert Bell, Special Assistant to the President for National Defense and Arms Control," White House, 21 January 1999, https://fas.org/.

11. Department of Defense, *Missile Defense Review*, 36.

12. Donald J. Trump, *National Security Strategy of the United States* (Washington, DC: The White House, 2017), 8, https://www.whitehouse.gov/wp-content/uploads/2017/12/NSS-Final-12-18-2017-0905.pdf.

13. Department of Defense, *Missile Defense Review*, v.

14. Rebeccah Heinrichs, "Trump Endorses Ambitious Goals for Missile Defense," Hudson Institute, 24 January 2019, https://www.hudson.org/; and Frank A. Rose, "The Trump Administration's New Missile Defense Review Is a Mixed Bag," *Order from Chaos* (blog), Brookings Institution, 25 February 2019, https://www.brookings.edu/.

15. Patrick Shanahan, "Missile Defense Review" (speech, Pentagon, 17 January 2019), in "President Trump Participates in Missile Defense Review Announcement," *C-SPAN*, 17 January 2019, video and transcript, https://archive.org/.

16. Karako and Rumbaugh, "Masterpiece Theater," 4–6.

17. Thomas Karako, "A New Missile Age: From Precision to Directed Energy," *Defense News: Missiles and Munitions,* 16 August 2016; and Thomas Karako, "The Missile Defeat Review in Context," in *Missile Defense and Defeat: Considerations for the New Policy Review,* ed. Thomas Karako (Washington, DC: CSIS, March 2017), 1–10, https://www.csis.org/.

18. Statement of RDML Edward Cashman, USN, director, Joint Integrated Air and Missile Defense Organization, in Senate, *The Missile Defeat Posture and Strategy of the United States—the FY17 President's Budget Request: Hearings before the Committee on Armed Services, Subcommittee on Strategic Forces,* 114th Cong., 2d sess., 14 April 2016.

19. Department of Defense, *Missile Defense Review*, iv.

20. Pavel Felgenhauer, "Russia Seizes Opportunity to Expand Drone Usage," *Jamestown Foundation Terrorism Monitor* 15, no. 17 (11 September 2017), https://jamestown.org/.

21. Thomas Gibbons-Neff, "Houthi forces appear to be using Iranian-made drones to ram Saudi air defenses in Yemen, report says," *Washington Post*, 22 March 2017, https://www.washingtonpost.com/.

22. US Army, *Army Air and Missile Defense 2028* (Huntsville, AL: US Army Space and Missile Defense Command/Army Forces Strategic Command, March 2019), 4, https://www.smdc.army.mil/Portals/38/Documents/Publications/Publications/Army_AMD_2028_Final.pdf.

23. Department of Defense, *National Defense Strategy*, 6.

24. Sandra Erwin, "Griffin: Space Development Agency to Bring New Capabilities That Don't Exist Today," *Space News*, 13 March 2019, https://spacenews.com/.

25. Thomas Karako and Wes Rumbaugh, *Distributed Defense: New Operational Concepts for Integrated Air and Missile Defense* (Washington DC: CSIS, January 2018), https://www.csis.org/; and Thomas Karako, "Beyond the Radar Archipelago: A New Roadmap for Missile Defense Sensors," *War on the Rocks*, 28 November 2018, https://warontherocks.com/.

26. Department of Defense, *Missile Defense Review*, 33.

27. National Defense Strategy Commission, *Providing for the Common Defense: The Assessment and Recommendations of the Nation Defense Strategy Commission* (Washington DC: United States Institute of Peace, 2019), 40, https://www.usip.org/sites/default/files/2018-11/providing-for-the-common-defense.pdf.

28. National Defense Authorization Act for Fiscal Year 2017, *Conference Report to Accompany S. 2943*, 114th Cong., 2d sess., 30 November 2016, sec.1684, 629–32, https://www.congress.gov/114/crpt/hrpt840/CRPT-114hrpt840.pdf.

29. The Joint Forces Component Command for Integrated Missile Defense (JFCC-IMD) synchronizes missile defense planning, conducts BMD operations support, and advocates for missile defense capabilities in support of USSTRATCOM, other combatant commands, the services, and appropriate US government agencies to deter and defend US deployed forces and its allies against ballistic missile attacks.

30. See, for instance, Martin E. Dempsey, *Joint Integrated Air and Missile Defense: Vision 2020* (Washington, DC: Joint Chiefs of Staff, 5 December 2013), https://www.jcs.mil/Portals/36/Documents/Publications/JointIAMDVision2020.pdf; Joint Publication 3-01, *Countering Air and Missile Threats*, 21 April 2017, https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp3_01 _pa .pdf?ver=2018-05-16-175020-290; Thomas Rowden, Peter Gumataotao, and Peter Fanta, "Distributed Lethality," *Proceedings Magazine* 141, no. 1 (January 2015): 343, https://www.usni.org/; David G. Perkins, "Multi-Domain Battle: Joint Combined Arms Concept for the 21st Century," Association of the United States Army, 14 November 2016, https://www.ausa.org/; and Gen David L. Goldfein, "CSAF Letter to Airmen," 10 March 2017, https://www.af.mil/.

31. Valerie Insinna, "Air Force Sets Ambitious Goal to Procure Next Missile Warning Satellites in Five Years," *Defense News*, 17 April 2018, https://www.defensenews.com/.

32. David J. Trachtenberg and Lt Gen Samuel Greaves, "The 2019 Missile Defense Review: What's Next?" (panel, CSIS Headquarters, Washington, DC, 1 February 2019), video (1:27:48) and transcript, https://www.csis.org/events/.

33. Sydney J. Freedberg, "Army Reboots Cruise Missile Defense: IFPC & Iron Dome," *Breaking Defense*, 11 March 2019, https://breakingdefense.com/.

34. David B. Larter, "The US Navy Is Fed Up with Ballistic Missile Defense Patrols," *Defense News*, 16 June 2018, https://www.defensenews.com/.

35. Dan Lamothe, "Admiral Defends Navy after Disasters at Sea: 'Other Ships Weren't Having Collisions,'" *Washington Post*, 12 February 2019, https://www.washingtonpost.com/.

36. Donald Trump, "President Trump Remarks on Missile Defense Review" (speech, Pentagon, 17 January 2019), *C-SPAN*, video (32:06) and transcript, https://www.c-span.org/.

Space Force Déjà Vu

In mid-March 2018, President Trump signaled his intention to fundamentally reform the Department of Defense. Stating unequivocally that "space is a war-fighting domain, just like the land, air and sea," he would push for "a military space force that would be the orbital equivalent of the Army, Air Force and Navy."[1] The remarks were dismissed by much of the press as an admitted continuation of a joke—and unlikely given the strong resistance to a proposed Space Corps by the secretaries of defense and the Air Force in testimony before Congress just a few months earlier. Former NASA director Sean O'Keefe called the proposal a massively unnecessary expense and "bureaucratic nightmare." He added that some may fear "a space force would compromise the sanctity of considering space to be off limits from warfare."[2]

Nonetheless, the president directed the National Space Council, led by Vice President Mike Pence, to coordinate a plan to implement his vision. In August, Pence detailed the way forward. The Pentagon would prepare for a sixth branch of the armed forces, a Department of the Space Force, by 2020. The process would be fast but incremental, including three components: a reestablished combatant command—US Space Command (USSPACECOM), a space operations force, and a joint space development agency. Specifically, USSPACECOM "will establish unified command and control for our Space Force operations, ensure integration across the military, and develop the space warfighting doctrine, tactics, techniques, and procedures of the future." The space operations force will comprise "an elite group of joint warfighters, specializing in the domain of space," while the space development agency "will ensure the men and women of the Space Force have the cutting-edge warfighting capabilities that they need and deserve."[3]

In February 2019, the Department of Defense sent its proposed space force plan to Congress for approval. This proposal scales back the idea of a separate but equal department into a modified space corps within the Air Force. It confounds space advocates who might interpret it as bureaucratic largess intended to undermine full independence. While the proposal appears to fall well short of the president's initial vision, it is certainly more attainable in the near term and a less radical excision. The DOD plan would also be historically fast. According to the vice president, the fundamental resources are already in place across the other services and intelligence

agencies, and it will be "built on the lessons of the past."[4] Indeed, one thing is certain about these developments: we've been down this road before.

The Ghosts of Space Force Past

In the spring of 1981, defense officials in the new Reagan administration began circulating support for a fresh look at space organizational structure that would ultimately lead to a new combatant command—US Space Command. The soaring costs and inefficiencies of space systems acquisition, the mess of some 50 uncoordinated military organizations working with pieces of the space enterprise, and the rise of a Soviet program that appeared to be racing ahead in military space war-fighting capabilities fueled frustrations that led to a call for action. In September 1981, the Air Force added a fifth subunit to its planning staff, the Directorate of Space Operations, to provide options. Still, as is often the case with large bureaucracies, meaningful change required a push from the outside. In late 1981, House Resolution 5130 required the US Air Force to report to Congress on the feasibility of establishing a space command.[5]

The DOD strongly opposed the move on the grounds it was not needed, would duplicate bureaucracies, and would cost too much. In January 1982, a General Accounting Office report undercut those arguments. It suggested that a separate space command coordinating all military space activities could instead result in overall cost savings; specialization was in fact the foundation of organizational efficiency. Thus, in June 1982, the USAF revealed it would establish a subordinate Space Command in Colorado Springs no later than September.[6] Two years later, the colocated US Space Command was inaugurated. By the end of the decade, the commander of USSPACECOM (dual-hatted as commander of the North American Aerospace Defense Command [NORAD]) gained authority over all military space operations, took command of land-based ballistic missile responsibilities from Strategic Air Command, secured authority over nascent computer operations (the precursor to today's Cyber Command), inaugurated a war-fighting space operations center, and created a Joint Space Intelligence Center.[7] Such rapid evolution perhaps went too far toward an independent space service and in the process threatened entrenched bureaucratic constituencies.

The spectacularly successful space debut in Operations Desert Shield and Desert Storm prompted the Air Force to seek even greater control of the space mission. Not unnoticed was the fact that by the mid-1990s, the space-specific portion of the DOD budget had approached $10 billion, with upwards of 85 percent earmarked for the Air Force. A similar amount

was distributed to government and intelligence agencies, for an average of $18 billion annually.[8] The 1998 Rumsfeld Commission warned of a "space Pearl Harbor" due to a lack of emphasis on space and recommended a gradual evolution toward a separate Space Corps within the Air Force as an intermediary step on the path to a separate Space Department. However, despite the commission's recommendations, USSPACECOM authorities were steadily transferred elsewhere. Following the events of September 11, 2001, all DOD efforts not focused on the global war on terrorism were subordinated. NORAD moved under the new North American Command, and all duties not already purged were subsumed by Strategic Command. In 2002, USSPACECOM was disbanded, and Air Force Space Command became the de facto US Space Force.[9]

Déjà Vu in 2017

In 2017, Cong. Mike Rogers (R-AL), chair of the House Armed Services Strategic Forces Subcommittee, became concerned that America now faced multiple near-peer competitors in space despite a perceived insurmountable advantage a generation earlier. Implicitly accusing the USAF of diverting space funds to priority air projects and mismanagement of other space resources, Rogers and ranking Democrat Jim Cooper (D-TN) inserted language into the 2018 National Defense Authorization Act (NDAA) directing that an autonomous Space Corps be established within the Air Force similar to the Marine Corps–Navy arrangement.[10] The measure passed the House but was tabled for future consideration in the Senate pending further study. The DOD and the Air Force continued to resist the proposal, marshalling precisely the same arguments the US Army used in its attempts to retain the Army Air Forces after WWII. Demonstrating an astonishing lack of historical acumen, in congressional testimony the Air Force argued that an independent separate Space Corps would take away from AFSPACECOM's primary functions in support of terrestrial forces best coordinated by an air-minded commander, create an unnecessary parallel bureaucracy, and be too expensive.

Although the Trump administration opposed the Rogers-Cooper plan, President Trump one-upped the Space Corps blueprint and surprisingly announced his intention to create a separate and equal *Department* of the Space Force. In June of 2018, Vice President Pence detailed the administration's vision.[11] The USAF would immediately begin comprehensive preparations to split off a coequal Department of the Space Force including a Marine Corps–style independent organizational structure within the Department of the Air Force. It would draft a plan for congressional

budget support and coordinate with other services and national intelligence space cadres for efficiencies.

Now publicly supporting the initiative, USAF leaders continued to privately argue the folly of the move. It would be bureaucratically redundant and wastefully expensive. A memo from the Office of the Secretary of the Air Force was released (or "leaked") stating that a five-year conservative estimate of the additional cost of separating an independent space service would approach $13 billion over five years, "likely to be revised upward."[12]

By October 2018, however, the Air Force leadership appeared to have dropped even veiled opposition. It submitted a viable, comprehensive transition plan for congressional approval at the end of February 2019. Surprisingly, the anticipated cost of the transition would be quite low and bureaucratic overlap remarkably lean. The Pentagon requested just $72 million for fiscal 2020 and just $2 billion over the next five years to stand up a functioning Space Force within the Department of the Air Force.[13] Beginning with less than 200 assigned personnel in the first year, the Space Force should grow to approximately 15,000 military and civilian billets by 2025. When the organization is expected to be fully operational, the Pentagon's plan would stabilize the Space Force budget at about $500 million per year, or "about 0.07 percent of the Defense Department's annual budget."[14]

Critiquing the Launch

It is possible to see several potential pitfalls, some quite counterintuitive, that could jeopardize congressional support and effectively neutralize Space Force independence. An early complaint is that the relatively tiny envisioned Space Force would immediately get equal representation on the Joint Chiefs, including three four-star generals—a chief and vice chief of the Space Force and the commander of US Space Command. By adding several lower-ranking general officers, the Space Force is projected to be the most rank-heavy of the services.[15] In comparison, the USAF has nine four-star billets, not including joint positions, or roughly one for every 76,000 Airmen.[16] Such a force structure could be viewed quite incredulously by the other services.

The small size of the nominally independent Space Force, even at five-year maturity, simply does not reflect the trajectory of a military service that should not only be equal in resources and war-fighting capability to the others in the future but also may become dominant. Under the current proposal, it will remain dwarfed by the Air Force's subordinate Space Command. The USAF currently receives about $15 billion annually for

national security space programs (85 percent of the overall $18 billion DOD space budget)—about 10 percent of its overall budget of $157 billion for FY 2018.[17] Moreover, the current AFSPACECOM has about 30,000 military and civilian personnel. Compared to $500 million earmarked annually for the Space Force after 2025, the USAF still could directly control a space budget 30 times that of its purportedly coequal independent space service. This may not sit well with stanch Space Force advocates.

The comparison of the US Space Force to the US Marines is also rather strained. The Marine Corps is a semi-independent force that controls its own organize, train, and equip requirements and has complete budget authority. The US Navy in FY 2017 had a combined strength of 597,000 active, reserve, and civilian personnel. The Marines had a combined strength of 222,000 active and reserve—more than a third of its parent service. Their independent budgets are proportional to their relative sizes. The top Navy and Marine officers, the chief of naval operations and the commandant of the Marine Corps, report directly to the secretary of the Navy. The chief of the Space Force will report directly to the secretary of the Air Force, and there is currently an under secretary of the Air Force that performs parallel duties to the Navy's under secretary. But the Space Force plan *adds* a second "under secretary of the Space Force" that is "responsible for working with Department of the Air Force officials, as well as other Department of Defense officials, for the overall supervision of space matters."[18] The new under secretary will be subordinate to the under secretary of the Air Force, as the latter is specifically designated "the first assistant to the Secretary of the Air Force."[19] This additional layer of control appears superfluous.

The historic rise and fall of US Space Command as the first gateway to an independent space service highlights several caveats in the proposal. For example, one that should assist in overcoming service resistance is that the "DoD does not intend to transition to the Space Forces those defense missions that are tangentially related with space, such as land- and sea-based nuclear operations, cyberspace operations, and the overall missile defense mission." Unfortunately, the only effective and cost-efficient global missile defense capability, one that protects against all of the nation's and our allies' missile threats, can only be achieved in and from space. While authorities can and do change, this one is problematic.

Additionally, the president's Space Policy Directive 4 (SPD-4) requires the USAF to *periodically* assess whether the time is right to spin off a fully equal and independent *Department* of the Space Force. However, no lan-

guage in SPD-4 or the congressional proposal indicates what *periodically* means or the criteria that must be met to compel it. These decisions are left to the Air Force, which in the past has valued control over the space budget, space facilities, and space personnel. The Space Corps now appears to be a permanent solution, not a transition.

Epilogue

On the whole, the proposal before Congress is reasonable. It follows a rough parallel to the necessary independence of the Air Force from its roots in the Army and could foreshadow a similar path for cyberspace if and when cyber is usefully characterized as a war-fighting domain. None of the flaws identified here are fatal. The DOD should be better off, and military space far better served, five years from now if the plan is implemented. The greatest threat to the current plan is political, not organizational or even financial. The White House is proclaiming that "President Donald J. Trump is Establishing America's Space Force" in a screaming boldface font while some in the media are already decrying the "Trump Space Force."[20] We live in divisive times where successive administrations attempt to undo the achievements of their predecessors. Even though the 2017 Space Corps initiative passed the House with significant bipartisan support and the current plan is essentially the same, a divided Congress may not be able to look past the 2020 elections. It may not vote on the merits of the plan, instead using it as a plebiscite on the administration as a whole. Indeed, opponents of an independent space force could tout it as part of a rollback effort. And that would not serve US interests in space. Since space is a war-fighting domain, an eventual dedicated military service is the most effective means to full national security. SSQ

Everett C. Dolman
Air Command and Staff College

Notes

1. Christina Wilkie, "Trump Floats the Idea of Creating a 'Space Force' to Fight Wars in Space," CNBC, 13 March 2018, https://www.cnbc.com/2018/03/13/trump-floats-the-idea-of-creating-a-space-force-to-fight-wars-in-space.html; and Seth Borenstein and Ken Thomas, "Star Wars? President Trump Proposes Military Space Force," *US News and World Report*, 13 March 2018, https://www.usnews.com/news/politics/articles/2018-03-13/star-wars-president-trump-proposes-military-space-force.
2. Borenstein and Thomas, "Star Wars?"

3. Claudette Roulo, "Space Force to Become Sixth Branch of Armed Forces," *DOD News,* 9 August 2018, https://dod.defense.gov/News/Article/Article/1598071/space-force-to-become-sixth-branch-of-armed-forces/.

4. Roulo, "Space Force to Become Sixth Branch."

5. Thomas Karas, *The New High Ground* (New York: Simon & Schuster, 1983), 17–20; and David Spires, *Beyond Horizons*, rev. ed. (Maxwell AFB: Air University Press, 1998), 188–92.

6. Spires, *Beyond Horizons*, 193–205.

7. Ibid., 217–18. Author's note: The commander usually was commander of USSPACECOM and Air Force Space Command.

8. Amaani Lyle, "Air Force Officials Take Space Budget, Acquisition Strategy to Capitol Hill," *US Air Force News,* 18 March 2011, https://www.af.mil/News/Article-Display/Article/113903/air-force-officials-take-space-budget-acquisition-strategy-to-capitol-hill/.

9. Gary Shugart, "Re-establishing U.S. Space Command," posted by Purview, *DoDLive* (blog), 1 October 2018, http://purview.dodlive.mil/2018/10/01/reestablishing-u-s-space-command/.

10. Sandra Erwin, "Congressman Rogers: A Space Corps is 'Inevitable,'" *SpaceNews,* December *2017,* https://spacenews.com/congressman-rogers-a-space-corps-is-inevitable/.

11. Associated Press, " 'Space Force': Trump Directs Pentagon to Create New military Branch," *NBC News,* 18 June 2018, https://www.nbcnews.com/politics/white-house/trump-says-he-directing-pentagon-create-new-military-branch-called-n884361.

12. Marcus Weisgerber, "Air Force Pushes Back on Pentagon's First Blueprints for Trump's Space Force," *Defense One*, 17 September 2018, https://www.defenseone.com/politics/2018/09/creating-space-force-will-cost-13b-ove-5-years-air-force-secretary/151312/; and Sandra Erwin, "Wilson: $13 Billion Space Force Cost Estimate Is 'Convervative,' " *SpaceNews*, 18 September 2018, https://spacenews.com/wilson-13-billion-space-force-cost-estimate-is-conservative.

13. Courtney Albon, "Pentagon Estimates New Space Force Will Cost $2B over Five Years," *Inside Defense*, 27 February 2019, https://insidedefense.com/daily-news/pentagon-estimates-new-space-force-will-cost-2-billion-over-five-years.

14. Elizabeth McLaughlin, "Want to Join the Space Force? There Won't Be an Academy," *ABC News,* 1 March 2019, https://abcnews.go.com/Politics/join-space-force-academy/story?id=61411343.

15. Marcus Weisgerber, "Wait, How Many Generals for Space Force?," *Global Business Brief,* 28 February 2019, https://www.defenseone.com/business/2019/02/wait-how-many-generals-space-force-radar-battle-heats-boeings-combat-drones/155204/.

16. Weisgerber, "Wait, How Many Generals?"

17. Todd Harrison, "Why We Need a Space Force," Center for Strategic and International Studies (CSIS), 3 October 2018, https://www.csis.org/analysis/why-we-need-space-force; https://www.af.mil/News/Article-Display/Article/113903/air-force-officials-take-space-budget-acquisition-strategy-to-capitol-hill/.

18. Proposed revisions to Title X and proposed Title XVII—Space Force, Sec. 1702, "Under Secretary of the Air Force for Space."

19. Proposed revisions to Title X and proposed Title XVII.

20. The White House, "President Donald J. Trump Is Establishing America's Space Force," fact sheet, 19 February 2019, https://www.whitehouse.gov/briefings-statements/president-trump-establishing-americas-space-force/; and "Trump to Establish Space Force as Sixth Military Branch," CNBC, video, 01:18, 18 June 2018, https://www.cnbc.com/video/2018/06/18/trump-space-force-sixth-military-branch.html.

FEATURE ARTICLE

Security in Northeast Asia: Structuring a Settlement

Joshua Shifrinson

Abstract

A potential pathway exists for a Northeast Asian settlement where the Koreas, the United States, China, and Japan can each live within the status quo. Sustaining a settlement will require reining in foreign policy hawks reluctant to allow the Democratic People's Republic of Korea (DPRK) to retain a nuclear arsenal. The United States will also need to engage allies fearful of conflict with North Korea but also disinclined to let a neighboring state enjoy a local nuclear monopoly. The United States should continue outreach to North Korea with the objective of establishing a process that links sanctions relief and security guarantees to a plan for eventual denuclearization. The future China-DPRK relationship must be considered and isolated from the US-China relationship—notably, economic tensions and disputes in the South and East China Seas. It should facilitate Chinese leverage over North Korea and encourage China to reinforce its economic and security ties with North Korea to influence and restrain Pyongyang's decision making. The Trump administration must earn the support of stakeholders across the policy-making and procedural spectrum and facilitate a domestic political consensus in favor of the emerging settlement. Securing a settlement in Northeast Asia may be a productive way of reducing one of the most troublesome spots in US foreign relations.[1]

*****

The last two years have witnessed among the most substantial shifts in Northeast Asian regional politics in the last half century. With the North Korean nuclear and missile programs advancing at a rapid clip, 2017 and early 2018 saw credible signs that the United States might go to war to limit further North Korean advances.[2] However, the subsequent announcement that President Donald Trump and North Korean leader Kim Jong-un would meet in June 2018 to ostensibly negotiate over the North Korean nuclear program sharply changed the dynamic. The Singapore

Summit resulted in an ostensible pledge to "work toward complete denuclearization of the Korean Peninsula."[3] Since then, policy makers from the United States and North Korea, along with other vested regional actors, have engaged in sustained formal and informal diplomatic bargaining aimed at adding substance to Singapore's rhetorical framework.

Few analysts believe the process catalyzed by Singapore will result in a substantial resolution of outstanding nuclear issues between the area's key actors. If anything, analysts warn that the United States' failure to craft a realistic pathway to North Korea's "complete, verifiable, [and] irreversible denuclearization" leaves Northeast Asia primed for instability—a situation rendered all the more likely given stalled progress following the February 2019 Hanoi Summit between Trump and Kim.[4] In this view, the fact that North Korea (like other states) is unlikely to surrender its nuclear arsenal raises the possibility that Trump and his team may become disenchanted with North Korea, thereby increasing the chance that the United States may lash out against what will then be a North Korea with a more robust nuclear arsenal.[5] Along the way—so the argument goes—the United States risks seeing its South Korean and Japanese allies lose trust and interest in US security guarantees, undercutting the capacity of the United States to respond should relations with North Korea deteriorate.[6] The fiction of North Korean denuclearization, in other words, creates a framework in which many things may go wrong without actually addressing the North Korean nuclear program. These concerns are valid and cannot be dismissed out of hand.

Still, focusing largely on whether the ongoing negotiations will facilitate denuclearization—or even a slowdown of North Korea's nuclear program—may overlook the potential that a series of implicit deals and understandings may be emerging that can help stabilize Northeast Asian politics.[7] To be sure, such a "settlement" remains only a potentiality at this point. Nevertheless, history is replete with cases of powerful states finding ways to cooperate and of setting aside past tensions even in the face of notional diplomatic failures and outstanding disputes.[8] Equally important, states regularly bargain and seek an array of political understandings with one another when faced with a significant shift in the distribution of power such as that represented by the DPRK's nuclear acquisition. Some sort of new equilibrium is the natural result of North Korea's recent nuclear advances. Given the diplomatic processes, understandings, and shifts that unfolded over the course of 2017–19, reasonable prospects exist for a broader diplomatic and strategic stabilization in Northeast Asia.

To explain this argument and the potential steps needed to reach a settlement, this article proceeds in five parts. First, it covers the logic of settlements in international relations. Then, the piece provides background on the problems posed by North Korea vis-à-vis Northeast Asia's security in the post–Cold War era. Next, it outlines the diplomatic developments that have made a settlement possible followed by the rationale and content of this prospective settlement. Finally, it proposes steps that may be necessary to bring a settlement to fruition and events that could derail the process.

Settlements in World Politics

Because states operate in an anarchic international system with varying degrees of power, the threat of war is omnipresent in international politics.[9] To obtain security for themselves under such conditions, states have two basic options. First, they can arm and prepare for conflict, building up the military, economic, and political tools needed to deter or defeat prospective opponents.[10] Second, they can attempt to resolve their differences with other countries, relying on diplomatic deals of varying degrees of formality to mitigate points of friction.[11] Conflict cannot be foreclosed entirely—in anarchy, states can and sometimes do go back on prior deals.[12] However, addressing outstanding disputes and points of strategic contention can dampen the likelihood that war is a near-term possibility, creating room for states to continue strengthening ties while focusing their energies on other domestic or international issues.[13]

Settlements belong to the latter category. As Henry Kissinger once argued, settlements refer to a "process by which a nation reconciles its vision of itself with the vision of it by other powers"—that is, a dynamic by which two or more states reach an understanding about the general parameters of what they will and will not do with the capabilities at their disposal.[14] In effect, any settlement crafts a framework within which states agree to cooperate or compete with one another on core issues within certain boundaries, without seeking wholesale and unilateral changes to the status quo.[15] No one state party to a settlement is likely to be entirely happy with its terms and conditions; by definition, a settlement requires participants to restrain their ambitions and accept limits on the pursuit of their interests. Still, so long as there is no "grievance of such magnitude that redress will be sought in overturning" an arrangement—if parties essentially have a stake in it and value the benefits of constrained cooperation over the potential of attaining one's maximal ambitions by a resumption of

unconstrained competition—settlements facilitate and incentivize peaceful competition.[16]

Settlements can be pursued through two basic channels. The first and most obvious is through direct negotiation. Here, diplomats and policy makers meet to directly shape the territorial, institutional, economic, and security arrangements believed necessary to reconcile rival states to one another's interests and power. History is replete with efforts along these lines. Thus, the Congress of Vienna helped craft a stable European settlement in the aftermath of the French Revolution and Napoleonic Wars, allowing the European great powers to manage their inevitable conflicts of interest over the next four decades.[17] Similarly, and although its internal contradictions eventually contributed to the breakdown of European diplomacy and the re-emergence of major war, the Paris Peace Conference of 1919 represented an effort by the victors of the First World War to directly construct a new framework for managing great power relations in Europe and beyond.[18] The Yalta and Potsdam Summits of 1945 entailed a parallel effort to shape the post-1945 world, one that (like its Paris predecessor) failed—contributing to the Cold War—as the United States and Soviet Union declined to live within the negotiated frameworks.[19] Conversely, the United States' reluctance to tie its hands regarding the declining Soviet Union in the late 1980s and early 1990s meant that Soviet efforts to organize a similarly negotiated settlement for post–Cold War Europe came to nothing.[20]

Second, and less appreciated, are settlements arranged through tacit understandings and iterated negotiations that gradually contribute to a broader framework. To appreciate this approach, it is instructive to consider the development of the US-Soviet settlement in Cold War Europe. The first 15 years of the Cold War saw the two states nearly come to blows over the division of Europe and whether Germany would be unified or divided, nuclear armed, and/or aligned with the United States or USSR or neutral.[21] However, in the aftermath of the Cuban missile crisis and with the United States and USSR able to deter each other with robust nuclear arsenals, the two superpowers changed course to embrace Europe's status quo.[22] The arms race would continue, but the superpowers used a series of diplomatic discussions to remove many of the flashpoints that could precipitate conflict. Thus, Germany would remain divided and nonnuclear, the Warsaw Pact and North Atlantic Treaty Organization would remain intact, and the United States and USSR would accept responsibility for managing security affairs within their respective spheres of influence. Neither side necessarily desired these agreements or anticipated the deals that trans-

pired. Nevertheless, the emergence of what Marc Trachtenberg calls the "European settlement" reduced Cold War tensions to a manageable level, allowing diplomatic wrangling to replace brinksmanship as the coin of European politics.[23]

Regardless of the path taken, the key to identifying a settlement is thus asking whether parties appear to recognize limits to the scope of their competition and seem willing to bargain with one another on the core issues at stake. Put differently, the issue is not whether states are sacrificing some of their interests—all settlements involve some mutual sacrifice—but whether (1) there is a reason for them to do so and (2) senior leaders accept the need for trade-offs without pressing their respective advantages to the hilt. Doing so, in turn, means looking beyond what policy makers say on a day-to-day basis and instead focusing on overarching trends and processes that collectively indicate how states understand and are pursuing their interests.[24]

North Korea's Challenge to Northeast Asia Security

What, then, are the prospects for a settlement in Northeast Asia? Evaluating the potential for a new equilibrium first requires understanding the multifaceted nature of North Korea's challenge to post–Cold War Northeast Asia. First, and most obviously, North Korea constitutes a direct military threat to several of its neighbors. South Korea has long lived with the possibility of a North Korean attack.[25] Similarly, Japan has been subjected to North Korean assaults on Japanese citizens while its cities are within range of North Korean missiles.[26] As for the United States, North Korea's nuclear and missile breakout over the last decade raises the prospect of a North Korean strike on the US homeland itself.[27] And although the North Korean military threat could theoretically be eliminated by an invasion or managed by efforts to deter North Korea, the United States has been reluctant to embrace either option.[28] After all, invasion presents real military risks to the United States and its allies,[29] while living with nuclear-armed adversaries has long been unpalatable to American policy makers.[30]

Second, North Korea presents significant entrapment risks.[31] A conflict between North and South Korea, for example, could lead to the United States' involvement under the provisions of the US–South Korean alliance. A contest between the United States and DPRK might drag in China, fearful of losing a proximate ally and/or seeing American forces poised near Chinese territory.[32] Even if regional states do not value the stakes of a conflict involving North Korea per se, the course or repercussions of such a contest might still lead to their ensnarement.

A final challenge involves the prospect of North Korea's removal as a sovereign actor. In brief, North Korea's survival is not guaranteed. Not only could the state be eliminated through invasion or regime change, but the country's pervasive economic and demographic problems make a domestic implosion a risk as well. Such possibilities carry a host of subsidiary problems. On one level, North Korea's disappearance would present China, the United States, and others with thorny questions surrounding the future of the Korean peninsula and whether a unified Korea would ally with the United States or China or go neutral.[33] To this end, China has tried to avoid threatening North Korea's domestic stability, just as the United States and its allies have expressed discomfort with what might happen if North Korea implodes.[34] At the same time, wrangling over Korea's future status and/or trying to forestall North Korea's disappearance could lead to an escalatory crisis, up to and including a US-China confrontation.[35] In this sense, North Korea's neighbors have needed to live with a fraught situation in which the only thing more problematic than the DPRK's threatening behavior and entrapment risk is its destruction.

The net result has been a fragile status quo in Northeast Asia. Ultimately, steps taken by China, the United States, or other actors to affect North Korea's strategic position could easily jeopardize others' interests, just as North Korean actions could themselves imperil friend and foe alike.[36] Akin to the first part of the Cold War, the result has been a situation prone to crisis and instability.

Diplomatic Developments: A Nascent Framework?

That said, it is possible to envision a prospective settlement emerging in Northeast Asia. To do so, however, requires looking beyond the specific twists and turns of the negotiations over North Korea's nuclear program per se. Indeed, with North Korea's vague commitment to denuclearization, the limited progress in influencing North Korea's nuclear and missile programs since Singapore, and the early breakup of the subsequent Hanoi Summit, most analysts note that the Trump administration has failed to attain its stated aim of unraveling North Korea's nuclear capabilities.[37] Instead, the potential for a settlement comes from what strategic understandings and implicit meanings may lurk behind and result from the diplomatic discussions witnessed over the last few years. Building on the recognition that settlements can emerge in evolutionary fashion, five trends suggest that a Northeast Asia settlement is not an impossibility.

First, the United States has largely taken regime change off the table and committed to the DPRK's continuation.[38] North Korea's nuclear arsenal

and growing capacity to target the mainland United States alone make any US-led attack on North Korea a much less plausible option than in the recent past.[39] Just as important, events during and after the Singapore Summit reinforced and de facto committed the United States to sustaining North Korea's existence. For one thing, having suggested in 2017 and early 2018 that a military campaign against North Korea was a possibility, the Trump administration has now moved in the opposite direction.[40] Hints of a change were already visible in May 2018 when Trump pledged that any North Korean deal "would be with Kim Jong Un, something where he'd be there, he'd be in his country, he'd be running his country."[41] Since Singapore, however, these steps have kicked into high gear. Not only did the United States sign an agreement pledging security guarantees for North Korea in exchange for the DPRK beginning the denuclearization process, but Trump put deeds behind these words by suspending joint US-South Korean war games that the North claimed were provocative.[42] Nor were these actions a temporary departure. In fact, Secretary of State Mike Pompeo returned to the theme in late June 2018, promising that the United States would "provide security assurances for the North Korean people" so long as North Korea remains committed to denuclearization.[43] Similarly, the run-up to the Hanoi Summit saw the US special representative for North Korea, Stephen Biegun, bluntly declare, "We are not going to invade North Korea. We are not seeking to topple the North Korean regime" in an effort to reassure the Kim government.[44] Neither did the breakup at Hanoi upset the process, as Trump moved in March 2019 to again suspend US–South Korean war games regularly decried as provocative by the North.[45]

Second, North Korea has given the United States latitude to back out of the ongoing standoff over the DPRK nuclear program. After taking office in 2017, the Trump administration maneuvered itself into a corner regarding North Korea's nuclear program. Like the Obama and Bush administrations, it was unwilling to acknowledge the failure of nuclear nonproliferation vis-à-vis the DPRK and accept the political and strategic problems of living with a nuclear North Korea.[46] At the same time, however, it was equally reluctant to pay the costs associated with a military campaign against the North Korean nuclear program. Thus, North Korea's pledge at Singapore to "denuclearize" and—more substantively—its ongoing de facto moratorium on nuclear tests create a useful fiction for the United States.[47] As other analysts suggest, these steps give US leaders a fig leaf to cover their nonproliferation failure, allowing the United States to still declare counterproliferation a success and helping to ratchet down the

threat of war.[48] After all, this fiction allowed Trump to declare that North Korea was "no longer a nuclear threat" immediately after Singapore and his administration to sustain this narrative, even as evidence emerged that North Korea is hiding nuclear assets and continuing work on its nuclear delivery options.[49] More broadly, the North Korean fiction provides a political tool to help the United States resist other states' proliferation efforts while justifying whatever steps are necessary to make deterring a nuclear North Korea viable. Baldly stated, if North Korea is to eventually denuclearize, then deterring a nuclear DPRK is just a temporary expedient—not a permanent US mission.[50]

Third, there appears to be a nascent framework in which diplomatic dialogue and engagement—helping to regularize North Korea's role in the region—is occurring. Progress has been intermittent and limited. However, the United States has named a special representative to oversee the negotiations, ministerial- and working-level talks have taken place (and may continue in the future), and Trump himself is taking an increasingly direct role in efforts designed to facilitate the process.[51] No one knows whether these discussions will result in substantive gains. Initial talks ended with North Korea decrying the United States' attitude toward negotiation, impeding US diplomatic efforts to discuss North Korean nuclear issues, and making largely symbolic concessions to the United States (for instance, offering some verification at the Punggye-ri nuclear testing site) that—as Vipin Narang and Ankit Panda observe—have little "particular bearing on the 'mass production' of ballistic missiles and nuclear weapons."[52] Still, the existence of a bilateral US-DPRK diplomatic process reduces the chance of miscalculation and future crises.[53] As important is the presence of a diplomatic framework requiring the United States and North Korea to have a functional, more normal diplomatic relationship—one in which policy makers can exchange views and information through known channels rather than eschewing most contact as had been customary.[54] The net result is that North Korea's pariah status is increasingly a thing of the past.[55]

The United States is not alone in this task: Japan and South Korea (both American allies) are also crafting a diplomatic process. Through mid-2018, both American allies were unhappy with the prospect of living with a nuclear DPRK, yet just as fearful that the United States would end up entrapping them into a war.[56] The latter concern now appears much reduced. Thus, even while trying to sustain their alliances with the United States, both actors have begun talking in detail with North Korea. In an echo of West Germany's Ostpolitik outreach to East Germany, South

Korea's Nordpolitik apparently encompasses efforts to engage both North Korea and the United States to shape the terms of any denuclearization package.[57] Building on prior outreach, South Korea has also engaged North Korea in talks aimed at diminishing the DPRK's conventional threat while reinvigorating economic and social connections with North Korea; as of this writing (March 2019), reports further indicate that South Korea is seeking to facilitate future negotiations between the United States and North Korea.[58] Japanese policy makers, meanwhile, have met with North Korean officials to discuss bilateral relations, just as a summit between Kim and Japanese prime minister Shinzo Abe remains a possibility.[59] Of course, the risk remains that a widening gulf may open between South Korea, the United States, and/or Japan on North Korean issues and undercut the United States' partnership with one or both countries (particularly should tensions with North Korea spike).[60] Still, South Korean and Japanese leaders have signaled that they see their alliances with the United States as central to addressing North Korean issues, and—since states tend to balance proximate military threats—the trend seems to be toward engaging North Korea without sacrificing ties with the United States.[61] In effect, Northeast Asia may be witnessing the emergence of a less conflictual and more fluid regional security environment.

Finally, China now has a green light to continue as the prime backer and influencer of North Korea. Before mid-2018, China was understandably worried that bilateral US-North Korean talks might result in a deal that pulled North Korea out of China's orbit.[62] Since that time, however, the opposite has occurred. Less than a week after Singapore, North Korean leaders hastened to brief the Chinese leadership on the course of the discussions and confer on a negotiating strategy. Similarly, Kim and other North Korean officials met with their Chinese interlocutors to discuss strategy in advance of the Hanoi meeting.[63] As importantly, US officials including Secretary of State Michael Pompeo and then-Secretary of Defense James Mattis separately visited Beijing in the second half of 2018 to sustain Chinese support for the North Korean denuclearization drive and later praised Beijing's moves; much of this effort involved encouraging Chinese efforts to keep economic sanctions on North Korea.[64] Considering that China is North Korea's primary economic partner, these discussions have only reinforced China's hand: if sanctions are to continue and/or have any bite, China will need to have its interests met.[65]

The Prospective Settlement in Northeast Asia

Individually, no one of these developments would change the security situation in Northeast Asia. Taken together, however, they hold potential for a substantial adjustment of Northeast Asian insecurities—helping reconcile the interests of states in the area such that competition and cooperation can occur within defined boundaries. Much depends on whether the United States and North Korea continue the guarantees-for-denuclearization fiction while vested regional actors sustain the diplomatic momentum seen to date. None of these outcomes are yet assured, all the more so as the Hanoi Summit and its aftermath prompted questions over the American and North Korean willingness to accommodate the other sides' demands.[66] Assuming they come to fruition, however, it is possible to envision the outlines of a new Northeast Asian equilibrium.

At the heart of this potential settlement is North Korea's removal as a regional flashpoint.[67] Here, the fiction of a denuclearizing North Korea affords the United States and North Korea room to ratchet down tensions. Even if a regular diplomatic relationship never emerges, the resulting structure for discussions will help avoid miscalculations and give both parties a stake in the prevailing strategic situation—potentially helping to keep crises to a minimum. Concurrently, with regime change off the table due to North Korea's nuclear arsenal, the United States can set to work fostering a viable deterrence regime by focusing additional resources on ascertaining the scope of the DPRK nuclear arsenal and determining how best to keep North Korea from crossing American red lines.[68]

South Korea and Japan could also fulfill their security needs within this emerging framework. With overt North Korean nuclear swaggering on the decline, pressure for South Korea and Japan to respond in similarly assertive fashion—including debates over acquiring their own nuclear weapons—are poised to wane.[69] Given the aforementioned South Korean and Japanese outreach to North Korea amid efforts to sustain US–South Korean and US-Japanese relations, this solution could involve a combination of sticks and carrots encouraging all parties to avoid provocative actions while hedging against DPRK backsliding.

China may gain as well.[70] With the threat of a US-led military campaign against North Korea substantially reduced, China now has comparative stability on its northeastern flank. Furthermore, the better North Korean relations with the United States and US partners become, the lower the potential for North Korea to trigger a crisis that ensnares China and the greater China's ability to set the pace and tone of diplomatic developments in Northeast Asia. As such, China can focus on ensuring that North

Korea does not collapse due to internal pressures; much like the Soviet Union with East Germany during the Cold War, China's role becomes sustaining its client's survival from within rather than beating back threats from without. In sum, the emerging settlement embraces the existing territorial and security division in Northeast Asia while implicitly recognizing a Chinese sphere of influence, thus giving China incentives to manage its area judiciously.[71] Even if China seeks to change Asia's security and economic order writ large, the approach described above creates room for competition to remain comparatively peaceful and regulated.

Finally, it is plausible to expect North Korea to embrace the nascent settlement. With its nuclear arsenal intact for the indefinite future, security guarantees from the United States, and ongoing diplomatic engagement from South Korea and Japan, North Korea's strategic position is the best it has been in some time.[72] The DPRK may also gain more in the future if diplomatic negotiations with the United States and other vested parties result in sanctions relief and growing economic opportunities.[73] The cost of these gains is its formal commitment to denuclearization—including a potential roadmap to this end,[74] tacit agreement not to overtly flaunt its nuclear weapons capability,[75] and greater subservience to Chinese influence.[76] In effect, North Korea would gain substantial independence from external challenges in exchange for embracing its client state status.

Critics might argue that the United States has been here before. After all, this is not the first time the United States, the DPRK, and other actors have negotiated over the DPRK nuclear program. Furthermore, many of the prior offers—for instance, the 1990s-era quid pro quo of international economic assistance in return for North Korea freezing its nuclear efforts—echo elements of deals under discussion today.[77] One might therefore wonder whether and why a potential settlement is possible today when previous bargains fell by the wayside.[78]

These parallels are deceiving. The current situation in Northeast Asia is different than in times past owing to the fundamental change in the distribution of power wrought by the DPRK's acquisition of nuclear weapons. In fact, the source of the potential settlement described here is the very thing that seems to make the arrangement implausible: North Korea's ability to target the United States and American allies with nuclear weapons and the United States' comparative inability to deprive the DPRK of its nuclear option.[79] Put differently, a Northeast Asian settlement might have appeared attainable in the past. Still, the inability of the United States to either guarantee North Korea's existence or accept a nuclear North Korea, the threat this ambiguity posed to North Korea and China, and North

Korea's inclination to needle the United States and its allies made a deal near impossible. However, with North Korea's existence virtually ensured by its nuclear arsenal and—potentially—American guarantees, the distribution of power and interests in Northeast Asia is much clarified.[80] The United States has effectively reached the extent of its power and influence in the region. North Korea has found a way to ensure its survival but can most benefit from this situation only by working with long-standing allies and adversaries. China need no longer fear entrapment or the loss of its ally, but it must find new ways of managing its client. Like the US-Soviet settlement after the mid-1960s, the prospective security structure in Northeast Asia—inadvertent and unexpected though it might be—may be the least of several evils for the actors involved as each needs to adapt to the new strategic environment. Incentives for the actors involved to negotiate and operate within limits have increased commensurately.[81]

Steps and Missteps: Getting to a Settlement

Again, there is no guarantee this settlement will come to fruition or prove sustainable. On one level, given the Trump administration's ad hoc approach to foreign policy and internal fissures, it is unclear whether the United States will remain interested in the Singapore deal or judge North Korea a viable partner. Particularly as evidence mounts that North Korea may not be moving toward denuclearization, the current US administration—which has previously delayed and threatened to cancel negotiations in response to DPRK intransigence—may decide to change course.[82] Similar problems involve North Korea, which has a track record of backtracking on agreements no longer seen to suit its interests and a tendency of lashing out if it feels threatened.[83]

Obtaining a settlement may also be difficult due to ongoing tensions in the US-South Korea and US-Japan alliances. Since 2017, US relations with its allies have degraded owing to disputes over the cost of stationed US forces, criticism of allied economic behavior, and suggestions that the United States might more generally reduce ties with long-standing partners. In response, South Korea and Japan have reportedly moved to debate ways of providing greater security for themselves and, in particular, considered acquiring nuclear weapons of their own.[84] Should the latter come to pass in unregulated fashion, it risks antagonizing North Korea and China by rendering US-backed security guarantees moot and setting the stage for regional insecurity spirals that would make any settlement immaterial.[85] Ultimately, securing a settlement requires carefully adjudicating the role and capability of current US alliances in any arrangement. Whether the

Trump administration is able or willing to engage its partners to obtain a settlement—let alone whether South Korea and Japan will trust the United States' initiatives—remains unclear.[86]

Moreover, even if a settlement comes into being, *sustaining* it may not be a straightforward task. The Cold War experience is instructive. After the mid-1960s, American and Soviet policy makers were vexed with domestic and international pressures to ignore their tacit settlement. This situation compelled them to actively manage domestic and international audiences to forestall a return to early Cold War tensions (an effort that was only somewhat successful).[87] Similar dynamics are possible in Northeast Asia. On the American side, sustaining a settlement will require reining in foreign policy hawks reluctant to allow the DPRK to de facto retain a nuclear arsenal (or seek regime change for other reasons).[88] The United States will also need to find a way of engaging allies fearful of conflict with North Korea yet also averse to letting a neighboring state enjoy a local nuclear advantage.

North Korea has problems, too. Kim's rule appears intact, but changes in the DPRK leadership and/or internal unrest could imperil the arrangement. Likewise, North Korea's leaders may be disinclined to accept living with the status quo or to permit China to dominate North Korean international fortunes.[89] The DPRK may also try to use its nuclear assets to extract additional concessions, leaving the United States in the fraught position of either conceding to North Korean demands or risking the failure of a framework in which it has invested much of its own time and energy.[90] China, meanwhile, will need to corral a nuclear-armed client. None of these tasks are simple. Even if a settlement emerges, it may be fragile and fraught with risks.

Despite these uncertainties, securing a settlement in Northeast Asia may be a productive way of reducing one of the most troublesome spots in US foreign relations. To boost the chances of success, the United States should proceed along several tracks. First, the United States and its partners need to continue outreach to North Korea. Rather than immediate denuclearization, the objective should be establishing a process that links sanctions relief and security guarantees for North Korea to a plan delineating particular North Korean actions and policies that reinforce the claim of North Korea's eventual denuclearization.[91] Denuclearization is unlikely to occur, but creating a framework will give policy makers in the United States, North Korea, and other states political maneuvering room while dampening North Korean insecurities. At the same time, affording North Korea something of value gives it a stake in the status quo and provides

the United States leverage if North Korea tries extorting further concessions (for instance, by threatening the resumption of nuclear tests). Plainly stated, this effort raises the costs of North Korea challenging the settlement.

Second, the United States should quietly make clear to China what the United States expects from the future China-DPRK relationship and consider what China seeks from the United States in kind. In other words, diplomatic discussions between China and the United States will be needed to deconflict expectations while arriving at a common understanding of what the Northeast Asian settlement does and does not entail.[92] These discussions cannot cover every twist and turn of Northeast Asian relations. Likewise, policy makers will need to find some way of isolating discussions on North Korea from more conflictual elements of the US-China relationship, including economic tensions and disputes in the South and East China Seas.[93] Still, as a way of creating a common reference point, engagement with China can mitigate the risk that unexpected events or developments in other portions of US-China relations will negatively affect Northeast Asian security.[94]

Third, and relatedly, the United States should begin working with China to facilitate Chinese leverage over North Korea. This will be no easy task. During the Cold War, the United States' ability to influence European allies with nuclear arsenals (e.g., France and Britain) was considerably more limited compared to those lacking them (e.g., West Germany). In fact, owing to their comparatively greater security, nuclear-armed clients were occasionally able to exert a significant degree of independence—as, for instance, Britain showcased during the Suez crisis.[95] With North Korea likely retaining a nuclear arsenal, China's ability to shape North Korean fortunes will be similarly constrained. To maximize Chinese influence, the United States should therefore encourage China to reinforce its economic and security ties with North Korea. Ideally, the growth of bilateral China–North Korean ties will discourage North Korea from brandishing its nuclear sword at the first sign of future trouble by providing the Chinese government with tools to influence and restrain Pyongyang's decision making.[96]

Fourth, American policy makers need to find a way of balancing allied efforts to engage North Korea with (1) reciprocal allied interest in sustaining security ties with the United States and (2) the risk that too little intra-alliance coordination could prompt US allies to hedge against the DPRK in ways that disrupt ongoing diplomatic bargaining. That is, a pathway is needed to simultaneously reassure and engage US allies as a settlement comes to fruition while giving them enough independent leeway to engage North Korea as they see fit. To this end, the United

States should consider stepping up ongoing consultations with its partners before and after talks with the DPRK.[97] A multilateral approach is unnecessary; in fact, it may be counterproductive by limiting North Korea's ability to envision a beneficial shift in the regional diplomatic environment from a settlement. However, US policy makers should work with American allies to discuss the broad parameters of what an ideal settlement would entail. Along the way, it might also be advantageous for the United States to sequence its intra-alliance ambitions so efforts to adjust the alliances' security and economic provisions (e.g., reducing US security commitments and allied economic offsets for the US military presence) occur after negotiations with the DPRK mature. These steps would not only help address allied insecurities in the near term, but they allow any future adjustments to account for North Korea's evolving role in Northeast Asia.

Finally, the Trump administration will need to reorient the US policy-making establishment toward the steps needed to structure and sustain a settlement. This does not mean simply engaging and rewarding DPRK behavior. Rather, and much like the US-Soviet relationship from the mid-1960s onward, resources must be devoted to acquiring the intelligence and military tools needed for a stable deterrence relationship with the DPRK.[98] At the same time, US leaders should facilitate a domestic political consensus in favor of the emerging settlement. This may be an especially challenging endeavor. At root, the initial decision to meet with the North Korean leader was a stark departure from normal policy making. Now, US diplomacy in Northeast Asia is taking on an increasingly partisan cast as many Democrats and Republicans question the president's approach.[99] To avoid having future US policy makers back away from any settlement and to put US policy on a sound long-term footing, the Trump administration will need to earn the support of key decision makers and stakeholders across the policy-making and procedural spectrum.

Conclusion

Ultimately, the United States has failed in its stated goal of denuclearizing North Korea. This situation is unlikely to change in the future. Nonetheless, this outcome should not blind us to the broader strategic consequences of US diplomacy. On the horizon is a potential pathway for a Northeast Asian settlement where the Koreas, the United States, China, and Japan can each live within the status quo. There is no guarantee that the potential described in this article will be reached. Furthermore, even if a settlement takes shape, it will take real efforts by policy makers over the long term to see the arrangement sustained. Still, durable settlements in international

politics are not always immediately apparent; sometimes they develop informally if not tacitly and emerge only after periods of tension, posturing, and disappointment. Just as the early Cold War unexpectedly fostered a security system in which the United States, European actors, and the Soviet Union could survive and bargain, so too may an analogous arrangement be possible in Northeast Asia. The United States has thus far failed to denuclearize North Korea, but this failure may be an inadvertent success. SSQ

Notes

1. For input on prior drafts, I thank James Walsh, Adam Mount, Brendan Green, and Jennifer Lind, as well as the three anonymous *SSQ* reviewers.

2. Evan Osnos, "The Risk of Nuclear War with North Korea," *New Yorker*, 18 September 2017, https://www.newyorker.com/; and BBC, "North Korea-US Tensions: How Worried Should You Be?," 25 September 2017, https://www.bbc.com/.

3. "Joint Statement of President Donald J. Trump of the United States of America and Chairman Kim Jong Un of the Democratic People's Republic of Korea at the Singapore Summit," The White House, press release, 12 June 2018, https://www.whitehouse.gov/. On the diplomatic process, see Mark Manyin and Emma Chanlett-Avery, "A Possible Second U.S.-North Korea Summit: What Diplomacy Has and Hasn't Achieved," *CRS* [*Congressional Research Service*] *Insight*, Report IN11023, 23 January 2019, https://fas.org/sgp/crs/row/IN11023.pdf; and Kelsey Davenport, "Chronology of U.S.–North Korean Nuclear and Missile Diplomacy," fact sheet, Arms Control Association, March 2019, https://www.armscontrol.org/factsheets/dprkchron.

4. "Complete, verifiable, and irreversible denuclearization" was the Trump administration's stated goal vis-à-vis North Korea heading into the Singapore discussion; see David Welna, "'Complete, Verifiable, Irreversible' a Tough Goal for North Korea Summit," *npr*, 6 June 2018, https://www.npr.org/. On stalled progress following the Hanoi Summit, see Richard Johnson, "Learning from Hanoi: Where Do We Go from Here?," *38 North,* 18 March 2019, https://www.38north.org/; Jed Babbin, "Three Concessions and Walkout: Hanoi and Its Aftermath," *American Spectator*, 4 March 2019, https://spectator.org/; and Uri Friedman, "How the White House Is Spinning the North Korea Summit Collapse," *The Atlantic*, 12 March 2019, https://www.theatlantic.com/.

5. Indeed, leaked US government reports as well as open-source intelligence indicate that North Korea has continued to produce nuclear weapons and their delivery systems during the negotiating period; see Jon Herskovitz and Youkyung Lee, "North Korea's Nuclear Program Quietly Advances, Pressuring Trump," Bloomberg, 14 January 2019, https://www.bloomberg.com/.

6. See, for example, Nicholas L. Miller and Vipin Narang, "The Year of Living Dangerously with Nuclear Weapons," *Foreign Affairs* (Snapshot), 11 January 2019, https://www.foreignaffairs.com/; Ankit Panda and Vipin Narang, "Diplomacy without Denuclearization: North Korea in 2018," *War on the Rocks*, 24 December 2018, https://warontherocks.com/; Ryan Hass, "Trump Did Not Solve the North Korea Problem in Singapore—in Fact, the Threat Has Only Grown," *NBC News*, 12 August 2018, https://www.nbcnews.com/; James Acton, "What Happens When North Korea Talks Fail?" *Huffington Post*, 13 June 2018, https://www.huffingtonpost.com/; Center for Preventive Action, "The Top Conflicts to Watch in 2019: North Korea," *Council on Foreign Relations*, 16 January 2019, https://www.cfr.org/; and John Warden and Ankit Panda, "Goals for Any Arms Control Proposal with North Korea," *Bulletin of the Atomic Scientists*, 13 February 2019, https://thebulletin.org/.

7. For statements on the value of slowing and restraining key elements of the North Korean program, see the analyses by Vipin Narang, Bruce Bennett, Joe Cirincione, and Catherine Killough, online via Harry J. Kazianis, John Dale Grover, and John S. Van Oudenaren, "North Korea and

America's Second Summit: We Asked 76 Experts to Predict the Results," *National Interest*: *Korea Watch* (blog), 6 February 2019, https://nationalinterest.org/blog/.

8. For discussion, see Henry Kissinger, *A World Restored; Metternich, Castlereagh and the Problems of Peace, 1812–22* (Boston: Houghton Mifflin, 1957); and Marc Trachtenberg, *A Constructed Peace: The Making of the European Settlement, 1945–1963* (Princeton: Princeton University Press, 1999).

9. Kenneth N. Waltz, *Theory of International Politics* (Reading, MA: Addison-Wesley, 1979); Hans J. Morgenthau, *Politics among Nations; The Struggle for Power and Peace*, 2d ed. (New York: Knopf, 1954); and John J. Mearsheimer, *The Tragedy of Great Power Politics* (New York: Norton, 2001).

10. On arming and allying, see Barry R. Posen, *The Sources of Military Doctrine: France, Britain, and Germany between the World Wars* (Ithaca: Cornell University Press, 1984); and Stephen M. Walt, *The Origins of Alliances* (Ithaca: Cornell University Press, 1987).

11. On the general difficulty of reaching international agreements, see James Fearon, "Bargaining, Enforcement, and International Cooperation," *International Organization* 52, no. 2 (1998): 269–305.

12. For contemporary examples, see "NATO Accuses Russia of Breaking Nuclear Missile Treaty," *BBC*, 4 December 2018, https://www.bbc.com/news/; "Donald Trump Confirms US Withdrawal from INF Nuclear Treaty," *Guardian*, 1 February 2019, https://www.theguardian.com/; and Joe Gould, "Pence Calls on EU Allies to Withdraw from Nuclear Deal in Latest Trans-Atlantic Rift," *Defense News*, 14 February 2019, https://www.defensenews.com/. On the consequences of such violations, see Charles Lipson, "Why Are Some International Agreements Informal?," *International Organization* 45, no. 4 (Autumn 1991): 504–14..

13. Charles L. Glaser, "Realists as Optimists: Cooperation as Self-Help," *Security Studies* 5, no. 3 (Winter 1994–95): 50–90.

14. Henry Kissinger, "The Congress of Vienna: A Reappraisal," *World Politics* 8, no. 2 (January 1956): 264.

15. As Kissinger put it, a settlement "is the legitimizing principle which establishes the relative 'justice' of competing claims and the mode of their adjustment"; and Kissinger,"Congress of Vienna," 265.

16. Kissinger, "Congress of Vienna," 265. For a similar treatment on the origins of international order, see G. John Ikenberry, *After Victory: Institutions, Strategic Restraint, and the Rebuilding of Order after Major Wars* (Princeton: Princeton University Press, 2000), 3-20, 50-79.

17. Kissinger, *World Restored*.

18. Margaret MacMillan, *Paris 1919: Six Months That Changed the World* (New York: Random House, 2001); Zara Steiner, *The Lights That Failed: European International History 1919–1933* (Oxford: Oxford University Press, 2007); and Zara Steiner, *The Triumph of the Dark: European International History 1933–1939* (Oxford: Oxford University Press, 2013).

19. Melvyn Leffler, *A Preponderance of Power: National Security, the Truman Administration, and the Cold War* (Stanford: Stanford University Press, 1992), chaps. 1–3; William Hitchcock, *The Struggle for Europe: The Turbulent History of a Divided Continent, 1945–2002* (New York: Doubleday, 2003), 19–39; and Trachtenberg, *Constructed Peace*, 3–65. Also useful is Norman Graebner, "Yalta, Potsdam, and Beyond: The British and American Perspectives," in *The Rise and Fall of the Grand Alliance, 1941–1945*, eds. Ann Lane and Howard Temperley (London: Macmillan, 1995), 226–54.

20. Joshua R. Itzkowitz Shifrinson, *Rising Titans, Falling Giants: How Great Powers Exploit Power Shifts* (Ithaca: Cornell University Press, 2018), 141–42.

21. James McAllister, *No Exit: America and the German Problem, 1943–1954* (Ithaca: Cornell University Press, 2002); and Leffler, *Preponderance of Power*, chaps. 8, 11.

22. On the changing military and strategic balance at this time, see John L. Gaddis, *Strategies of Containment: A Critical Appraisal of Postwar American National Security Policy* (New York: Oxford University Press, 1982); and Daryl G. Press, *Calculating Credibility: How Leaders Assess Military Threats* (Ithaca: Cornell University Press, 2005), 117–41.

23. Trachtenberg, *Constructed Peace*.

24. This is akin to how most analysts of grand strategy call for looking beyond what strategy documents say and focusing far more on how states behave. See Barry R. Posen, "Stability and Change in U.S. Grand Strategy," *Orbis* 51, no. 4 (October 2007): 561–67.

25. Michael O'Hanlon, "Stopping a North Korean Invasion: Why Defending South Korea Is Easier than the Pentagon Thinks," *International Security* 22, no. 4 (Spring 1998), 135–70.

26. Richard J. Samuels, *Securing Japan: Tokyo's Grand Strategy and the Future of East Asia* (Ithaca: Cornell University Press, 2007), 148–51.

27. As the Department of Defense put it in 2017, "North Korea is committed to developing a nuclear-armed ICBM that is capable of posing a direct threat to the United States." Department of Defense, *Military and Security Developments Involving the Democratic People's Republic of Korea 2017* (Washington: Office of the Secretary of Defense, 2017), 10. More recently, the DOD's *Missile Defense Review* concluded, "Over the past decade, [North Korea] has invested considerable resources in its nuclear and ballistic missile programs, and undertaken extensive nuclear and missile testing in order to realize the capability to threaten the U.S. homeland with missile attack." Office of the Secretary of Defense, *2019 Missile Defense Review* (Washington, DC: Office of the Secretary of Defense, 2019), ii, https://www.defense.gov/Portals/1/Interactive/2018/11-2019-Missile-Defense-Review/The%202019%20MDR_Executive%20Summary.pdf. See also "CIA Director Mike Pompeo on 'Crushing' Foes amid Shutdown, N. Korean Nuclear Threat," *CBS News*, 22 January 2018, https://www.cbsnews.com/.

28. On the reluctance to use force against North Korea, see William Perry, "Proliferation on the Peninsula: Five North Korean Nuclear Crises," *Annals of the American Academy of Political and Social Science* 607, no. 1 (September 2006), 81–82; Ted Galen Carpenter, "The 1994 North Korea Crisis: Military Force a Bad Idea Then (and a Worse One Now)," *National Interest*, 18 April 2017, https://nationalinterest.org/blog/; Jesse Johnson, "Obama Weighed Pre-Emptive Strike against North Korea after Fifth Nuclear Blast and Missile Tests near Japan in 2016, Woodward Book Claims," *Japan Times*, 12 September 2018, https://www.japantimes.co.jp/news.

29. Victor Cha, "Giving North Korea a 'bloody nose' carries a huge risk to Americans," *Washington Post*, 30 January 2018, https://www.washingtonpost.com/opinions/; Dave Mosher, "Trump Appointing John Bolton Is a 'National Security Emergency,' One Expert Says—Here's Why," *Business Insider*, 23 March 2018, https://www.businessinsider.com/; and Demetri Sevastopulo, "Trump and North Korea: The Perils of a Preemptive Strike," *Financial Times*, 9 January 2018, https://www.ft.com/content.

30. For discussion of American reluctance to live with nuclear-armed states, see the implicit debate between Francis J. Gavin, "Strategies of Inhibition: U.S. Grand Strategy, the Nuclear Revolution, and Nonproliferation," *International Security* 40, no. 1 (Summer 2015): 9–46; and Thomas P. Cavanna, "Geopolitics over Proliferation: The Origins of US Grand Strategy and Their Implications for the Spread of Nuclear Weapons in South Asia," *Journal of Strategic Studies* 41, no. 4 (June 2018): 576–603.

31. An ongoing debate in international relations theory concerns what "entrapment" entails and where it manifests; some analysts would instead classify the problem for the United States, China, and others as "entanglement." On this debate, see David Edelstein and Joshua Shifrinson, "It's a Trap! Security Commitments and the Risks of Entrapment," in *U.S. Grand Strategy in the 21st Century: The Case for Restraint*, eds. A. Trevor Thrall and Benjamin Friedman (London: Routledge, 2018).

32. For authors who downplay the Chinese involvement risk, see Jacquelyn Schneider, "Chinese Military Involvement in a Future Korean War," *Strategic Studies Quarterly* 4, no. 4 (Winter 2010): 50–67; and Oriana Mastro, "Why China Won't Rescue North Korea," *Foreign Affairs* 97, no. 1 (January/February 2018): 58–66.

33. Bruce Bennett, *Preparing for the Possibility of a North Korean Collapse* (Santa Monica: RAND Corporation, 2013); Richard Bush, "China's Response to Collapse in North Korea," *Brookings Brief*, 23 January 2014, https://www.brookings.edu/; Bonnie Glaser, Sheila Smith, and

Marcus Noland, "China and Japan's Perspectives on North Korea (Transcript)," Council on Foreign Relations, 21 October 2014, https://www.cfr.org/event/; Michael O'Hanlon, "North Korean Collapse Scenarios," *Brookings Op-Ed*, 9 June 2009, https://www.brookings.edu/opinions/; Evans Revere, "Korean Reunification and U.S. Interests: Preparing for One Korea," *Brookings Brief*, 20 January 2015, https://www.brookings.edu/; and "Imagining a Unified Korea," *Nikkei Asian Review*, 6 June 2018, https://asia.nikkei.com/Spotlight/Cover-Story/Imagining-a-unified-Korea.

34. Dick Nanto, and Mark Manyin, "China-North Korea Relations," *North Korea Review* 7, no. 2 (Fall 2011): 94–101; and Choe Sang-Hun, "With Nuclear Tests, North Korea's Leader Asserts Role of Instigator," *New York Times*, 8 January 2016.

35. Phil Reynolds, "What Happens if North Korea Collapses?" *The Diplomat*, 3 September 2016, https://thediplomat.com/.

36. See, for instance, Kathleen McInnis et al., *The North Korean Nuclear Challenge: Military Options and Issues for Congress*, Congressional Research Service Report R44994, 6 November 2017; Adam Mount, "How China Sees North Korea," *The Atlantic*, 29 August 2017, https://www.theatlantic.com/; Kristin Huang, "How China Responded to Previous North Korean Nuclear Tests," *South China Morning Post*, 4 September 2017, https://www.scmp.com/news/; and Julie Hirschfield Davis, "Trump Criticizes China as Meeting on North Korea Nears," *New York Times*, 5 July 2017, https://www.nytimes.com/.

37. Daniel Russel, "A Historic Breakthrough or a Historic Blunder in Singapore?," *Foreign Affairs* (Snapshot), 12 June 2018, https://www.foreignaffairs.com/; Miller and Narang, "Year of Living Dangerously"; Panda and Narang, "Diplomacy without Denuclearization"; Patrick Cronin, "Give Peace with North Korea a Chance, but Remember Plan B," *Foreign Policy*, 14 January 2019, https://foreignpolicy.com/; and John Brennan, "Trump Must Listen to the North Korea Experts, Not His Gut," *Washington Post*, 15 February 2019, https://www.washingtonpost.com/.

38. Of course, the United States and its international partners were willing to extend security guarantees to North Korea as part of a framework agreed to as part of the Six-Party Talks in the mid-2000s. However, since the Six-Party framework was never implemented, a security guarantee was never registered. See Hanns Gunther Hilpert and Oliver Meier, "Interests, Interdependence, and a Gordian Knot," in *Facets of the North Korea Conflict,* eds., Hanns Gunther Hilpert and Oliver Meier (Berlin: Siftung Wissenschaft und Politik, 2018), 7.

39. Reflecting this dynamic, analysts have begun discussing the prospects of crafting a "stable deterrence relationship" between the two countries; see Vipin Narang and Ankit Panda, "North Korea Is a Nuclear Power. Get Used to It," *New York Times*, 12 June 2018, https://www.nytimes.com/; and Mark Bell and Julia MacDonald, "Toward Deterrence: The Upside of the Trump-Kim Summit," *War on the Rocks*, 15 June 2018, https://warontherocks.com/. On the difficulties of war with a nuclear-armed DPRK, see Barry Posen, "The Price of War with North Korea," *New York Times*, 6 December 2017, https://www.nytimes.com/.

40. See Brett Samuels, "Pompeo Dodges on North Korean Regime Change Question," *The Hill*, 13 May 2018, https://thehill.com/.

41. David Nakamura and Philip Rucker, "Trump Promises Kim Jong Un He'd Stay in Power after a Nuclear Deal," *Chicago Tribune*, 17 May 2018, https://www.chicagotribune.com/.

42. On pledges of security guarantees, see Ankit Panda, "Donald Trump, Kim Jong Un Sign Joint Declaration at Singapore Summit," *The Diplomat*, 12 June 2018, https://thediplomat.com/. On military exercises, see the White House, "Press Conference by President Trump," 12 June 2018, https://www.whitehouse.gov/; Everett Rosenfeld and Nyshka Chandran, "Trump Says North Korea Will Keep Its Promises, and the U.S. Will Stop War Games," *CNBC*, 12 June 2018, https://www.cnbc.com/; "U.S., South Korea Nix 'War Game' in Name of 'Momentum,'" *CBS*, 19 June 2018, https://www.cbsnews.com/; and Phil Stewart, "U.S., South Korea Suspend More Drills to Bolster North Korea Diplomacy," Reuters, 19 October 2018, https://www.reuters.com/.

43. Elise Labott, "Exclusive: Pompeo Says No Timeline on North Korea Negotiations," *CNN*, 25 June 2018, https://www.cnn.com/.

44. Stephen Biegun, "Remarks on DPRK at Stanford University," 31 January 2019, https://www.state.gov/. Trump also returned to the general theme shortly before the Hanoi Summit, contrasting the "very good relationship" he and Kim share with the assertion that the Obama administration was "ready to go to war" with North Korea. See The White House, "Remarks by President Trump on the National Security and Humanitarian Crisis on Our Southern Border," 15 February 2019, https://www.whitehouse.gov/. Also useful is David Kim, "Denuclearization of the Korean Peninsula Begins with a Peace Declaration," *Bulletin of the Atomic Scientists*, 14 February 2019, https://thebulletin.org/.

45. David Cloud, "U.S. Military to Cancel Large-Scale Exercises on Korean Peninsula," *Los Angeles Times*, 2 March 2019; and Yoojung Seo and James Griffiths, "US, South Korea Cancel Major War Games 'to Support Diplomatic Efforts,'" *CNN*, 3 March 2019, https://www.cnn.com/.

46. Brennan, "Trump Must Listen to the North Korea Experts."

47. Indeed, Trump is overt on this point, remarking in February 2019 that "I'm in no rush for speed[y denuclearization]—we just don't want testing." Quoted in Youkung Lee, "North Korea's Kim Ready to Accept Inspections of Nuclear Plant, South Korea Presidential Advisor Says," *Japan Times*, 16 February 2019, https://www.japantimes.co.jp/.

48. See, for example, Julian Borger, "North Korea Maintaining More than a Dozen Launch Sites, Photos Show," *Guardian*, 12 November 2018, https://www.theguardian.com/; Panda and Narang, "Diplomacy without Denuclearization"; Tobin Harshaw, "Winning the Nuclear Game against North Korea," *Bloomberg Opinion*, 16 February 2019, https://www.bloomberg.com/; and Katy Gabel Chui, "Sig Hecker on North Korea in 2018," *Bulletin of the Atomic Scientists*, 13 February 2019, https://thebulletin.org/.

49. Veronica Stracqualursi and Stephen Collinson, "Trump Declares North Korea 'No Longer a Nuclear Threat'" *CNN*, 13 June 2018, https://www.cnn.com/; Ian Kullgren, "Bolton Downplays North Korea Weapons Report," *Politico*, 1 July 2018, https://www.politico.com/; and Panda and Narang, "Diplomacy without Denuclearization." For ongoing North Korean activities, see Courtney Kube, Ken Dilanian, and Carol Lee, "North Korea Has Increased Production at Secret Sites, Says U.S. Officials," *NBC*, 30 June 2018, https://www.nbcnews.com/.

50. Interestingly, concerns that US outreach to North Korea could encourage other countries to pursue nuclear weapons overlook this point. Yet if the United States is negotiating with North Korea only because of the eventual promise of denuclearization, then it has sustained its ostensible commitment to nonproliferation and counterproliferation in a way that should give other states pause before embarking on nuclear programs of their own.

51. These elements do not always overlap. Since Hanoi, for instance, Trump has reportedly blocked efforts by his special representative to resume back-channel negotiations with North Korea, preferring instead to oversee the process himself. See John Walcott, "President Trump Just Sidelined His Own Top Negotiator on North Korea," *Time*, 20 March 2019, http://time.com/. That said, the key issue here is that the United States remains supportive of diplomatic dialogue, and on this score it looks to be sustaining efforts at engagement. Indeed, the United States has not only downplayed the importance of evidence that North Korea (as of late March 2019) might be preparing to resume tests of a satellite launch vehicle but also underscored its openness to negotiations. For the continued engagement, see Friedman, "How the White House Is Spinning"; Carnegie Endowment for International Peace, "A Conversation with U.S. Special Representative Stephen Biegun," transcript, 2019 Carnegie International Nuclear Policy Conference, Washington, DC, 11 March 2019, https://s3.amazonaws.com/ceipfiles/pdf/NPC19-SpecialRepresentativeBiegun.pdf; and Department of State, "Senior State Department Official on North Korea," 7 March 2019, https://www.state.gov/. For the broader US efforts at engagement since mid-2018, see for example David Brunnstrom, "Pompeo Expects to Return to North Korea 'Before Terribly Long,'" Reuters, 18 June 2018, https://www.reuters.com/; David Brunnstrom and Jeff Mason, "Pompeo Heads to North Korea as Doubts Mount about Its Intentions," Reuters, 2 July 2018, https://www.reuters.com/; Michelle Kosinski and Zachary Cohen, "Pompeo Names Special Representative, Announces

Fourth Trip to North Korea," *CNN*, 23 August 2018, https://www.cnn.com/; " 'Big Guy' Pompeo Faced a Hard Bargain in Latest Pyongyang Visit with North Korea Calling the Shots," *South China Morning Post*, 8 October 2018, https://www.scmp.com/; "U.S. Envoy for North Korea Stephen Biegun Arrives in Seoul for Talks: Yonhap," *Straits Times*, 3 February 2019, https://www.straitstimes.com/; Daniel Dickson and Johan Ahlander, "North Korean Diplomat Arrives in Sweden to Discuss U.S. Deadlock," Reuters, 18 January 2019, https://www.reuters.com/; "Trump Meets with North Korea's Kim Yong-Chol at White House," *BBC*, 18 January 2019, https://www.bbc.com/news/world-us-canada-46925425; and Ken Thomas, "Trump Receives New Letter from Kim Jong Un, Sends His Reply," *Boston Globe*, 2 August 2018, https://www.boston.com/news/.

52. Nick Wadhams and Anthony Capaccio, "North Korea Slams U.S. 'Gangster-Like' Demands at Nuclear Talks," *Bloomberg News*, 7 July 2018, https://www.bloomberg.com/; Nick Wadhams, "Pompeo's North Korea Envoy Can't Get Face Time with Counterparts," *Bloomberg News*, 7 December 2018, https://www.bloomberg.com/; Kylie Atwood, "Pompeo's Six Hours in Pyongyang—A Reporter's Notebook," *CBS News*, 15 October 2018, https://www.cbsnews.com/; and Panda and Narang, "Diplomacy without Denuclearization."

53. Bell and MacDonald, "Toward Deterrence."

54. Uri Friedman, "Here's What Trump Actually Achieved with North Korea," *The Atlantic*, 19 June 2018, https://www.theatlantic.com; and Chui, "Sig Hecker on North Korea in 2018." Reflecting this trend, recent reports indicate that the United States is weighing establishing a North Korean diplomatic liaison office that would allow for regular diplomatic communication. See Alex Ward, "The US Wants to Set Up a Liaison Office in North Korea," *Vox*, 18 February 2019, https://www.vox.com/.

55. Making an analogous point is Victor Cha, "Trump and Kim Have Just Walked Us Back from the Brink of War," *New York Times*, 12 June 2018, https://www.nytimes.com/. On potential concessions, see David Kim, "North Korean Concessions the United States Might Want," *Bulletin of the Atomic Scientists*, 14 February 2019, https://thebulletin.org/.

56. John Walcott and David Brunnstrom, "Korea Talks Ease War Fears in Washington, but for How Long?," Reuters, 11 January 2018, https://www.reuters.com/; Motoko Rich, "Trump-Kim Summit Creates New Anxieties for Asian Allies," *New York Times*, 13 June 2018, https://www.nytimes.com/; and Choe Sang-Hun, "South Korea Seeks to Assure Citizens U.S. Won't Strike North Pre-Emptively," *New York Times*, 11 April 2017, https://www.nytimes.com/.

57. Uri Friedman, "The Mystery at the Heart of the North Korea Talks," *The Atlantic*, 26 June 2018, https://www.theatlantic.com/; Joshua Berlinger and Yoonjung Seo, "North and South Korea Commit to 'Era of No War,'" *CNN*, 19 September 2018, https://www.cnn.com/; and Lee, "North Korea's Kim Ready."

58. On South Korea seeking to facilitate negotiations post-Hanoi, see Rob McBride, "South Korea Offers to Facilitate Future Trump-Kim Talks," Al-Jazeera, 2 March 2019, https://www.aljazeera.com/; and "S. Korea to Seek Talks with DPRK to Facilitate DPRK-U.S. Dialogue," Xinhua, 13 March 2019, http://www.xinhuanet.com/. On South Korea's broader engagement efforts, see Hjung-Jin Kim, "North Korea to Move Artillery Out of Range of Seoul as Part of Peace Talks, South Suggests," *Independent*, 25 June 2018, https://www.independent.co.uk/; Kim Tong-Hung, "Pyongyang and Seoul Agree to Improve North Korea's Railways, but the Work Must Wait," *Pittsburgh Post-Gazette*, 27 June 2018, https://www.post-gazette.com/; and Julian Ryall, "South Korea Slashes North Korea Human Rights Budget, Raises Regime Aid," *DW*, 3 September 2018, https://www.dw.com/.

59. Simon Denyer, "Japan's Abe Finds Himself on Sidelines amid Outreach to North Korea," *Washington Post*, 23 September 2018, https://www.washingtonpost.com/; Danielle Demetriou, "Japan and North Korea Held Secret Meeting as Shinzo Abe 'Loses Trust' in Donald Trump," *Telegraph*, 29 August 2018, https://www.telegraph.co.uk/; and "Japan and North Korea Held Secret Meeting in October," *Nikkei Asian Review*, 29 October 2018, https://asia.nikkei.com/.

60. For discussion, see Lee Haye-ah, "Analysts Brace for Trump Card at Next N. Korea Summit," Yonhap News Agency, 7 February 2019, https://en.yna.co.kr/; and Choe Sang-Hun, "North Korea

Seeks to Split Alliance between South Korea and U.S.," *New York Times*, 23 March 2019, https://www.nytimes.com/.

61. South Korean president Moon Jae-in, for instance, declared in November 2018 that "it is entirely the power of the strong Korea-U.S. alliance that drew North Korea into dialogue and made the current situation possible." See "Moon Tells Pence U.S.-North Korea Ties, Inter-Korean Relations Should Move Forward," *Korea Times*, 15 November 2018, https://www.koreatimes.co.kr/. For Japan, see Mari Yamaguchi, "Japan Seeks Stronger Ties with US, Says North Korean Threat 'Imminent' Despite Summit Pledge," *Military Times*, 26 August 2018, https://www.militarytimes.com/. Also useful is Zhenhua Lu, "US, South Korea 'Closely Coordinating' on Breaking Nuclear Talks Stalemate, Mike Pompeo Says," *South China Morning Press*, 21 November 2018, https://www.scmp.com/. On balancing proximate threats, see Walt, *Origins of Alliances*.

62. Jane Perlez, "China, Feeling Left Out, Has Plenty to Worry about in North Korea–U.S. Talks," *New York Times*, 22 April 2018, https://www.nytimes.com/.

63. Adam Cathcart, "Pivot to Beijing? Kim Jong Un's Play for Economic Stability after Hanoi," *NK News*, 3 March 2019, https://www.nknews.org/; Zhenhua Lu and Lee Jeong-ho, "North Korea's Kim Jong-un in China for Two-Day Trip 'to Brief Xi Jinping on Donald Trump Summit,' " *South China Morning Press*, 19 June 2018, https://www.scmp.com/; and Christopher Bodeen, "Kim Looking to 'Achieve Results' in 2nd Summit with Trump," Associated Press, 10 January 2019, https://www.apnews.com/.

64. Lolita C. Baldor and Christopher Bodeen, "Mattis, China Leaders Strike Positive Tone despite Tensions," Associated Press, 27 June 2018, https://www.apnews.com/; "China, US Talks on North Korea Get Off to Frosty Start," *BBC*, 8 October 2018, https://www.bbc.com/; and Leo Byrne, "China a 'Good Partner' in Denuclearizing North Korea: Pompeo," *NK News*, 7 January 2019, https://www.nknews.org/.

65. That said, there is evidence that China has taken a laxer approach toward enforcing existing sanctions on North Korea since the Singapore Summit. See U.S.-China Economic and Security Review Commission, *2018 Report to Congress* (Washington, DC: U.S.-China Economic and Security Review Commission, November 2018), 420–21.

66. Friedman, "How the White House Is Spinning"; Uri Friedman, "Is Trump Giving Up on a Nuclear-Free North Korea?" *The Atlantic*, 2 March 2019, https://www.theatlantic.com/; and Joyce Lee and David Brunnstrom, "North Korea May Suspend Talks with 'Gangster-Like' U.S., Rethink Nuclear Test Freeze," Reuters, 14 March 2019, https://www.reuters.com/.

67. For a related treatment of US policy toward North Korea writ large, see Adam Mount and Andrea Berger, *Report of the International Study Group on North Korea Policy* (Washington, DC: Federation of American Scientists, 2019), https://fas.org/wp-content/uploads/media/FAS-DPRK-SG.pdf.

68. On deterrence and North Korea, see Scott Sagan, "The Korean Missile Crisis," *Foreign Affairs* 96, no. 6 (November–December 2017); John Dale Grover, "North Korea Still Requires Deterrence and Diplomacy," *National Interest*, 31 July 2018, https://nationalinterest.org/; and Michael Singh, "Trump Should Focus on Deterring North Korea," *Foreign Policy*, 17 October 2017, https://foreignpolicy.com/.

69. For concerns that North Korean nuclear weapons may prompt Japan and South Korea to pursue their own nuclear weapons, see Christopher Hughes, "North Korea's Nuclear Weapons: Implications for the Nuclear Ambitions of Japan, South Korea, and Taiwan," *Asia Policy* 3 (January 2007): 75–104; and Harshaw, "Winning the Nuclear Game."

70. Indeed, some analysts were quick to propose that China was the primary "winner" of the Singapore Summit. See Bonnie S. Glaser and Oriana Skylar Mastro, "The Big Winner of the Singapore Summit," *Foreign Affairs* (Snapshot), 15 June 2018, https://www.foreignaffairs.com/.

71. For a related discussion, see Isaac Stone Fish and Robert Kelly, "North Korea Is Ultimately China's Problem," *Foreign Affairs* (Snapshot), 8 June 2018, https://www.foreignaffairs.com/.

72. Michael Green, "Deciphering Kim Jong Un's Motives," *Foreign Affairs* (Snapshot), 16 May 2018, https://www.foreignaffairs.com/.

73. Warden and Panda, "Goals for Any Arms Control Proposal;" Eric Gomez, "What the US Should Take Away from Kim Jong Un's New Year Address," *The Diplomat*, 4 January 2019, https://thediplomat.com/; and Patrick Cronin and Kristine Lee, "Preparing for a 'Decent Chance' of Success and Failure with North Korea," *38 North*, 1 February 2019, https://www.38north.org/.

74. Remarks by US officials in early 2019 posed the question of whether North Korea must denuclearize before obtaining sanctions relief. Despite suggestions that the United States might be willing to proceed in a step-by-step fashion in which North Korea progressively wound up its nuclear program in exchange for sanctions relief, Biegun and other officials have elsewhere implied that North Korea must embrace "complete denuclearization . . . as a condition for all other steps." In practice, there may be less of a discrepancy than meets the eye. As Biegun explained in mid-March 2019, the United States is interested in moving forward with both denuclearization and in "transforming relations with the DPRK"—code for sanctions relief and economic integration—but "nothing can be agreed until everything is agreed." In the same remarks, he elaborated that the "foundation" of US policy "is denuclearization. And until we can get to some point where we have the same traction on that issue that we have on the other issues, that makes it very difficult for us to move forward." Combined, it appears that the United States is unwilling to officially embrace a step-by-step approach that would trade sanctions relief for denuclearization efforts without a defined end state. However, Biegun's formulation also implies that the United States is open to a roadmap for improving US-DPRK relations (including sanctions relief) provided the United States and DPRK reach agreement on denuclearization (and what denuclearization entails) as a desired—if not necessarily attainable—end state. If so, the approach would be a step-by-step policy in practice, if not officially. On Biegun's remarks and the ambiguity of the early 2019 position, see Carnegie Endowment, "Conversation with Special Representative Stephen Biegun," 11–12.

75. In downplaying its nuclear capabilities, North Korea would, in essence, be following a path taken by other nuclear-armed states such as Israel and Pakistan that would suffer strategic repercussions if their nuclear arsenals were made public. For discussion of states hiding their nuclear capabilities, see Nicholas Miller and Or Rabinowitz, "Keeping the Bomb in the Basement: U.S. Nonproliferation Policy toward Israel, South Africa, and Pakistan," *International Security* 40, no. 1 (Summer 2015): 47–86; and Austin Long and Joshua Shifrinson, "How Long until Midnight? Intelligence-Policy Relations and the U.S. Response to the Israeli Nuclear Program, 1959–1985," *Journal of Strategic Studies* 42, no. 1 (Winter 2019): 55–90.

76. There is a legitimate question over whether formal commitments—such as codified agreements, treaties, and declarations—are binding for personalist regimes like Kim's North Korea. One might argue that personalist autocracies enable leaders to quickly defect from agreements if their interests change. That said, given an anarchic international system, it is nearly impossible to bind any state (regardless of regime type) to uphold the terms of an agreement if its interests mandate otherwise. Certain regimes (e.g., democracies) may be poised for greater compliance, but it is neither automatic nor divorced from state interest. In this sense, the above analysis suggests that even Kim's North Korea may embrace and sustain a formal commitment to denuclearize because the resulting settlement benefits North Korea in other ways. On the difficulty of compliance, as well as variation in compliance by regime type and interests, see Robert Axelrod and Robert Keohane, "Achieving Cooperation under Anarchy: Strategies and Institutions," *World Politics* 38, no. 1 (October 1985): 226; and Brett Ashley Leeds, "Domestic Political Institutions, Credible Commitments, and International Cooperation," *American Journal of Political Science* 43, no. 4 (October 1999): 979–1002.

77. Thanks go to James Walsh for this observation. For the parallels on the security guarantee issue, see note 34. For details on past offers, see Marc Champion, "A Rough Guide to North Korea's Many Promises to Abandon Nukes," *Bloomberg News*, 11 June 2018, https://www.bloomberg.com/.

78. For the best analysis of the tradeoffs involved in prior debates over relations with North Korea, see Victor D. Cha and David C. Kang, "The Debate over North Korea," *Political Science Quarterly* 119, no. 2 (Summer 2004): 229–54; and Victor D. Cha and David C. Kang, *Nuclear North Korea: A Debate on Engagement Strategies* (New York: Columbia University Press, 2003).

79. On the limitations imposed by nuclear weapons and the resulting diplomatic and security consequences, see Robert Jervis, *The Meaning of the Nuclear Revolution: Statecraft and the Prospect of Armageddon* (Ithaca: Cornell University Press, 1989). Of course, recent research shows that the United States has long sought ways of disarming other states' nuclear arsenals. Moreover, ongoing US advances in counterforce targeting and ballistic missile defenses may leave smaller nuclear states especially vulnerable. Still, it remains unclear how confident US strategists are that these investment will work in practice—indeed, even after investing billions of dollars in trying to hold the Soviet nuclear force at risk, US policy makers retained a healthy respect for the Soviet nuclear program through the end of the Cold War. Ultimately, although the United States may seek ways of getting after the North Korean nuclear arsenal, such efforts appear to be very costly and of questionable reliability, leaving the United States with few ways of depriving North Korea of its nuclear options. Even accounting for US counterforce and missile defense options, nuclear weapons therefore look likely to still induce real caution in the United States' dealings with other countries. On US counterforce efforts during the Cold War and after, see Austin Long and Brendan Rittenhouse Green, "Stalking the Secure Second Strike: Intelligence, Counterforce, and Nuclear Strategy," *Journal of Strategic Studies* 38, no. 1-2 (January 2015): 38–73; and Keir Lieber and Daryl Press, "The New Era of Counterforce," *International Security* 41, no. 4 (Spring 2017): 9–49.

80. On the importance of a clarified distribution of power for ensuring successful diplomatic bargains, see Geoffrey Blainey, *The Causes of War*, 3rd ed. (Basingstoke, UK: Macmillan, 1988).

81. This is not to say that North Korea is poised to turn into a "good neighbor." Rather, the point is that a nuclear North Korea creates incentives for the United States, DPRK, and others to find some way of pursuing their interests—which sometimes conflict with one another—within limits and more-or-less understood rules of the road. Thanks go to an anonymous *SSQ* reviewer for suggesting this point.

82. Warden and Panda, "Goals for Any Arms Control Proposal"; "Trump Calls Summit Cancellation a 'Tremendous Setback,' " *CBS News*, 25 May 2018, https://www.cbsnews.com/; and Josh Rogin, "Why Trump Canceled Pompeo's Trip to North Korea," *Washington Post*, 27 August 2018, https://www.washingtonpost.com/. That the US position may have hardened after Hanoi makes this issue especially pressing, all the more so as it is unclear how North Korea may respond if US policy shifts. On the hardening of the US position, see Jennifer Hansler, "US Envoy Says Trump Administration Won't Accept Phased North Korean Denuclearization," *CNN*, 11 March 2019, https://www.cnn.com/.

83. Kelsey Davenport, "Chronology of U.S.–North Korean Nuclear and Missile Diplomacy," Arms Control Association fact sheet, March 2019, https://www.armscontrol.org/; and Kim Hjelmgaard, "North Korea Threatens 'Unimaginable' Strike on United States," *USA Today*, 19 October 2017, https://www.usatoday.com/.

84. Gordon Lubold and Warren Strobel, "Trump Wants South Korea to Pay More for U.S. Troop Presence," *Wall Street Journal*, 7 December 2018, https://www.wsj.com/articles/; Daisuke Kikuchi and Tomohiro Osaki, "Questions Arise over Trump-Abe Ties at Critical Juncture for Japanese Prime Minister," *Japan Times*, 15 April 2018, https://www.japantimes.co.jp/news/; Scott Snyder, "Can South Korea Trust Trump?" *The Atlantic*, 7 November 2017, https://www.theatlantic.com/; Mike Mochizuki, "Three Reasons Why Japan Will Likely Continue to Reject Nuclear Weapons," *Washington Post*, 6 November 2017, https://www.washingtonpost.com/; and Euan Graham, "Why South Korea and Japan Should Not Go Nuclear," *Interpreter*, 6 November 2017, https://www.lowyinstitute.org/.

85. For a general treatment of insecurity spirals in East Asia, see Thomas Christensen, "China, the U.S.-Japan Alliance, and the Security Dilemma in East Asia," *International Security* 23, no. 4 (Spring 1999): 49–80.

86. On the general problems of US credibility given the shifts in US politics, see Keren Yarhi-Milo, "After Credibility: American Foreign Policy in the Trump Era," *Foreign Affairs* 97, no. 1 (January/February 2018): 68–77.

87. Marc Trachtenberg, "The Structure of Great Power Politics, 1963–1975," in *The Cambridge History of the Cold War, Volume 2: Crises and D*étente, eds. Melvyn Leffler and Odd Arne Westad (London: Cambridge University Press, 2010), 482–502.

88. On this issue, as well as North Korean efforts to isolate foreign policy hawks in US domestic debates, see Panda and Narang, "Diplomacy without Denuclearization"

89. For how nuclear weapons can cause states to expand their foreign ambitions, see Mark Bell, "Beyond Emboldenment: How Acquiring Nuclear Weapons Can Change Foreign Policy," *International Security* 40, no. 1 (Summer 2015): 87–119.

90. Miller and Narang, "Year of Living Dangerously."

91. For elements of what such a deal might entail, see the pieces by Narang et al. in Kazianis, Glover, and Van Oudenaren, "North Korea and America's Second Summit." Also useful is Harshaw, "Winning the Nuclear Game."

92. On the value of negotiations with China over North Korea, see Michael Mullen and Sam Nunn, *A Sharper Choice on North Korea: Engaging China for a Stable Northeast Asia* (New York: Council on Foreign Relations, 2016).

93. On these tensions, see Helene Cooper, "U.S. Disinvites China from Military Exercise Amid Rising Tensions," *New York Times*, 23 May 2018, https://www.nytimes.com/; and Deirdre Shesgreen, "US-China Tensions Flare as Secretary of State Mike Pompeo meets with Counterparts in Beijing," *USA Today*, 8 October 2018, https://www.usatoday.com/.

94. On the salience of "reference points" for strategy debates and diplomatic negotiations, see the useful discussion by Jack Levy, "Deterrence and Coercive Diplomacy: The Contributions of Alexander George," *Political Psychology* 29, no. 4 (July 2008): 542–48.

95. A. Menon, *France, NATO and the Limits of Independence 1981–97: The Politics of Ambivalence* (Springer, 2000); Bell, "Beyond Emboldenment;" Wilfred L. Kohl, *French Nuclear Diplomacy* (Princeton: Princeton University Press, 2015); and Gene Gerzhoy, "Alliance Coercion and Nuclear Restraint: How the United States Thwarted West Germany's Nuclear Ambitions," *International Security* 39, no. 4 (Spring 2015): 91–129.

96. On the dynamics of alliance restraint, see Jeremy Pressman, *Warring Friends* (Ithaca: Cornell University Press, 2008).

97. For current efforts, see "Pompeo, in Japan, Seeks Allied Unity Before North Korea Talks," *NBC News*, 6 October 2018, https://www.nbcnews.com/; and Isabel Reynolds and Youkyung Lee, "Feud between Major Allies Japan and South Korea Deepens as Trump Sits It Out," *Japan Times*, 5 February 2019, https://www.japantimes.co.jp/.

98. I am indebted to Brendan Green for conversations on the US-Soviet nuclear competition from the 1960s onward. Likewise, debates over what targets or set of targets would most credibly deter the Soviet Union were a regular feature of US policy discussions during the Cold War. Given the opacity of the North Korean government, it is reasonable to expect that crafting a deterrence relationship vis-à-vis North Korea will generate similar debates.

99. Thanks go to James Walsh and James Goldgeier for observations on Trump's departure from standard practice. On political skepticism, see Eli Stokes, "Republicans Remain Skeptical despite Trump's Boasts of a Breakthrough with North Korea's Kim," *Los Angeles Times*, 12 June 2018, https://www.latimes.com/; and Peter Beinart, "Why Can't Democrats Give Trump Credit on North Korea?" *The Atlantic*, 15 June 2018, https://www.theatlantic.com/.

Joshua Shifrinson

The author is an assistant professor of international relations with Boston University's Pardee School of Global Studies, where his work focuses on US foreign policy, international security, and diplomatic history. A graduate of MIT and Brandeis University, he is the author of *Rising Titans, Falling Giants: How Great Powers Exploit Power Shifts* (Cornell University Press, 2018).

The INF Treaty: Pulling Out in Time

Alexander Lanoszka

Abstract

The Trump administration has suspended its obligations under the Intermediate-Range Nuclear Forces (INF) Treaty. Critics of this decision argue that it is strategically unwise: it hands Russia a propaganda victory, widens existing divisions among its NATO allies, and risks an arms race in Europe. Such criticisms are overstated, however. What—if any—propaganda benefits the Kremlin may enjoy will be outweighed by the backlash to its own aggressive behavior. NATO members have so far supported the United States' decision. A global arms buildup is underway, but budgetary considerations and the nature of the military environment in Europe will inhibit any US-Russia arms race from spiraling. Rather than being an end unto itself, the very purpose of an arms control agreement like the INF Treaty was to ensure mutual vulnerability—a condition that will still hold between Russia and the United States. Nevertheless, withdrawing from the INF Treaty could improve the US security posture against Russia and China in a manner that improves deterrence.

*****

On 2 February 2019 the Trump administration announced the suspension of its obligations under the Intermediate-Range Nuclear Forces Treaty. Ratified in 1988 by the United States and the Soviet Union, this arms control agreement banned all ground-based missiles and launchers of ranges between 500 and 5,500 kilometers. The INF Treaty partly derived its significance from being the first major arms control treaty between the two superpowers that called for the elimination of weapons that were *already* deployed. Previous arms control treaties only stipulated production and deployment limitations.[1] As such, the INF Treaty helped boost confidence between two rival superpowers and contributed to the end of the Cold War. But by the time Donald Trump became the US president, it was moribund. The Obama administration had already accused Russia of violating the treaty. For its part, Russia had already signaled its

interest in renegotiating it to involve other countries like China. Russia has even accused the United States of breaking the treaty with the deployment of a missile defense system in Europe. Nevertheless, critics of the Trump administration's decision to suspend its treaty obligations contend that doing so hands the Kremlin a propaganda victory, in addition to triggering an arms race and sowing discord among allies. However, such criticisms are overstated. Indeed, arms control agreements are means to an end rather than ends unto themselves. If the desired ends are not being realized, then the means must change. Although the Trump administration must articulate more clearly its strategy for moving forward in the post-INF world, the decision may prove to be the correct one, especially if it allows the United States to put more pressure on China and Russia.

To appreciate the significance of the INF Treaty and what implications its demise has—or does not have—for European security today, a brief overview of the treaty is necessary. How Russia has violated the treaty is instructive as is the impetus for US withdrawal, the key criticisms of withdrawal, and the current theater context.

Origins and History of the INF Treaty

The basic problem that confronted US and other Western defense planners during the Cold War pertained to the military balance. The Soviet Union and the Warsaw Pact enjoyed numerical superiority in conventional forces in Europe. Owing to the expense of keeping large standing armies in peacetime and the political controversies that would attend any major buildup of West German forces, the United States sought recourse in its nuclear weapons arsenal to deter any significant Soviet aggression. The United States introduced shorter-range, so-called tactical nuclear weapons for battlefield use in theaters of operations close to where adversaries resided. Treaty allies like West Germany, Japan, and South Korea hosted these weapons on their own territory under special arrangements that were eventually designed to mitigate any risk of theft or unintended use. These weapons included artillery, ballistic missiles of various ranges, cruise missiles, and gravity bombs that could be fitted on fighter aircraft.

To cover a broad range of military contingencies and to take advantage of recent technological advances, the United States and its NATO partners improved the quality of their conventional forces in Europe and began to deploy tactical nuclear weapons, especially in West Germany.[2] By the early 1960s, NATO appeared to have more options for confronting the Soviet military threat on the battlefield, with "flexible response" being the strategy embraced by the alliance to modulate its use of conventional and nuclear

weapons in accordance with the type of aggression that the Soviet Union might undertake. If the Soviet Union and the Warsaw Pact did launch an attack against Western Europe, then short-range tactical nuclear weapons could slow, if not stop it, with decision makers on both sides having—in theory at least—opportunities to de-escalate the confrontation.[3] To be sure, whether operational plans for wartime really changed with "flexible response" is debatable: according to historian Francis Gavin, the notion that nuclear escalation could be controlled was fiction.[4] Still, nuclear weapons were the basis for deterring any major attack by Warsaw Pact forces, even if it was exclusively conventional. This state of affairs persisted after the Soviet Union attained strategic parity with the United States in the mid-1960s.

In the late 1970s the Soviet Union began to replace the SS-4 and SS-5 theater ballistic missiles with the SS-20.[5] This intermediate-range missile could strike targets in Western Europe but not those in North America, thereby exposing a gap in NATO's deterrence posture. At the time, Washington could either unleash nuclear weapons based in the continental United States on Soviet cities or could authorize their battlefield use in the heart of Europe. It lacked the ability to attack Soviet cities with nuclear weapons forward deployed in Western Europe. West German chancellor Helmut Schmidt famously highlighted this gap in a speech delivered at the International Institute for Strategic Studies in London in October 1978.[6] US decision makers initially were reluctant to address these concerns. President Jimmy Carter wanted to pursue nuclear disarmament, whereas his national security advisor, Zbigniew Brzezinski, believed that "the Soviets would not use nuclear weapons first and might be restrained even if they had superiority in nuclear weapons."[7] A State Department briefing memo admitted that "in military terms, the SS-20 has not . . . much undermined NATO doctrine."[8] Yet something had to be done. Unfortunately, for Western European decision makers, the solution was not as easy as putting into place additional nuclear deployments in Europe that could attack the supply lines and rear-guard forces of the Warsaw Pact if necessary. Public opinion in West Germany was becoming antinuclear, with the new deployments having the potential to undermine East-West détente and West Germany's foreign policy of Ostpolitik. These concerns mattered for Chancellor Schmidt if he wished to retain the support of the Free Democratic Party for his ruling coalition in the late 1970s.[9]

The solution that ultimately emerged was the dual-track decision. To address credibility concerns, NATO oversaw the deployment of 464 ground-launched cruise missiles and 108 Pershing II missiles in Western Europe.

According to historian Kristina Spohr Readman, alliance considerations—rather than military ones—drove this particular track.[10] The second track pertained to arms control. Rising antinuclear and pro-disarmament sentiments in Western Europe could not be ignored, and so the compromise was to link the new deployment to calls for the United States and the Soviet Union to work together toward reducing intermediate-range nuclear forces from Europe.

These developments paved the way for what would become the INF Treaty. Of course, other factors pushed the two superpowers toward greater security cooperation. Not least among them were US president Ronald Reagan's antipathy for nuclear deterrence and Soviet general secretary Mikhail Gorbachev's desire to recalibrate Soviet foreign policy by retrenching strategically and pursuing rapprochement with the West. Still, the INF Treaty had both symbolic and military value once their two countries signed it in 1987 and ratified it the following year. Symbolically, the INF Treaty deepened trust between two rival superpowers and helped bring the Cold War to an end.[11] Militarily, the treaty eliminated all land-based ballistic and cruise missiles and launchers with ranges between 500 and 5,500 kilometers, regardless if they were nuclear-armed or conventional. It also provided for a robust inspections regime that would last 12 years, ensuring that both sides would comply in destroying the banned weapons. It did allow air- or sea-launched missiles, however.

Two items are worth highlighting. The first is that the large numbers of nuclear weapons in Europe—of intermediate ranges or otherwise—reflected both military and alliance considerations. US defense planners understood that Warsaw Pact forces enjoyed numerical superiority with respect to conventional military power. They also came to appreciate that threatening a nuclear response to Soviet aggression by unleashing weapons from the continental United States would not assure those allies that could be isolated and picked off. Nuclear weapons at various rungs of the escalation ladder appeared necessary for deterrence. Second, the INF Treaty itself was partly the product of alliance politics. The buildup of Pershing II missiles in the early 1980s was a response to the SS-20 deployments. The United States initially did not want to pursue this buildup. But from the perspective of Western European allies like West Germany, the United States could only appear as a credible security guarantor if it at least matched Soviet capabilities. Ultimately, the INF Treaty benefited European security because it removed about 2,600 prohibited ground-based missiles and launchers, which the Soviet Union had prioritized over air- and sea-launched missiles. War in Europe would still be devastating, but

at least decoupling would not be as severe a problem for the United States as before.

The Twilight Years of the INF Treaty

The 1990s passed without incident for the INF Treaty. Russia (and other post-Soviet states like Ukraine) inherited the Soviet Union's commitment to the arms control initiative and continued to destroy nuclear weapons as part of a much larger effort to lighten its force posture. Although Russia came to depend more on its nuclear arsenal to deter large-scale conventional aggression, which in turn involved moving away from Soviet-era declarations not to be the first to use nuclear weapons in a militarized conflict, no violations of the INF Treaty occurred.[12]

Unfortunately, the INF Treaty weakened over time. Although the INF Treaty was to last indefinitely, Article XI provided for regular or challenge (i.e., short-notice) on-site inspections to be operative for the first 13 years. Both the United States and Russia allowed this verification mechanism to expire without devising anything to replace it. Accordingly, national technical means of inspection such as satellite observation became the default tool for the signatories to monitor treaty compliance. Darya Dolzikova writes that the verification gap created by Article XI expiring "precluded the possibility of identifying and investigating [any] violation in a timely, rigorous and impartial manner."[13] As early as 1988 a US Senate Select Committee on Intelligence anticipated this concern. It determined that "in particular an illegal force of GLCMs [ground-launched cruise missiles] could probably not be detected nearly as promptly nor with the same degree of confidence [as a ballistic system]. This is due to their much smaller size and to the fact that they are in almost all respects identical with and virtually indistinguishable from sea-launched versions of the same missile."[14]

To be sure, a Special Verification Committee remains in place, thus providing a forum for discussing potential instances of noncompliance. However, it does not conduct regular investigations or articulate the protocols for performing them.[15] Geopolitics also strained the INF Treaty. In 2007 the Russian secretary of defense at the time—Sergei Ivanov—purportedly told his US counterpart Robert Gates that Russia's withdrawal from the treaty was desirable because it would then have the means "to counter Iran, Pakistan, and China"—countries that sit either on or near its borders.[16] Whether this exchange took place or not, Russia did try in 2007 to multilateralize the treaty so other states could sign. It won US support at the UN General Assembly, but the effort languished.[17]

Russian INF Violation

Rumblings about a possible Russian treaty violation began in the latter half of the 2000s. Diplomatic exchanges between the two countries in 2013 touched on US concerns about Russia's INF compliance, but the matter remained mostly rumor. Nevertheless, the controversy intensified in July 2014 with the State Department's publication of the 2014 Compliance Report and with President Barack Obama and Secretary of State John Kerry flagging the violation directly with their Russian counterparts, Vladimir Putin and Sergey Lavrov, respectively. A meeting convened in September 2014 specifically for addressing this issue failed to alleviate US concerns, with the Russian delegation denying that any violations took place at all and making counter-accusations that Washington itself was in noncompliance. Efforts to address the matter persisted throughout 2015 and 2016 but saw little success. The 2016 edition of the State Department's Compliance Report found that a "cruise missile developed by Russia meets the INF Treaty definition of a ground-launched cruise missile with a range capability of 500 km to 5,500 km, and as such, all missiles of that type, and all launchers of the type used or tested to launch such a missile, are prohibited under the provisions of the INF Treaty."[18] The US House of Representatives and the Senate demanded more information about Russia's compliance record and beseeched President Obama to explain how he planned to address concerns about Russian treaty violation.[19] The impasse persisted even after Donald Trump became US president. Though his administration initially signaled that the United States would remain in the INF Treaty, President Trump declared his intent for the United States to withdraw on 20 October 2018. Russia's violation was not the only reason Trump gave to explain this decision. He noted that other countries like China were not party to the agreement. About six weeks later Secretary of State Mike Pompeo announced that the United States "has found Russia in material breach of the treaty and will suspend our obligations as a remedy effective in 60 days unless Russia returns to full and verifiable compliance."[20] Unsatisfied with how Russia responded to this announcement, the United States began the six-month withdrawal period for exiting the treaty on 2 February 2019.

What exactly has been the purported violation? The Obama administration was reluctant to disclose its evidence, encouraging experts to offer many conjectures as to which Russian missile contravened the INF Treaty.[21] Some alleged that the Obama administration sat on the information to avoid criticisms of its Russia reset policy and to shepherd the New Strategic Arms Reduction Treaty (New START) through Congress.[22] A more

persuasive explanation is that because the United States has had to rely mostly on satellite observation to monitor Russian compliance, it needed more information before it could confidently raise the issue. Over time the United States became more forthcoming. In late 2017, Christopher Ford of the National Security Council revealed at the Wilson Center in Washington, DC, that the noncompliant GLCM was the Novator 9M729 (or to use the NATO designation, SSC-8 "Screwdriver"). It appeared that the 9M729 missile might have been using the Iskander-M launcher, which had been deployed in the Kaliningrad exclave in November 2017 after having already been fielded in the area for military exercises since at least 2014.[23] This specific launcher can carry short-range ballistic missiles that can themselves carry different warheads, including nuclear ones. It has provoked much consternation in Poland, Latvia, and Lithuania because many of their urban and industrial centers fall within its 400–500 kilometer (250–310 mile) range. To return to compliance, Russia would have to agree to eliminate this launcher if it were ever used to test the offending missile.[24] This would likely not happen.[25] In November 2018, Director of National Intelligence Daniel Coats disclosed that "Russia began testing the missile in the late 2000's and by 2015 had completed a comprehensive flight test program consisting of multiple tests of the 9M729 missile from both fixed and mobile launchers." Specifically, he asserted that "Russia initially flight tested the 9M729—a ground based missile—to distances well over 500 [km] from a fixed launcher."[26] He did not offer further specifications about the actual missile. These tests presumably took place at facilities located in Kapustin Yar, a Russian launch and development site near the city of Volgograd. Slightly predating Coats's remarks were statements by the Dutch and the German governments that supported the US position.[27]

Russia predictably responded that it had not tested the 9M729 to INF ranges. A war of words and presentations ensued. The United States accused Russia of trying to "obfuscate the nature of the program."[28] The most serious effort at rebutting US accusations occurred in a briefing given jointly by the Russian Ministries of Defense and Foreign Affairs. This briefing showcased the 9M729 missile container and launcher (but not the missile itself) while emphasizing that it had a range of 480 km as opposed to the older, slightly shorter 9M728, which has a range of 490 km. No tests—at least those conducted between 2008 and 2014—exceeded the INF limit. The United States was unsatisfied with the Russian statement. Invitations to inspect the missile went unaccepted amid US doubts that they would reveal any information about its maximum range. As the State

Department website avers, "Russia has attempted to conceal the nature of the SSC-8 program by obfuscating and lying about the missile's test history."[29]

Russia has also sought to deflect blame by making counter-accusations that the United States has itself been in violation.[30] The main counter-accusation pertains to the US-NATO missile defense program in Europe—that is, the European Phased Adaptive Approach that has its main sites in Poland, Romania, and Spain with the full shield having its command and control in Ramstein, Germany. The Polish and Romanian sites are noteworthy because they involve ground-based AEGIS-Ashore systems that have SM-3 Block IIA and Block IIB interceptors designed to defend against medium- and intermediate-range missile threats. Russia alleges that the Aegis ashore system can be reprogrammed to launch cruise missiles like the sea-based Tomahawk and that the canisters used can fit nuclear-tipped cruise missiles.[31] According to the Russian view, these systems could be used to launch attacks against Russia, thereby undermining its own deterrent capabilities. As Alexey Arbatov writes, however, this program "will have very little impact on the Russian nuclear deterrence potential—both in terms of the planned number of missile interceptors and their technical characteristics."[32] Some US analysts side with the Arbatov position. They argue that the limited range of the Aegis radar is useless for detecting and tracking long-range missiles.[33] Moreover, the system depends on more than just the Aegis radar since it can draw on external sources (e.g., new X-band radar in Turkey).[34] Finally, Russia charges that the target missiles (using Minuteman II motors) designed to test US missile defense interceptors run afoul of the INF Treaty. This allegation has little foundation since the treaty "explicitly permits the use of older booster stages for research and development purposes, subject to specific Treaty rules. This includes their use as targets for missile defense tests."[35]

Impetus for US Withdrawal

In some ways Russia's violation of the INF Treaty gave the legal pretext for the Trump administration to withdraw from the treaty to pursue a more competitive strategy vis-à-vis China.[36] As indicated, Trump partly justified withdrawing the United States from the INF Treaty by invoking China. In his 2019 State of the Union address, he suggested that "perhaps we can negotiate a different agreement, adding China and others."[37] The geopolitical logic is straightforward. In the past 10 years, because it was not a signatory to the INF Treaty, China has been investing in ground-based intermediate-range missile systems that serve in part to create an

antiaccess/area denial (A2/AD) bubble that will complicate efforts by the United States to operate within a theater of operations, let alone enter it, to defend an ally.[38] According to a 2013 US National Air and Space Intelligence Center report, "China has the most active and diverse ballistic missile program in the world," with the most controversial missile being the ground-launched, nuclear-capable DH-10 missile.[39] This cruise missile has a range of 1,500 kilometers. Moreover, China and Russia appear to be "on the verge of an alliance" as evinced by greater military-technological cooperation and personnel exchange, increased use of regular consultations, and the greater frequency of joint military exercises.[40] From the perspective of the Trump administration, withdrawing from the INF Treaty accomplishes two objectives. First, it frees the United States to develop and to deploy land-based systems that can counter Chinese systems, thereby improving deterrence and strengthening alliances. Second, Russian defense planners have voiced concerns about the rise of China in the past decade. Now Russia would be free to field intermediate-range conventional and nuclear forces to shore up its deterrence measures regarding China.[41] Doing so could create a security dilemma whereby Beijing may feel the need to develop further capabilities so as to strengthen deterrence against Russia. By sowing distrust in Sino-Russian relations, the added pressure on Beijing in turn can relieve pressure on US allies and partners in the Western Pacific.

Some critics argue against such a strategy. They contend that US deployments of land-based intermediate-range missile systems would destabilize East Asia, encounter budgetary and technical challenges, and provide a costlier and superfluous alternative to existing systems.[42] These arguments can be contradictory. Budgetary and technical considerations will blunt any destabilizing effect that a supposedly dangerous and expensive system might have. For instance, if Guam is the most feasible option for deploying land-based intermediate-range missiles systems, then this vulnerability should make these weapons less dangerous to China. Indeed, Beijing might even prefer that Washington spend money on more expensive systems—assuming that they are superfluous—that may have dubious strategic value. Still, critics leave unclear as to why China's missile superiority in the Asia-Pacific region itself is not destabilizing but US efforts to address this imbalance would be. Moves toward parity should be welcomed because they promote stability by enhancing mutual vulnerability. Moreover, air- and sea-launched systems could just as well be seen as destabilizing, especially if they are more survivable and delivered by platforms with stealth capabilities.[43] Why one system is less

stabilizing than the other is not necessarily obvious, especially if Chinese military and political leaders seem to have retained their faith in minimal deterrence despite opting for greater ambiguity in their country's nuclear posture.[44]

Propaganda, Arms Races, and Discord?

Critics have voiced concerns about what the INF Treaty's demise means for international security. First, by electing to withdraw from the agreement, the Trump administration handed Moscow a major propaganda victory. Second, with the INF Treaty gone, an unfettered nuclear arms race would ensue whereby both sides would try to deploy as many of the once-banned missiles as they can in Europe. Third, terminating the treaty would undermine cohesion within US alliances. These concerns are overstated.

A Propaganda Victory?

Arms control advocates charge that withdrawing from the INF Treaty rewards Russian noncompliance with a propaganda victory. Moscow can now blame Washington for the demise of the INF Treaty.[45] The reasoning here is specious. For one, the identity of the audience impressed by this supposed propaganda victory is never clear. US citizens tend to have stylized views on foreign policy and so in general would not appreciate the technical details surrounding the improper use of the 9M729 missile. The same could be said for most publics abroad. The Kremlin would have created a favorable narrative for Russian citizens regardless of US actions. Allied decision makers in Europe might be the audience, but they also have their own intelligence services to assess competing claims about INF Treaty violations in their own right. Indeed, NATO has unanimously expressed its support for the US position. For another, this argument implicitly assumes that the propaganda victory borne by the US withdrawal outweighs the record of Russian noncompliance that triggered the withdrawal in the first place. In the days after the United States submitted its official notice for withdrawal, Russian minister of defense Sergei Shoigu signaled his country's intent to create new land-based missiles in the next two years. The short timeline suggests that it has already been developing what would have been noncompliant missiles.[46] International audiences observe not only the US withdrawal from the INF Treaty but also Russian behavior more generally.

Alliance Fragmentation?

Another critique is that the INF Treaty would intensify the ongoing crisis in transatlantic relations at a time when Trump has called into question the contemporary relevance of NATO and sharply rebuked some of its members for not doing enough to contribute to the common defense burden.[47] This fear has not yet been borne out. Although some arms control advocates might not find the case made by the United States for pulling out persuasive, the fact remains that NATO has so far shown unanimity on this issue. The reason is simple: Russia is guilty of violating the treaty while trying to undermine European security through various activities like disinformation campaigns, political meddling, nuclear signaling, and the war in Ukraine.[48]

A deeper version of this critique raises the possibility that Russia may be trying to decouple some European allies not from the United States but from other European allies.[49] By facing the prospects of nuclear retaliation, they might be less inclined to abide by Article 5 commitments and to support allies located on Russia's borders. This danger is real. However, one must not overstate the newness of this problem. Precisely because they were already geographically removed from the Baltic region, some European allies do not share the threat assessments of Poland and the Baltic countries with respect to Russia. Indeed, France and Great Britain failed to respond meaningfully to Nazi (and Soviet) aggression against Poland—a treaty ally for each of them—when nuclear weapons did not yet exist. The intramural debates over European Union sanctions typify the major differences of opinion that abound among member states over how to confront Russia. Disagreements exist even over the desirability and effectiveness of nuclear deterrence in Europe.[50] One reason why, for example, Polish leaders prefer to work with the United States is because they somewhat distrust their Western European counterparts.[51] Intra-European decoupling might widen with Russian INF forces, but the problem has long existed.

The alliance-centered critique of the INF withdrawal thus assumes that fragmentation will be less intense if the Trump administration chooses to stick with the agreement. Yet, as Michael Kofman notes, "if only one party is complying with the deal, then it ceases to be an instrument of arms control and becomes a unilateral act of self-restraint."[52] Even more than disrupting the fiction of arms control, maintaining appearances might rattle those allies most worried about the Russian threat. They might believe that the United States will allow Russia to covertly build up its

capabilities and to act with impunity simply to uphold a US commitment to agreements.

An Arms Race?

The most significant criticism of the withdrawal decision warns that this move would lead to an unfettered arms race between the United States and Russia.[53] Some observers even add that Russia has a head start thanks again to its record of noncompliance—a fear that Russia seems to have already validated by proclaiming its intent to introduce new land-based missiles in the near term.

How likely is it that a nuclear arms race might break out? Certainly, nuclear-weapon states have begun making adjustments to their arsenals in the last decade. China has upgraded its nuclear forces to make them more mobile and thus more survivable as a retaliatory force.[54] Great Britain and France have each embarked upon replacing their current fleet of nuclear-powered ballistic submarines.[55] In the context of the US-Russian relationship, Austin Long observes that "Russia is also expanding its arsenal to include new systems [such as the SS-8]," whereas "US nuclear modernization concentrates on replacement, rather than expansion."[56] Indeed, as some have observed, Russia "has continued or stepped up a number of worrisome nuclear policies already in place before the [2013–14] Euromaidan protests in Ukraine."[57] The real question is whether the end of the INF Treaty represents an inflection point in how nuclear-weapon states like Russia and the United States will go about their nuclear acquisition efforts moving forward. The review of Cold War history earlier suggests that it would not be.

Recall that US and NATO defense planners leaned on nuclear deterrence to prevent even conventional military aggression by numerically superior Warsaw Pact forces in Central Europe. The United States built up impressive stockpiles of strategic nuclear weapons to survive a massive bolt-out-of-the-blue Soviet strike—a fear encouraged by talk of bomber and missile gaps.[58] In Europe, the United States introduced a suite of tactical nuclear weapons that would help disrupt, if not defeat, any large-scale Soviet military assault and thus dispel allies' concerns. In other words, theories of war precipitated the massive Cold War development and deployment of nuclear forces. However, they do not have much relevance for the contemporary environment.

Current Theater Context

Such theories of war do not make sense in the context of the current European theater. To begin with, NATO's frontier shifted further east with the incorporation of the Baltic States and former Warsaw Pact countries like Poland. Russia has a robust military presence in Kaliningrad, which many analysts argue could be exploited to isolate in-theater NATO forces or to cut off additional NATO forces from providing assistance to the Baltic States in the highly unlikely event of a large-scale invasion.[59] Moreover, Belarus and Ukraine add a new geographical buffer. Although Belarus has a formal military alliance with Russia, its leaders have pushed back against the Kremlin's efforts to strengthen Moscow's defense ties. The Russian military presence on Belarusian territory is limited mostly to facilities and airfields that can hardly be called bases. Moscow cannot assert its own preferences on Minsk without imposing costs, not least because the latter may fear being dragged into the former's disputes with NATO countries. Any significant, unforeseen buildup of Russian forces would likely be detectable, thus giving early warning to potential Russian bellicosity.[60] Ukraine is already fighting an armed conflict with Russia, albeit through proxy forces that likely would have been defeated if they had not received major transfers of heavy equipment and other forms of support. Notwithstanding recent flare-ups in the Sea of Azov area, the "frozen conflict" that persists in the Donbas suggests that Russia is either unwilling or unable to escalate to annex that territory as it did with Crimea in early 2014. In fact, with the demise of the INF Treaty, Ukraine will also be free to invest in its missile capabilities. Doing so would also add pressure on Russia and enhance US leverage against it.[61]

The Baltic countries, and Poland to a lesser extent, are the most vulnerable to Russian military aggression. A 2016 RAND report drew on war games to determine that Russian armed forces could take Riga and Tallinn within 72 hours. This assessment overstates the ease with which Russia could conquer Baltic territory through kinetic operations. For example, the modernization of its military has been uneven, its logistical supply networks remain underdeveloped, and any advanced preparatory buildup would lack the element of surprise. Closing the so-called Suwałki Gap—the singular land bridge between Poland and Lithuania connecting the Baltic countries with the rest of European NATO—would invite an escalatory response from NATO whereby any military forces staged in Kaliningrad and Belarus could be at risk. Such a large-scale assault on these NATO countries is highly unlikely even by admission of many local defense planners.[62] The most likely threat is subconventional, especially in

Estonia and Latvia where about a quarter of their national populations are Russian speaking. Finally, as Ulrich Kühn and Anna Péczeli observe, "even if Russia were to deploy a limited number of INF systems . . . such a deployment would not immediately alter the overall military balance between NATO and Russia."[63] NATO will retain its conventional military superiority, whereas Russia's basic hold on local escalation dominance will persist. More bluntly, Poland and the Baltic countries have already been living within range of nuclear-capable missiles.

The northeastern flank hardly resembles the Cold War's Central Front. Does that mean nuclear weapons have no role whatsoever? No. One reason why Russia may be resorting to subconventional or so-called hybrid actions against the Baltic countries is concern about the consequences of any large-scale military aggression against them.[64] An overt attack would trigger Article 5, which could set in motion escalatory dynamics that may be hard for any one side to contain. Some allege that Russia has a war-winning nuclear doctrine envisioning the use of nuclear weapons to de-escalate even those conflicts that it has started.[65] If true, this strategic problem exists regardless of whether the INF Treaty remains in force. Some observers are skeptical of such assessments: "escalate to de-escalate" is either far too risky to be true or much more defensive than typically portrayed.[66] At minimum, not unlike NATO's flexible response in the Cold War, Russia's nuclear doctrine does not foresee unilateral disarmament and the voluntary surrender to another great power in a major war. In sum, nuclear weapons will be useful largely for deterring a major military action rather than for compelling favorable results should deterrence fail.[67]

Finally, any prospective arms race in Europe would have to overcome budgetary barriers. According to the 2017 Congressional Budget Office report, "the plans for nuclear forces delineated in the Department of Defense's (DoD's) and the Department of Energy's (DOE's) budget requests for fiscal year 2017 would cost a total of $400 billion over the 2017–2026 period."[68] Considering that the Republican Party has lost control of the House in the 2018 midterms and that Democrats wish to curb the defense budget in light of the growing deficit spending, the Trump administration may be hard-pressed to find money for new INF systems. This constraint will also exist for Russia despite it having a head start in developing and deploying such systems. As Pavel Podvig observes, notwithstanding the availability of internal funds for flight tests and advanced demonstrations, "the State Armament Program for 2018–2027, which was approved at the end of 2017 after a more than 2-year delay caused by the uncertain economic situation, did not include a number of projects

that were initiated by the industry and supported by the military."[69] To be sure, as Kofman counsels, the Russian defense budget—substantial as it is—has seen only modest cuts.[70] Nevertheless, building up ground-based cruise missiles and launchers in East Central Europe when Russia already has an A2/AD bubble in Kaliningrad will have to compete with other defense priorities, which include the war against Ukraine, the intervention in Syria, military infrastructure, and even domestic security services.

Conclusion: Arms Control Is Not an End but a Means

The arguments put forward against withdrawing from the INF Treaty are thus unconvincing. And indeed, it is worth recalling how, just before the INF Treaty was negotiated, Thomas Schelling penned an essay entitled "What Went Wrong with Arms Control?" in which he argued that advocates lost sight of the key features of weapons that could make them destabilizing. Specifically, he warned against the preoccupation with numbers "categories [that] relate to things like land, sea and air [rather than] strategic characteristics like susceptibility to preemption or capability for preemption, [or] even relevant ingredients like warheads per target point, readiness, speed of delivery, accuracy or recallability after launch."[71] Schelling believed that one key feature important for strategic stability concerned mutual vulnerability: that is, no one side should have an ability to carry out a disarming first strike. To be sure, this notion of strategic stability is problematic. Pentagon decision makers have typically been uncomfortable with the vulnerability it entailed, whereas the Kremlin generally does not understand strategic stability as a function of capabilities. Nevertheless, mutual vulnerability will likely persist despite the INF Treaty and global nuclear modernization efforts. Despite investments in counterforce capabilities and missile defense, the United States will not be able to launch a disarming first strike against improved Russian nuclear capabilities. For its part, Russia appears more interested in "ensuring guaranteed retaliation" than gathering the capabilities necessary for "a successful counterforce attack" or "a damage limitation strategy."[72] Even if the United States were to close capability gaps vis-à-vis Russia's nuclear posture, as some suggest, mutual vulnerability will remain.[73] Arms control advocates have neglected this enduring feature of the military balance.

By suspending its obligations under the INF Treaty, the Trump administration signaled that it would not engage in arms control initiatives for their own sake and that sometimes those initiatives are misaligned with the ends they purport to seek. Consider the 2018 *National Defense Strategy* (*NDS*). Recognizing Russia (and China) as strategic competitors, the

2018 *NDS* emphasizes deterrence but acknowledges that it does not emerge automatically. A *competitive strategy* must be vigorously pursued over the long term to shape the choices of adversaries in a favorable direction. As such, the *NDS* avers that "we [the United States] will challenge competitors by maneuvering them into unfavorable positions, frustrating their efforts, precluding their options while expanding our own, and forcing them to confront conflict under adverse conditions."[74] This strategy might still accept a degree of mutual vulnerability, but it may seek to tip the balance further against Russia and China in a manner that improves the military balance in favor of the United States and its partners. These benefits may not materialize, thereby obliging the Trump administration to work in concert with allies in Europe and Asia to hold Russia accountable for its violation of the arms control agreement and to contain the missile threats posed by Russia and China.

Although the United States has no plans for deploying previously banned missiles and launchers in Europe, as the Trump administration has maintained to date, withdrawing from the INF Treaty may pay important dividends for US national security interests. First, it signals to Russia that treaties will not be upheld unilaterally if it violates them and that noncompliance creates reputation costs. Sending this signal can possibly foster alliance solidarity, as evinced by NATO's response to the withdrawal thus far. Second, suspending its treaty obligations allows the United States and its allies greater flexibility toward Russia and China if in the future they feel that ground-based systems do offer an advantage that they wish to exploit. That interest may not exist now, but the threat of such deployments could deter revisionism against US or allied interests.[75] Third, if Russia decides to continue with developing intermediate-range forces, then that could provoke a response from its neighbors. Specifically, China might be wary of Russian intentions and could put the brakes on their growing strategic alignment. Ukraine could also develop cruise missiles that hold Moscow at risk, thereby strengthening deterrence and dampening any incentive Russia might have for escalating in the Donbas region.

Any propaganda benefits the Kremlin may enjoy will be outweighed by the backlash to its own aggressive behavior. As for discord, NATO has so far been united behind the US decision to abrogate. While an arms buildup is underway, international, budgetary, and other constraints will keep it from intensifying. These benefits outweigh the costs associated with pulling out of the INF Treaty. SSQ

Notes

1. Alexei Arbatov, "Saving Nuclear Arms Control," *Bulletin of the Atomic Scientists* 72, no. 3 (2016): 167, https://thebulletin.org/.

2. Philip A. Karber and Jerald A. Combs, "The United States, NATO, and the Soviet Threat to Western Europe: Military Estimates and Policy Options, 1945–1963," *Diplomatic History* 22, no. 3 (Summer 1998): 399–429, https://www.jstor.org/.

3. Thomas C. Schelling, *Controlled Response and Strategic Welfare*, Adelphi Paper 5 (London: International Institute of Strategic Studies, 1965), 3–11.

4. Francis J. Gavin, "The Myth of Flexible Response: United States in Europe during the 1960s," *International History Review* 23, no. 4 (2001): 847–75, 10.1080/07075332.2001.9640953; and Scott D. Sagan, "SIOP-62: The Nuclear War Plan Briefing to President Kennedy," *International Security* 12, no. 1 (Summer 1987): 22–51, http://www.jstor.org/stable/2538916.

5. Raymond L. Garthoff, "The Soviet SS-20 Decision," *Survival* 25, no. 3 (1983): 110–19, https://doi.org/10.1080/00396338308442097.

6. Helmut Schmidt, "The 1977 Alastair Buchan Memorial Lecture," *Survival* 20, no. 1 (1978): 2–10, doi: 10.1080/00396337808441722.

7. See Kristina Spohr Readman, "Germany and the Politics of the Neutron Bomb, 1975–1979," *Diplomacy and Statecraft* 21, no. 2 (2010): 259–85, doi: 10.1080/09592296.2010.482473; and "Summary of Interview [John G. Hines interview with Zbigniew Brzezinski]," 20 November 1991, in National Security Archive, George Washington University, posted 11 September 2009, http://www2.gwu.edu/.

8. "Briefing Memo [SCC (Special Coordinating Committee) Meeting on PRM-38, August 23]," 16 August 1978, in National Security Archive, George Washington University, posted 10 December 2009, https://nsarchive2.gwu.edu/.

9. Kristina Spohr Readman, "Conflict and Cooperation in Intra-Alliance Nuclear Politics: Western Europe, the United States, and the Genesis of NATO's Dual-Track Decision, 1977–1979," *Journal of Cold War Studies* 13, no. 2 (Spring 2011): 69–71, https://doi.org/10.1162/JCWS_a_00137.

10. Readman, "Conflict and Cooperation," 88.

11. Arbatov, "Saving Nuclear Arms Control," 167.

12. Kristin Ven Bruusgaard, "Russian Strategic Deterrence," *Survival* 58, no. 4 (2016): 9, https://doi.org/10.1080/00396338.2016.1207945.

13. Darya Dolzikova, "The Role of Verification in the Intermediate-Range Nuclear Forces Treaty Dispute," *RUSI Commentary*, 15 January 2019, https://rusi.org/.

14. Quoted in Douglas Barrie, "Allegation, Counter-Allegation, and the INF Treaty," *Survival* 59, no. 4 (2017): 39, https://www.tandfonline.com/.

15. Dolzikova, "Role of Verification."

16. Robert M. Gates, *Duty: Memoirs of a Secretary at War* (New York: Alfred A. Knopf, 2014), 154.

17. US Department of State, "Joint U.S.-Russian Statement on the Treaty on the Elimination of Intermediate-Range and Shorter-Range Missiles at the 62nd Session of the UN General Assembly," media note, 25 October 2007, http://2001-2009.state.gov/.

18. US Department of State, *2016 Report on Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments* (Washington, DC: US Department of State, 11 April 2016), https://www.state.gov/.

19. See, for example, the FY 2015 National Defense Authorization Act, H.R. 4435, §1225, 113th Cong., 2d sess., 5 June 2014, https://www.govinfo.gov/, and its final version, the National Defense Authorization Act for FY 2015, Public Law 113-291, 113th Cong., 2d sess., December 2014, https://www.govinfo.gov/.

20. Morgan Chalfant, "Pompeo: US to Leave Nuclear Treaty in 60 Days Unless Russia Complies with Terms," *The Hill*, 4 December 2018, https://thehill.com/.

21. For an excellent review of these conjectures, see Amy F. Woolf, *Russian Compliance with the Intermediate Range Nuclear Forces (INF) Treaty: Background and Issues for Congress*, CRS R43832

(Washington, DC: Congressional Research Service, 18 January 2019), 18–25, https://crsreports.congress.gov/

22. Whereas the INF Treaty prohibits the development and deployment of ground-based missiles and launchers of ranges between 500 and 5,500 kilometers, New START caps the allowable number of strategic nuclear missile launchers at 1,550.

23. Pavel Podvig, "The INF Treaty Culprit Identified. Now What?," *Russian Strategic Nuclear Forces* (blog), 5 December 2017, http://russianforces.org/; and "Iskander-M in Kaliningrad," *Russian Defense Policy* (blog), 27 November 2017, https://russiandefpolicy.blog/. The 9M729 missile may also be similar to the Kalibr sea-launched cruise missile, which is not banned by the INF Treaty. See Pavel Podvig, "Russia's Current Nuclear Modernization and Arms Control," *Journal for Peace and Nuclear Disarmament* 1, no. 2 (2018): 263, doi: 10.1080/25751654.2018.1526629.

24. Colocation at sites that have Iskander missiles will also complicate NATO efforts to discern the 9M729. Barrie, "Allegation," 37.

25. Moreover, the Trump administration has asserted that Russia already has "as of late 2018 . . . filled multiple battalions of the SSC-8 missiles." US Department of State, "Press Availability at NATO Headquarters," Remarks by Secretary of State Michael R. Pompeo," Brussels, Belgium, 4 December 2018, https://www.state.gov/.

26. Office of the Director of National Intelligence, "Director of National Intelligence Daniel Coats on Russia's INF Treaty Violation," press briefing, 30 November 2018, https://www.dni.gov/.

27. Janene Pieters, "Netherlands Has Proof Russia Developed Prohibited Cruise Missile," *NL Times*, 28 November 2018, https://nltimes.nl/; and "USA legen Nato-Partnern Beweise gegen Russland vor," *Der Spiegel*, 30 November 2018, http://www.spiegel.de/politik/.

28. Quoted in Woolf, *Russian Compliance*, 34.

29. US Department of State, "Intermediate-Range Nuclear Forces (INF) Treaty," accessed 15 March 2019, https://www.state.gov/.

30. See also Ulrich Kühn and Anna Péczeli, "Russia, NATO, and the INF Treaty," *Strategic Studies Quarterly* 11, no. 1 (Spring 2017): 70–71.

31. Theodore A. Postol, "Russia May Have Violated the INF Treaty. Here's How the United States Appears to Have Done the Same," *Bulletin of the Atomic Scientists*, 14 February 2019, https://thebulletin.org/2019/02/russia-may-have-violated-the-inf-treaty-heres-how-the-united-states-appears-to-have-done-the-same/.

32. Arbatov, "Saving Nuclear Arms Control," 168.

33. Reprogramming issues notwithstanding, the United States may not be in violation of the treaty per se. As Amy Woolf explains, the INF Treaty "specifies that the launcher must launch an intermediate-range GLCM, not any intermediate-range cruise missile, to qualify as a system banned by the treaty." Legally speaking, the Tomahawk is strictly not "a ground-launched cruise missile that is a weapon-delivery vehicle." Woolf, *Russian Compliance*, 29. Moreover, Pavel Podvig avers that "it is highly unlikely that the missile defense system developed by the US could pose a realistic threat to Russian strategic forces." Podvig, "Russia's Current Nuclear Modernization," 259.

34. The cancelled Phase 4 of EPAA would have relied more on space-based cueing so as to intercept missiles of intermediate and long ranges.

35. Brian McKeon, then the principal deputy under secretary of defense, quoted in Woolf, *Russian Compliance*, 28. Another counter-accusation concerns the US operation of unmanned aerial vehicles. After all, drones share some characteristics with cruise missiles and can fly between 500 and 5,500 kilometers, but these similarities should not be overstated. Drones are piloted remotely, do not necessarily constitute weapons themselves, and can take off and land like airplanes. Woolf, *Russian Compliance*, 28–29.

36. Before becoming national security advisor, John Bolton (and coauthor John Yoo) publicly criticized the Obama administration for upholding "the obsolete, Cold War–era limits on its own arsenal." See also John Bolton and John Yoo, "An Obsolete Nuclear Treaty Even before Russia Cheated," *Wall Street Journal*, 9 September 2014, https://www.wsj.com/; and Matthew Kroenig, "Withdrawal from Russia Nuclear Treaty Is Right Move for America," *The Hill*, 24 October 2018, https://thehill.com/.

37. "Remarks by President Trump in State of the Union Address," transcript, The White House, released 6 February 2019, https://www.whitehouse.gov/. Officials in the Trump administration have downplayed the China factor.

38. Evan Braden Montgomery, "Contested Primacy in the Western Pacific: China's Rise and the Future of U.S. Power Projection," *International Security* 38, no. 4 (Spring 2014): 132–34, https://www.mitpressjournals.org/.

39. National Air and Space Intelligence Center (NASIC), *Ballistic and Cruise Missile Threat* (Wright-Patterson AFB, OH: NASIC, 2013), 3, https://apps.dtic.mil/.

40. Alexander Korolev, "On the Verge of an Alliance: Contemporary China-Russia Military Cooperation," *Asian Security*, 30 April 2018, doi: 10.1080/14799855.2018.1463991.

41. Stephen Blank, "The Chinese and Asian Impact on Russian Nuclear Policy," *Defense and Security Analysis* 28, no. 1 (25 April 2012): 39, 45–46, doi: 10.1080/14751798.2012.651377.

42. Pranay Vaddi, "Leaving the INF Treaty Won't Help Trump Counter China," Carnegie Endowment for International Peace, 31 January 2019, https://carnegieendowment.org/.

43. Stephen Stashwick, "US Navy to Re-Fit Tomahawk Cruise Missiles to Attack Ships," *Diplomat*, 14 September 2017, https://thediplomat.com/; and Kyle Mizokami, "America Is Building a New, Stealthy Nuclear Cruise Missile," *Popular Mechanics*, 24 August 2017, https://www.popularmechanics.com/. To be sure, because of local geography, any new US deployment of GBIRs would be largely limited to Guam, Taiwan, or Okinawa—any of these sites would present its own set of technical or political challenges. No issue with host nation authorization would arise with Guam.

44. Fiona S. Cunningham and M. Taylor Fravel, "Assuring Assured Retaliation: China's Nuclear Posture and U.S–China Strategic Stability," *International Security* 40, no. 2 (Fall 2015): 13, https://www.mitpressjournals.org/.

45. Julian Borger, "John Bolton Pushing Trump Withdraw from Russian Nuclear Arms Treaty," 19 October 2018, *Guardian*, https://www.theguardian.com/; and Fred Kaplan, "Trump's Missile Misfire," *Slate*, 22 October 2018, https://slate.com/.

46. "INF Nuclear Treaty: Russia Plans New Missile Systems after Pullout," British Broadcasting Corporation, 5 February 2019, https://www.bbc.com/.

47. See, for example, Tom Nichols, "Mourning the INF Treaty," *Foreign Affairs*, 4 March 2019, https://www.foreignaffairs.com/. For pushback against the view that Trump has fundamentally undermined US alliances, see Alexander Lanoszka, "Alliances and Nuclear Proliferation in the Trump Era," *Washington Quarterly* 41, no. 4 (2019): 85–101, https://www.tandfonline.com/.

48. See Keir Giles, *Russia's 'New' Tools for Confronting the West: Continuity and Innovation in Moscow's Exercise of Power* (London: Chatham House, March 2016), https://www.chathamhouse.org/; and Jacek Durkalec, *Nuclear-Backed "Little Green Men": Nuclear Messaging in the Ukraine Crisis* (Warsaw: Polish Institute of International Affairs, July 2015), https://www.stratcomcoe.org/.

49. Jeffrey Lewis, "An Intercontinental Ballistic Missile by Any Other Name," *Foreign Policy*, 25 April 2014, http://www.foreignpolicy.com/; and Jacek Durkalec, "Russia's Violation of the INF Treaty: Consequences for NATO," *PISM* [*Polish Institute of International Affairs*] *Bulletin* no. 107, 13 August 2014, https://www.files.ethz.ch/.

50. See Manuel Lafont Rapnouil, Tara Varma, and Nick Witney, *Eyes Tight Shut: European Attitudes towards Nuclear Deterrence* (Berlin: European Council on Foreign Relations [*ECFR*], December 2018), https://www.ecfr.eu/.

51. Marcin Zaborowski and Kerry Longhurst, "America's Protégé in the East? The Emergence of Poland as a Regional Leader," *International Affairs* 79, no. 5 (October 2003): 1009–28.

52. Michael Kofman, "Under the Missile's Shadow: What Does the Passing of the INF Treaty Mean?" War on the Rocks, 26 October 2018, https://warontherocks.com/.

53. Katrina vanden Heuvel, "Trump Is Igniting a Perilous New Nuclear Arms Race," *Washington Post*, 5 February 2019, https://wapo.st/.

54. Thomas J. Christensen, "The Meaning of the Nuclear Evolution: China's Strategic Modernization and US-China Security Relations," *Journal of Strategic Studies* 35, no. 4 (2012): 448, http://www.andrewerickson.com/.

55. Benjamin Zala, "How the Next Nuclear Arms Race Will Be Different from the Last One," *Bulletin of the Atomic Scientists* 75, no. 1 (2 January 2019): 39, https://thebulletin.org/.

56. Austin Long, *Russian Nuclear Forces and Prospects for Arms Control* (Santa Monica, CA: RAND, 21 June 2018), 3, https://www.rand.org/.

57. Ulrich Kühn, Shatabhisha Shetty, and Polina Sinovets, "Europe's Nuclear Woes: Mitigating the Challenges of the Next Years," *Bulletin of the Atomic Scientists* 73, no. 4 (2017): 245, https://thebulletin.org/.

58. Lawrence Freedman, *U.S. Intelligence and the Soviet Strategic Threat* (Princeton, NJ: Princeton University Press, 1986), 77–79.

59. Sergey Sukhankin, "From 'Bridge of Cooperation' to A2/AD 'Bubble': The Dangerous Transformation of Kaliningrad Oblast," *Journal of Slavic Military Studies* 31, no. 1 (2018): 15–36, doi: 10.1080/13518046.2018.1416732; and Alexander Lanoszka and Michael A. Hunzeker, "Confronting the Anti-Access/Area Denial and Precision Strike Challenge in the Baltic Region," *RUSI Journal* 161, no. 5 (2016): 12–18, doi: 10.1080/03071847.2016.1253367.

60. Alexander Lanoszka, "The Belarus Factor in European Security," *Parameters* 47, no. 4 (Winter 2017–18): 75–84, https://ssi.armywarcollege.edu/.

61. Mariana Budjeryn, "Without the INF Treaty, Europe Could See a New Missile Power. (Spoiler: It's Not Russia.)," *Washington Post*, 26 February 2019, https://www.washingtonpost.com/.

62. Alexander Lanoszka and Michael A. Hunzeker, *Conventional Deterrence and Landpower in Northeastern Europe* (Carlisle, PA: Strategic Studies Institute, 2019), https://ssi.armywarcollege.

63. Kühn and Péczeli, "Russia," 87.

64. Alexander Lanoszka, "Russian Hybrid Warfare and Extended Deterrence in Eastern Europe," *International Affairs* 92, no. 1 (2016): 175–95, doi: 10.1111/1468-2346.12509.

65. See Katarzyna Zysk, "Escalation and Nuclear Weapons in Russia's Military Strategy," *RUSI Journal* 163, no. 2 (2018): 4–15, doi: 10.1080/03071847.2018.1469267.

66. Olga Oliker and Andrey Baklitsky, "The Nuclear Posture Review and Russian 'De-escalation': A Dangerous Solution to a Non-Existent Problem," *War on the Rocks*, 20 February 2018, https://warontherocks.com/; and Nikolai Sokov, "Why Russia Calls a Limited Nuclear Strike 'De -Escalation,'" *Bulletin of the Atomic Scientists*, 13 March 2014, https://thebulletin.org/.

67. Alexander Lanoszka, "Nuclear Blackmail and Nuclear Coercion in the Baltic Region," *Scandinavian Journal of Military Studies* (forthcoming, 2019).

68. Congressional Budget Office, *Projected Costs of U.S. Nuclear Forces, 2017 to 2026* (Washington, DC: Congressional Budget Office, February 2017), https://www.cbo.gov/.

69. Podvig, "Russia's Current Nuclear Modernization," 260–61.

70. Michael Kofman, "The Collapsing Russian Defense Budget and Other Fairy Tales," *Russia Matters*, 22 May 2018, https://www.russiamatters.org/.

71. Thomas C. Schelling, "What Went Wrong with Arms Control?" *Foreign Affairs* 64, no. 2 (Winter 1985/1986): 227, https://www.foreignaffairs.com/.

72. Podvig, "Russia's Current Nuclear Modernization," 258.

73. Jacek Durkalec and Matthew Kroenig, "NATO's Nuclear Deterrence: Closing Credibility Gaps," *Polish Quarterly of International Affairs* 12, no. 1 (2016): 37–50, http://matthewkroenig.com/.

74. Department of Defense, *Summary of the 2018 National Defense Strategy of the United States of America: Sharpening the American Military's Competitive Edge* (Washington, DC: Department of Defense, 2018), 5, https://dod.defense.gov/.

75. Kroenig, "Withdrawal from Russia Nuclear Treaty."

Alexander Lanoszka

Dr. Lanoszka is an assistant professor of international relations in the Department of Political Science at the University of Waterloo and honorary fellow in the Department of International Politics at City, University of London. He may be reached at alexander.lanoszka@uwaterloo.ca. He thanks Andrea Gilli, Luis Simón, and W. Michael Guillot for comments on previous drafts.

Industrial Age Capacity at Information Age Speed

Maj Timothy J. May, USAF

Abstract

This article examines the potential for a shift in defense logistics and the DOD's relationship with industry to meet the logistical demands of the modern battlespace. The concept outlines solutions that protect supply chains and manufacturing capabilities through increased agility, adaptability, and resilience. The article uses historical examples and a survey of technologies to make a case for change. It examines enabling technologies and offers an implementation strategy. Artificial intelligence (AI), robotics, big data resources, and ever-improving manufacturing methods comprise the key enabling technologies. The implementation strategy involves establishing a market ecosystem that adequately protects intellectual property and does not jeopardize major contributors to the US economy. The US can evolve its industrial base to meet future logistical demands that spur innovation and sustain competition to emulate industrial age capacity at information age speeds. This change effectively pivots defense logistics from supply management and provision to a deployable, war materiel producing system. The emergent paradigm creates a force structure and manufacturing capability adaptable to the entire spectrum of conflict in an on-demand capacity.

*****

The future of warfare is as much about manufacturing time as it is about manufacturing war materiel. In other words, great power conflict in the twenty-first century foretells a strategic environment in which the US will not have the luxury of years of industrial mobilization and deployment. Conversely, the US cannot afford to maintain a war-like footing in perpetuity. It must evolve its force structure and manufacturing capabilities to emulate industrial age capacity at information age speeds. Defense logistics must transition from a system of supply management to an organic manufacturing base that leverages advances in production techniques, automation, and AI. Evolving defense logistics and revamping the relationship with industry will create a force structure and manufacturing capability adaptable to the entire spectrum of conflict in an on-demand capacity.

This will allow the US to reduce its standing force structure by creating the ability to generate a force tailored to individual conflicts. The approach will allow the US to respond to any contingency with a hydralike force optimized for the task at hand. Coupling this change with a new acquisition model that leverages force structure in a way that demands from and rewards industry for continuous improvement will help the US remain technologically ahead of adversaries.

This article proposes a radical shift in defense logistics and the underlying strategy of acquisition to meet the demands of the modern battlespace while protecting its supply chains and manufacturing capabilities. First, it makes a case for change; then, it examines the enabling technologies, and, finally, it offers a strategy for implementation. Historical precedents, fiscal constraints, and inherent risks of the current defense industrial base mobilization capabilities comprise the foundation of the rationale for change. The advancing capabilities of AI, robotics, big data resources, and ever-improving manufacturing methods constitute the critical technologies challenging the current framework. The strategy for change involves establishing an appropriate force structure, DOD investment in manufacturing resources, streamlining the defense supply chain, and establishing a market ecosystem that adequately protects intellectual property and does not jeopardize major contributors to the US economy.

As with most transformational change, it should start by leveraging existing technologies in new and innovative ways because invention without practicality offers limited utility. Those who optimize, simplify, or improve often occupy prominent seats in history over those who invent or discover. Henry Ford did not invent the car just as Samuel Colt did not create the gun; however, their paradigm-altering processes made the technology accessible to nearly everyone. Bill Gates and Steve Jobs did not invent the personal computer, but they made them ubiquitous. Innovation in conflict yields similar results. The type of innovation necessary to realize the full potential of the unique technologies at the forefront of the technical revolution requires a shift in focus. Many in the defense enterprise, both industry and the war fighter, recognize new technologies will wield a disruptive influence on the character of war. However, given the state of these technologies today, that vision often narrows in scope. The US may lack the time or ability to recover if it misses this opportunity for adopting and institutionalizing technologies such as AI and additive manufacturing (AM) as it did with the airplane and the submarine. If adaptation is imperative for future ability, then to appreciate the potential for change as well as its complexity, one must bound the problem.

The Case for Change

Today's defense industrial base consists of a rich subset of the economy fueled by the DOD's enduring need to maintain its combat forces and an insatiable desire for new technology in pursuit of advantage over would-be adversaries. An estimated 61,000 companies supply the DOD as prime vendors.[1] The largest companies in the market include Lockheed Martin, Boeing, Northrop Grumman, and Raytheon; known as the "Big 5," they account for the largest share of defense contracts due to their overall size and capacity.[2] Notable programs include the F-35 Joint Strike Fighter (Lockheed Martin), KC-46 Aerial Tanker (Boeing), B-21 Long-Range Strike-Bomber (Northrop Grumman), and BGM-109 Tomahawk Land Attack Missile (Raytheon). Scores of other vendors rest just below the Big 5 in overall market share, providing a myriad of goods and services. Vendors range from large companies, with revenue reaching into the billions, to small businesses providing niche items.[3] The defense industrial base often works collaboratively across the enterprise on a massive program such as those identified above. The prime contractor for an aircraft may select a subcontractor for engines, ejection seats, avionics components, radar, and so on. This abundant ecosystem centered on defense merchants selling arms to the extensive professional forces of the US and its allies did not always exist.

The US experience with mobilization evokes images of inauspicious beginnings culminating in the triumph of overwhelming industrial might. From President Wilson's war declaration in 1917 to first combat in 1918, the US took too long to fully mobilize and relied heavily on magnanimous allies. As A. B. Quinton, Jr. summarizes, "industrial activity more than fighting man-power is the determining factor between success and failure of a military effort. . . . Considering the thousands of items required and their high rate of obsolescence due to constantly improved design."[4] The Second World War saw the US only slightly better prepared. Gilbert cites Lt Gen William Knudsen in explaining the national effort, "The first year, he said, was needed for tooling up, the second, for production. At the end of that time, it was his opinion that the United States could 'write its own ticket.'"[5] Great power competition, as described in the *National Defense Strategy* (*NDS*), will consume considerable resources.[6] The only difference between future conflicts of this type and those in the past is that the US cannot expect a period of operational grace for mobilization. Major combat operations with a great power rival will likely occur at an unprecedented pace and consume resources at a rate overwhelming to the existing industrial base.

The changing landscape of the global environment drives the quest for radical change in defense acquisitions and logistics. Leaders focused on national security agree that the international order faces a return to great power competition.[7] In this reemerging geopolitical environment, the US cannot afford for its innovation capacity to languish. The 2018 *Science and Engineering Indicators Report* by the US National Science Board revealed friend and foe nations alike rapidly closing the gap on a US lead in science and technology.[8] In 2018, US spending in research and development (R&D) reached $496 billion with China close behind at $408 billion.[9] In the years leading up to this report, China increased its R&D expenditures at a rate of 18 percent for nearly two decades.[10] In the same period, US expenditures rose by only four percent.[11] Furthermore, China "more than doubled" its market share of technologically advanced manufacturing, including air and space vehicles, semiconductors, computers, pharmaceuticals, and precision measuring and control devices in the last ten years.[12] The steadily dwindling advantage in science and technology held by the US manifests, in part, as growing concern about the stability and reliability of the industrial base.

Unpredictability in defense appropriations raises grave concerns in the industrial base's continued position as a global innovation leader. A recent study by the Center for Strategic and International Studies (CSIS) revealed significant impacts upon the defense industrial base during the period including the Budget Control Act (i.e., sequestration) and unending continuing resolutions.[13] According to Rhys McCormick et al., "Some sectors [of the defense industry] saw continual declines in contract obligations, while others experienced a whipsaw effect, swinging rapidly from growth to decline." In particular, the CSIS report determined that "the data show that across most platform portfolios, R&D took disproportionate cuts when compared to products and services."[14] In the US, the private sector dominates in applied research and experimental development while the university system drives basic research.[15] The central role businesses play in R&D inextricably links the US innovation and industrial bases to marketability. When faced with tough financial decisions and uncertainty in the defense sector, the tens of thousands of vendors who comprise the industrial base opted for tried and true solutions over the internal exploration of new capabilities.

Fielding and maintaining a force ideally suited for the widening spectrum of potential operations will likely prove increasingly cost prohibitive. The all-volunteer force (AVF) already places tremendous strain on the defense budget in personnel expenses. Consequently, this constant pressure

increasingly diverts resources from infrastructure and equipment. As the character of war continues to evolve, so do its expenses. Adjusted to 2015 dollars, a single B-17—a reusable bomber with strategic impact—cost $2.6 million.[16] Conversely, one AGM-158B joint air-to-surface standoff missile–extended range (JASSM-ER)—a single use cruise missile—cost $1.3 million in 2015 dollars.[17] As technology's role on the battlefield continues to increase, the potential cost of a single volley could render military options economically unviable.

Without considerate appropriation of funds across the portfolio of national interests, the US risks crippling essential sectors of its economy and infrastructure via defense spending. The proposed defense budget for fiscal year 2018 included $574 billion—less overseas contingency operations funding—and constituted approximately three percent of the US gross domestic product.[18] The principal expenses include health care and services for defense personnel.[19] Furthermore, the US faces the daunting task of simultaneously organizing, training, and equipping a force capable of engaging adversaries across the spectrum of warfare. NDS's 4+1 concept explains the threat environment as one consisting of peer powers, regional disruptors, and nebulous insurgents.[20] Attempting to field and sustain a force capable of responding to the breadth of threats described will likely prove increasingly prohibitive. Without essential changes to force structure and business practices, the DOD risks paralyzing any future NDS by attempting to maintain an impossible level of readiness without relief.

The twentieth century revealed that mobilizing for major conflict requires time, and modern militaries face increasing pressure to prepare for myriad contingencies spanning the entire spectrum of warfare. The intrinsic link between logistics and warfare, the persistence of fiscal discipline in funding the DOD, and the threats presented by adversaries exploiting the changing character of war compel a new approach. Future conflicts will increasingly constrict the time available for mobilization and optimization. To maintain an advantage, the US must explore ways to manufacture time in every facet of its defense infrastructure. In his memoirs, Gen John J. Pershing assessed the American experience in the First World War: "We were called upon to make up in a few months for the neglect of years, during which self-satisfied provincialism and smug complacency had prevented the most elementary efforts toward a reasonable precaution to meet such an emergency."[21] Moving forward, the US should carefully consider and adopt technologies with the greatest potential to stave off calamity as a result of delayed action while presenting would-be adversaries

with force—and supporting infrastructure—capable of producing an endlessly variable repertoire of capabilities.

Enabling Technologies

Three key technologies will enable the US military's transition into an organic, dispersed manufacturing base capable of providing adequate war materiel to the joint force at a much faster rate than today's industrial base. Bolstered by the resilience inherent to dispersion and adaptability, AI, AM, and advanced robotics (AR) comprise the critical technologies capable of ushering in a revolution in military logistics and US force structure.

The eventual force structure change and manufacturing base involved heavily leverage AI as a force multiplier. For this reason, it is assumed that by 2040 AI will reach a technology readiness level that facilitates two essential capabilities. In operations, AI will enable combat employment by human-machine teams. Utilizing the principle of "supervised autonomy," human operators will act as small unit leaders for AI combatants. Recent experiments by the Air Force Research Lab (AFRL) and Army Research, Development, and Engineering Command demonstrated the potential of such collaborations. In collaboration with Lockheed Martin, AFRL recently conducted the Have Raider experiments. In the experiment, a QF-16 aircraft, modified to fly autonomously, joined in formation with a human-operated F-16 in the performance of a series of advanced flight and combat related tasks.[22] Have Raider I proved the autonomous aircraft capable of operating in close formation with the human flight lead in which the "experimental F-16 autonomously flew in formation with a lead aircraft and conducted a ground-attack mission, then automatically rejoined the lead aircraft after the mission was completed." Have Raider II rapidly advanced the concept by achieving the following objectives in an ever-changing environment: first, "autonomously plan[ning] and execut[ing] air-to-ground strike missions based on mission priorities and available assets"; second, "dynamically react[ing] to a changing threat environment during an air-to-ground strike mission while automatically managing contingencies for capability failures, route deviations, and loss of communication"; and third, having "a fully compliant USAF Open Mission Systems software integration environment allowing rapid integration of software components developed by multiple providers."[23]

The second critical component of AI in this endeavor relates to manufacturing. AI and autonomous systems will serve an expanding role in manufacturing operations, as evidenced by the increasing calls for alarm about its impact on the workforce. A recent report by the McKinsey and

Company consulting firm estimates that approximately "fifty percent of current work activities are technically automatable."[24] Consequently, if fully adopted by various industries, automation may displace 800 million full-time employees worldwide by 2030.[25] The potential exists to advance assembly lines and manufacturing processes from machine-assisted operations to fully autonomous activities that exploit the force multiplying and time-saving potential of supervised autonomy.

The next key assumption involves the rapid progress of advanced manufacturing techniques. AM, known colloquially as 3-D printing, appeared in the 1980s; however, its disruptive potential emerged when coupled with advanced computing, new techniques, and previously unusable materials. Today, industries worldwide struggle to grasp the technology's full potential. Emerging AM processes include materials ranging from plastics to metals and will likely touch every aspect of human life in the coming decades.[26] Furthermore, as researchers mature the various AM methods, the processes become ever faster.[27] By 2040, AM technologies will likely overcome the challenges associated with characterizing material and structure reliability, and the lengthy processes of today will see dramatic time reductions.

Discussions on the role of AM in manufacturing often dwell on quality concerns. How can a manufacturer assure a user that an additively manufactured part possesses the same properties as the original produced with traditional methods? The keys to success in improving AM speed and product quality assurance include continued improvement of the machines and their implements. Incorporating sensors to detect and correct anomalies during production improves quality control and assurance. An increasing body of knowledge on the relationship between the AM process, feedstock, and key output properties continually bring AM closer to parity with traditional methods. However, the ultimate success of AM rests in entirely new designs. Those products entirely conceived of and produced with AM in mind will eventually displace comparisons to traditional methods.

AM constitutes a single tool in an expanding catalog of manufacturing resources. R&D at universities, national laboratories, and in businesses continually expand the capabilities of this unique technology. Researchers enjoy steady progress in overcoming challenges related to feedstock materials, improving product reliability and predictability, and continual decreases in the rate of production. AM will likely supplant traditional subtractive (e.g., lathe machining) as the preferred method for manufacturing parts in coming years; however, certain materials will remain best suited for

traditional subtractive processes. The key to any successful manufacturing strategy is an appreciation for the holistic value of multiple methods versus placing complete faith in one.

Coupling advances in AI and AM with innovations in robotics lays the foundation for fully autonomous assembly lines. Articulated industrial robots grow increasingly dexterous where *dexterity* is defined as "the variety of tasks that the system can complete, and also how well it can perform those tasks. . . . It is perhaps appropriate to classify the hand and arm as subsystems responsible for tasks of different scales, where the hand performs fixing and fine manipulation and the arm handles gross positioning motions."[28] As developers iteratively advance and couple the individual capabilities of robotic arms and hands, these systems grow ever nearer the ability to duplicate work previously only the purview of skilled human laborers.[29] As the manufacturing tools' abilities progress and their potential becomes increasingly apparent, the feasibility of a transition to widespread implementation across the defense enterprise grows.

Toward Implementation

In application, this concept enables the US to optimize the size of its standing force by simultaneously leveraging the capabilities inherent in a professional corps and the flexibility introduced by rapid manufacturing. The character of war today, and with an eye toward the future, hardly resembles that of the twentieth century; however, new manufacturing and procurement methods renew the potential of an "on demand" force. Consider the fighter squadron: a typical squadron consists of 18–24 aircraft and 20 pilots.[30] The Air Force currently fields 55 fighter squadrons but hopes to expand to 60.[31] For air operations alone, a healthy fighter force requires 990–1,320 aircraft and about 1,100 pilots. Expanding to 60 squadrons would necessitate an additional 100 pilots and 90–120 aircraft. Adopting a force structure that leverages human-machine teams, in which human flight leaders command three semi-autonomous fighters in four-ship formations, yields two possible outcomes for the USAF. First, in the current manpower arrangement, the USAF increases its employable fighter potential (assuming 20 aircraft per squadron) by a factor of three. A single 20-pilot fighter squadron possesses the capacity to launch 80 combat sorties; 55 squadrons suddenly resemble 165. Alternatively, the USAF could maintain 60 fighter squadrons with just a fraction of the current number of fighter pilots. Five pilots and 15 drones maintain the combat potential of current squadrons—a 75 percent reduction in manpower. Furthermore, when considering attrition, and with a three-to-one

ratio of humans-to-machines, squadrons will remain combat capable much longer than those comprised entirely of human pilots. The ability to maintain or dramatically increase combat capacity in this way holds great potential for offsetting or reducing the expense of maintaining a high-quality AVF.

Health care was identified earlier as the greatest expense in the annual defense budget, and the DOD routinely seeks opportunities to offset such costs. Proposed flattening or reductions in benefits inflame the sense that the government cannot provide adequately for its forces.[32] In that same vein, base realignment and closure initiatives raise the ire of lawmakers concerned by the economic impacts on their constituents.[33] By leveraging on-demand manufacturing, the DOD could reduce or justifiably offset the stifling expense of providing for its Airmen. Maintaining combat potential with a reduced number of pilots in human-machine teams translates directly to lower force maintenance costs.

Sizing the standing force, including assets and personnel, using the on-demand concept requires careful consideration of the global security environment, national security objectives, and the NDS. Undersized fielded forces may not hold the line until reinforcements can reach the fight. Oversized fielded forces may cripple the economy. Similarly, malaise in the defense industrial base may leave it unable to respond in times of national crisis. Defense mobilization, whether in the historical context of a major industrial endeavor requiring months to years, or one potential future enacted over the course of hours, to days, hinges on the balance of standing force ability and readiness with production speed and capacity. On-demand manufacturing resources must provide the speed to account for expected combat losses and the capacity to generate supplemental war materiel necessary to sustain operations. The worst-case scenario, logistically, of major combat operations versus a peer nation offers an optimal baseline for requirements as any lower-intensity operations should fall within the abilities of the manufacturing base. Once the DOD adequately evaluates the necessary criteria, it can issue requirements for its fielded forces and manufacturing capacity.

The US government and its industrial base should invest heavily in the tools and technologies necessary to improve indigenous resources for AM machines, AR technologies, and AI algorithms. General Electric (GE) currently leads US companies in AM capacity. In 2016, GE purchased controlling shares in the Swedish company Arcam AB and continues to scour the globe for additive and advanced manufacturing technologies to expand its repertoire of capabilities.[34] Despite the presence of a major US

company in this sector, the US still lacks the indigenous capacity necessary for overall supremacy. The quest for market advantage by US companies mirrors the necessity of the US military to maintain an advantage over its would-be adversaries. In *Restoring American Power*, Sen. John McCain stated, "If all we do is buy more of the same, it is not only a bad investment; it is dangerous. We must rethink how our military projects power, invest in new capabilities and devise new ways of operating."[35] Standing at the precipice of major technological change in conjunction with the fourth industrial revolution, the US can position itself to seize the initiative and maintain dominance as the character of war evolves once more.

By procuring manufacturing tools necessary for such production capacity, the US can stave off the operational challenges imposed by delays associated with mobilizing the industrial base. Mark Cancian of CSIS notes the perils of assuming the industrial mobilization schedule that occurred during the Second World War retains any relevance in modern and future conflicts on a major scale. "In fact, after about nine months of intense peer conflict, attrition would grind the US armed forces down to something resembling the military of a regional power. . . . This state of affairs arises because the US government has not thought seriously about industrial mobilization."[36] It took many months for the US to fully mobilize during the two World Wars without a direct attack on the homeland. The potential for an attack on the industrial base, vital supply chains, or critical infrastructure—in areas previously perceived as sanctuaries—via cyberspace only increases the impetus for a new approach. Integrating manufacturing capacity into the logistics and industrial bases in ways that can substantially bolster the force structure introduces agility and capacity unprecedented in warfare. Furthermore, this research, development, and investment strategy creates opportunities for the US to advance, understand, and protect technologies destined to serve both civil and military utilities.

The idea of the government assuming responsibility for production invariably raises flags over potential technology stagnation or wilting competition in a critical national sector. However, regarding the resultant manufacturing enclaves as deployable entities rather than factories or business competitors offers one way of assuaging such concerns. This construct alleviates much of the uncertainty that disrupts the industrial base, such as up-front expenses incurred by companies to tool factories for specific production lines despite the risks of reduced or discontinued orders. If manufacturing is procured and maintained like other major defense programs, the DOD can leverage its experience in sustaining

and improving fielded designs. Additionally, weaponizing the industrial base in this way introduces an entirely new sector for competition as companies compete to provide, and the DOD strives to field, subsequent generations of manufacturing capabilities. Sharing the workload in this construct enables the industrial base to continue developing manufacturing tools. Perhaps most importantly, this approach frees critical resources within the industrial base for increased and uninterrupted R&D pursuits.

Weaponizing the tools of manufacturing fuels competition among the defense industrial base. According to the 2018 CSIS report analyzing the impact of sequestration, "the number of prime vendors was reduced by roughly 20 percent or about 17,000 vendors."[37] When uncertainty strikes, many suppliers of military goods cannot endure. The current market resulted from decades of asset consolidations as the United States navigated the Cold War, its aftermath, and the conflicts that shaped the decades bridging the twentieth and twenty-first centuries. If the DOD maintains the major industrial resources for production, the cost of entry into competition lowers. A defense vendor with a winning design and viable production requirements does not require the massive industrial footprint necessary to manufacture hundreds of thousands of units. Conceivably, a small start-up capable of producing a quality prototype could compete as an equal with any of the Big 5 vendors.

Incentivizing private industry in this model requires a shift in the types of goods produced and the nature of defense contracts. Today, the companies that comprise the defense industry operate on the expectation that they will win a contract then produce the hardware associated with that contract. Such contracts include major weapons systems with intended service lives spanning decades, and the winning supplier pours tremendous resources into production. Adapting to an on-demand force means significant changes to this paradigm. First, weapons system designs would transition to something more akin to "software as a service." The DOD will still award contracts, but rather than winning the opportunity to produce a set number of units, the supplier commits to a number and frequency of updates or design improvements for a set period. Instead of buying 1,000 F-35As, the Air Force buys Lockheed Martin's time and resources to mature the F-35 from models A through H over 20 years. The success of companies like Amazon and IBM that offer software as a service prove how lucrative this model can be. Private industry production of goods shifts toward the exquisite. Line replaceable units (LRU) including radios, radars, engines, and myriad components intended to

feed the supply system provide ample opportunity for defense vendors to profitably sustain their current business ventures while expanding operations in support of the new model. As the entire system evolves to leverage overlapping components across weapons systems, the potential growth and market opportunities offset the disruption of traditional production expectations.

The necessity of pursuing near perfection in a major system wanes with an on-demand force structure. With only a handful of opportunities and an expectation of long service lives, the DOD and the defense industry face the antithetical challenges of simplicity and requirement creep. An on-demand force deposes both of these problems because it allows for continual improvement. Hardware solutions can experience the same types of rapid prototyping, testing, and certification as software; the design plan for the wartime manufacturing configuration enjoys constant improvement. This evolution of today's sustainment infrastructure also contributes to the viability of the business model and potential for cultivating growth.

Incorporating manufacturing capacity into the DOD force structure further expands competition by increasing the potential of Federally Funded R&D Centers (FFRDC). According to Federal Acquisition Regulations, "FFRDCs are unique nonprofit entities sponsored and funded by the US government to meet some special long-term research or development need which cannot be met as effectively by existing in-house or contractor resources."[38] The Manhattan Project stands out among the most readily identifiable examples of FFRDC programs and their potential to yield tremendous capability.[39] The national laboratories, under the purview of the US Department of Energy and its subordinate, the National Nuclear Security Administration, constitute the enduring legacy of innovation and cutting technological development marked by that auspicious beginning.[40] Today, FFDRCs serve a variety of purposes for numerous organizations throughout the federal government, such as the RAND Corporation's Project Air Force. However, the national lab infrastructure and roles as centers of excellence for both science and weapons design hold the greatest potential benefit to the nation. Consider the BLU-129 carbon-fiber bomb body: experts at Lawrence Livermore National Lab designed the weapon, and the US government retains the intellectual property rights to its design. Unfortunately, since the labs lack significant manufacturing capability, the DOD must contract production of the weapon to Aerojet Rocketdyne.[41] With an organic manufacturing capability in the DOD, the US can effectively extend competition among

defense vendors and expand its innovation potential by increasing the ability of its FFRDCs to contribute.

The fundamental elements of the relationship between the DOD and the industrial base do not change, but their best practices evolve. The DOD will continue to set requirements based on its operational needs, expected operating environments, and threats posed by adversaries. The industry continues to propose design solutions for those requirements and operational challenges competitively. Once the DOD declares a winner, contracts ensure sustainment for purposes of design improvements, software sustainment, weapons integration, and so on. Newly selected systems still face rigorous evaluation by developmental and operational testing communities. The services still scrutinize any selected systems and continuously improve them like they improve today's force. The manufacturing shift outlined here enables change by enabling leaders to adjust the size of the standing force according to the global security environment.

Professional service members still train regularly leveraging live and virtual constructive environments as well as a handful of manufactured and maintained systems. For example, two tank platoon leaders embark on a field exercise with each of their human-operated vehicles, one machine-operated vehicle apiece, and two virtually represented vehicles round out the eight-deep formation. Rather than maintaining the personnel necessary for eight tanks plus all accompanying logistics, the Army maintains four tanks, two crews, and possesses the manufacturing capacity to meet wartime requirements. Conversely, the services may dramatically increase their capacity by maintaining the current number or increasing the number of personnel. In both cases, on-demand manufacturing creates a means of offsetting expenses.

An on-demand force does not necessitate a shoddy force. Continuous design improvement means continual product improvement. As mentioned earlier, incentivizing the private sector highlighted changes to the types of contracts awarded. This approach effectively incentivizes and rewards companies for conducting and implementing initiatives currently in the realm of internal R&D, leveraging private capital in hopes of securing government contracts in the future. Furthermore, on-demand manufacturing does not mean single use quality. Instead, engineers can design unmanned equipment for a service life on par with expected operating conditions. Considerate design and production of a system with a service life of 100 combat sorties or a single year instead of decades would be tremendous, especially when compounded with a force structure that can

delay production of that system until needed. Those assets designed and intended for human operators can include the same margin of safety and human performance enhancing features while benefiting from the continuous improvement concept. With contractors constantly engaged and rewarded for improving their products, shortened weapon system service lives mean even manned assets can enjoy refreshed technologies at a greater frequency than today. Many serving platforms today (e.g., B-52, F-15, and UH-1) testify to the prowess of their designers; however, the average age of systems serving every branch of service should represent notable exceptions—and failures of other acquisition efforts—rather than some gold standard of success. In this new structure, the DOD can provide its combatant commanders with the same vanguard of professionals as today but malleable in ways previously unimaginable. If, for example, a conflict begins as high-intensity peer-to-peer but devolves into a simmering counterinsurgency operation, the overall force seamlessly transitions along with the fight. An on-demand force can strike a harmonious nexus between quality, quantity, and value.

New manufacturing capabilities point to a bright future capable of enabling a revolution in how the services organize, train, and equip, but one can expect complex components to persist in supply. Certain LRUs such as specially configured electronics or aircraft engines may require prohibitively pristine conditions or consume too much time in production. This reality may change; however, the DOD can exploit the need to maintain a supply of such components by increasing commonality. Classes of aircraft or vehicles that share engines or wheels create efficiency. Common LRUs like radios, controls and displays, or basic operating software further simplify the supply chain and create opportunities for flexibility.

Advanced manufacturing tools and techniques also possess tremendous utility in nonmilitary applications and, therefore, the potential for cost offsets. Consequently, any investment in such equipment for military purposes enables the US to repurpose such equipment to other sectors when not necessary for the support of combat operations. The Global Positioning System (GPS) perfectly illustrates the potential of contributions from military systems to the civilian enterprise. The abandoned policy of "selective availability" in which the US would intentionally degrade GPS position accuracy for national security reasons offers a precedent for such a relationship.[42] Consider the value of military manufacturing equipment contributing to civil works projects at home or in collaboration with US-led aid operations abroad. The DOD may establish the performance specifications and generate the initial orders for the government; however, the US

government could find ways to share this manufacturing potential beyond the defense sector. The potential value to the nation of manufacturing resources procured to provide for defense but applied to initiatives supporting the other instruments of national power both domestically and abroad could significantly, and favorably, alter the makeup of the national budget.

Furthermore, the potential to lease manufacturing tools not actively supporting the production of war materiel could bolster the economy while attacking national debt. In 1953, President Dwight D. Eisenhower delivered the speech known as "The Chance for Peace," and, in 1961, he warned against "the Military-Industrial Complex" in his farewell address. In the former he stated,

> This world in arms is not spending money alone. It is spending the sweat of its laborers, the genius of its scientists, the hopes of its children. The cost of one modern heavy bomber is this: a modern brick school in more than 30 cities. It is two electric power plants, each serving a town of 60,000 population. It is two fine, fully equipped hospitals. It is some 50 miles of concrete highway. We pay for a single fighter plane with a half million bushels of wheat. We pay for a single destroyer with new homes that could have housed more than 8,000 people. This, I repeat, is the best way of life to be found on the road the world has been taking.[43]

In the latter, Eisenhower acknowledged, "Only an alert and knowledgeable citizenry can compel the proper meshing of the huge industrial and military machinery of defense with our peaceful methods and goals."[44] The specific figures changed, but the principal issue remains. Sustaining a large, fielded force places a strain on other areas of the nation and the economy. Adapting the defense industrial base to meet the needs of a force structured and postured to field combat capability on-demand creates the opportunity to address the challenges Eisenhower put forth decades ago. Consider the potential applications of dual-use technologies, procured for the manufacture of war materiel in defense of the nation and applied to the needs of national infrastructure, energy, education, or medicine in times of peace.

Intellectual property and International Traffic in Arms Regulations (ITAR) may raise concerns for proliferation or espionage—this risk is not unfounded. International trade laws often lag behind technology, and a recent dispute over digital data highlights the issue. The US International Trade Commission faced the task of determining whether or not digital design data transmission (related to orthodontic devices) constituted a physical "article" and therefore violated patent law.[45] Furthermore, one

needs only a glance at images of Chinese J-20 and J-31 aircraft in comparison to our US F-22 and F-35 aircraft to notice similarities. By leading with initiatives in this space, the US can establish regulations and guidance on how nations should deal with manufacturing technologies capable of civil and military applications without any significant reconfiguration. Furthermore, the US can establish safeguards and methods capable of protecting intellectual property inherent to the software packages used to produce a given weapons system.

Adjusting the acquisitions and force structure paradigms of the industrial era to meet information era demands not only paves the way for continued US superiority in industry and war, but it also expands the collective war-fighting potential of allies and partners. The US ability to rapidly coalesce and lead international coalitions with disparate positions in pursuit of common objectives routinely stands out as, arguably, its greatest strength. Coupling team-building capacity with rich cultures of innovation and skilled industrial bases can elevate the group to its maximum potential. The 2017 National Defense Authorization Act (NDAA) included language that expanded National Technical and Industrial Base (NTIB) status to "include persona and organizations in the United Kingdom and Australia as well as those in the United States and Canada."[46] Adding two additional allies to the existing international collaboration with Canada expands the innovation and production potential of the four nations. While Congress did not set forth specific stipulations, deadlines, or criteria for success in the 2017 NDAA, the potential for continuous improvement and growth is evident upon even cursory examination. Codified NTIB collaboration in conjunction with amendments or exemptions to ITAR would ease the flow of concepts, designs, and products among the allies. Paired with the organic manufacturing concept presented in this article, this strategy enables each of the four nations to effectively extend the footprint of its industrial base to the countries and bases of its allies. Operating on this manufacturing strategy, the alliance effectively crowdsources its war materiel needs among members. The entire war production effort automatically achieves resilience via geographic dispersal and redundancy.

Implementation of this strategic vision begins with simultaneous analysis and physical experimentation. Proving the concept on an experimental scale leverages the existing capabilities of the technologies in question while testing their potential. With empirical evidence, the DOD can determine whether the key technologies, in concert with an R&D campaign, can swell manufacturing operations to the scale and speed necessary to meet anticipated demand. In parallel, the DOD should analyze its re-

quirements for production in various operating environments and conflicts. Such research will inform decisions concerning replenishment of expendables, replacements due to attrition, and necessary supplemental materiel. Conquering the technical challenges of implementation alone will result in an incomplete solution—the DOD must couple this aspect of implementation with its efforts to prepare its forces for future operating environments.

The subject of future conflict and the evolving character of war weighs heavily on each of the services. How will they best organize, train, and equip to face emerging challenges? New technologies and operating environments will ceaselessly challenge military leaders to embrace the adage that "doctrine is not dogma." The USAF extensively researched the future of air superiority as it prepared its plans for its penetrating counterair platform.[47] The US Navy consistently re-evaluates its force structure as the maritime operating environment evolves. Increasing interest in acquiring a new class of frigate versus relying exclusively on the littoral combat ship illustrates the dynamic nature of each domain.[48] The US Army recently established Futures Command, charged with researching the future battlespace and ensuring "overmatch."[49] The US Marine Corps has already established AM initiatives for its logistical needs and appears intent on further integrating the technology to support its concepts of operations.[50] Integrating operations across domains, replacing tried and true tactics with those defined by swarm algorithms, or questioning the continued viability of long-held principles of warfare will require careful consideration—and willingness—to change across the force. How do war fighters achieve mass in the narrow confines of a megacity? How does a combatant commander integrate across domains without communications considered essential for unity of command? As the DOD grapples with these doctrinal questions, increasingly divergent alternatives should receive consideration. The hydralike adaptability of an on-demand force in perpetual development and improvement between the DOD and industry, capable of deploying forces tailored to individual operating environments, and optimized for the application of force suitable to the conflict's place on the spectrum of warfare may solve such problems.

Conclusion

Each of the service secretaries and chiefs of staff laud innovation and tout the importance of new technologies to future war-fighting capabilities. However, experience shows that technology alone cannot guarantee successful employment. In parallel with calls to embrace emerging capabilities,

the services lament the ossified bureaucratic processes and resistance to change that dominates defense acquisitions. This is not a new problem. Dorothy Leonard-Barton and William Kraus summarized the challenges of adopting new technologies in *Harvard Business Review*:

> Many implementation efforts fail because someone underestimated the scope or importance of such preparation. Indeed, the organizational hills are full of managers who believe that an innovation's technical superiority and strategic importance will guarantee acceptance. Therefore, they pour abundant resources into the purchase or development of the technology but very little into its implementation. Experience suggests, however, that successful implementation requires not only heavy investment by developers early in the project but also a sustained level of investment in the resources of user organizations. . . . No one in the user organization had prepared the way for the innovation, so there was no one to whom developers could hand it off.[51]

Barton and Kraus highlighted a problem in 1985 as personal computers proliferated in offices around the world. This issue persists and grows increasingly acute as technology infiltrates more and more aspects of daily life. The inability to successfully implement these technologies among its fighting forces may pose grave consequences to the US as evidenced by history.

The role of highly capable platforms in war will not end anytime soon; however, a handful of wonder weapons will not yield decisive results in a campaign. In *Joint Force Quarterly*, T. X. Hammes correlates the current rate of technological advance to the interwar period: "This creates the potential for disruptive shifts by creative applications, especially by combinations of these advances. The key question is whether we will invest in . . . battleships or aircraft? Will our investments prove exquisite and irrelevant or change the face of conflict?"[52] The Japanese Zero and German Tiger possessed superior performance characteristics over their American counterparts. Nevertheless, superior employment by American operators and rugged designs by US companies often carried the day. Similarly, the employment of atomic bombs against Japan at Hiroshima and Nagasaki led to Japanese capitulation, but historians credit the suffocating interdiction campaign by US submarine forces with setting the conditions for success.[53] AM, AR, and AI pose the same kinds of disruptive threats to manufacturing, and the industrial base as aircraft and mechanization posed to the certainty of battleships and horse cavalry in the past. The difference, in this

modern situation, centers on the fact that the technologies challenging industrial norms simultaneously threaten the status quo of how militaries organize, train, and equip.

Leveraging rapid manufacturing, iterative and continuous design improvement, and human-machine teams effectively operationalize the industrial base. Rather than simply providing the means of procurement and the tools of production, the industrial base, and its potential becomes a component of the joint force commander's (JFC) campaign plan. During shaping operations, the JFC works with apportioned human-machine teams to influence the theater in a way supportive of national objectives. Because operationalizing the industrial base brings manufacturing capacity closer to the fight, the JFC can leverage this concept as circumstances escalate. Deterrence today might include deployments of new assets into theater or shows of presence activities. The resultant shell game played to ensure limited resources meet worldwide demands often results in precarious solutions and potentially risky gaps. With an operationalized industrial base, a JFC may make a public display of reapportioning manufacturing resources for war materiel or requisitioning additional production capacity from outside the theater. The US can demonstrate readiness and resolve without redistributing combat forces or risking excessive build-up for one crisis at the expense of another. Seizing the initiative and dominating the adversary with an operationalized industrial base means rapid production of precisely tailored forces suited for the exact nature of the operation underway. JFCs executing with such resources maintain the capacity to produce combat forces optimized for exploiting emerging circumstances in a conflict. Additionally, this model provides a ready reserve—in manufacturing potential—capable of adapting to and countering enemy actions. Lastly, because part of the force apportionment strategy includes manufacturing tools and raw materials, the JFC prepares for stabilization and transition operations before hostilities commence. The ability of an operationalized industrial base to cease production of combat hardware and begin producing things necessary to assist civil authorities postbellum offers a unique opportunity for the US to assure victory from pre-hostility to the ensuing peace.

Today there exists the necessity for a radical change in thinking regarding how the military views the industrial base and manufacturing, but additionally, the matter of force size and structure demands further investigation. The size of the force appropriate for day-to-day operations worldwide requires careful consideration by the DOD. Employing too few professionals only exacerbates the demands placed on service members

while potentially introducing an asymmetric vulnerability for an adversary to exploit. Conversely, employing too many fails to exploit the potential of on-demand manufacturing fully. This question warrants examining the security environment and considering how to balance the active duty, Reserve, and National Guard forces most effectively. The composition of human-machine teams requires further examination of how much equipment to sustain versus how much to produce when needed.

All signs point to the ability of new manufacturing capabilities to increase the rate and quality of production dramatically, but the specific needs of an engaged military require careful consideration. Determining the rate of production necessary to satisfy force deployment and crisis response marks a key first step. Identifying acceptable and achievable replenishment rates for combat losses during large-scale, sustained operations will serve as the benchmark for this concept's efficacy. The specific demands on force structure and manufacturing resources point, finally, to economic impact and viability.

Experts recognize that AI, AM, and AR will dramatically impact the workforce and have a disruptive effect on the global economy. Ignoring these challenges or attempting to negate their effects without an accompanying revolution on how the economy organizes and operates will only erode US status as an economic and military superpower. The US government should work collaboratively with industry to determine the best courses of action to maintain combat capability, encourage competition, and assure economic growth. Despite these potential obstacles to implementation, the potential for a dramatic increase in capability demands further research.

The US can leverage technologies already in existence and champion the advancement of those just emerging in ways that can secure its preeminence in power projection and assured force sustainment. By evolving the character of the defense industrial base, the US can field and maintain a military that proves both economically viable and combat capable. Investing in advanced manufacturing capabilities will enable the US to continually evaluate and evolve its equipment and force at a faster pace and at a lower cost than an industrial era model allows. SSQ

Notes

1. Rhys McCormick, Andrew P. Hunter, and Gregory Sanders, *Measuring the Impact of Sequestration and the Drawdown on the Defense Industrial Base* (Washington, D.C.: Center for Strategic & International Studies, 2018), xiv.
2. McCormick, Hunter, and Sanders, *Measuring the Impact of Sequestration*, 12.
3. McCormick, Hunter, and Sanders, *Measuring the Impact of Sequestration,* vii.

4. A. B. Quinton, Jr., "War Planning and Industrial Mobilization," *Harvard Business Review* 9, no. 1 (October 1930): 8.

5. Horace N. Gilbert, "From Industrial Mobilization to War Production," *Harvard Business Review* 21, no. 1 (Autumn 1942): 124-5.

6. Office of the Secretary of Defense, *Summary of the 2018 National Defense Strategy* (Washington, D.C.: Office of the Secretary of Defense, 2018), 1, https://www.defense.gov.

7. Office of the Secretary of Defense, *2018 National Defense Strategy,* 1.

8. US National Science Board, Science and Engineering Indicators 2018, https://www.nsf.gov/statistics/2018/nsb20181/report/sections/overview/introduction.

9. US National Science Foundation, "State of US Science Enterprise Report Shows US Leads in S&E as China Rapidly Advances," News Release 18-006, 18 January 2018, https://www.nsf.gov.

10. US National Science Board, "State of US Science Enterprise."

11. US National Science Board, "State of US Science Enterprise."

12. US National Science Board, "State of US Science Enterprise."

13. McCormick, Hunter, and Sanders, *Measuring the Impact*, 74.

14. McCormick, Hunter, and Sanders, *Measuring the Impact*, 75.

15. US National Science Foundation, "State of US Science Enterprise."

16. Louis Johnston and Samuel H. Williamson, "What Was the U.S. GDP Then?," Measuring Worth, 2018, https://www.measuringworth.com.

17. Michael J. Sullivan, *Defense Acquisitions: Assessments of Selected Weapon Programs* (Washington, D.C.: Government Accounting Office (GAO), March 2015), https://www.gao.gov.

18. Office of the Undersecretary of Defense (Comptroller), "DoD Releases Fiscal Year 2018 Budget Proposal," press release, 2018, https://comptroller.defense.gov.

19. Office of the Undersecretary of Defense (Comptroller), *Defense Budget Overview* (Washington, D.C.: Office of the Secretary of Defense, 2017), 1-4, https://comptroller.defense.gov.

20. Refers to threats to the US posed by China (1), Russia (2), North Korea (3), Iran (4), and violent extremism (+1). See Office of the Secretary of Defense, *2018 National Defense Strategy,* 1.

21. Romeyn B. Hough Jr. and Wilton B. Persons, "The Raw-Material Aspect of Industrial Preparedness," *Harvard Business Review* 10, no. 1 (October 1931): 97.

22. Lockheed Martin Aeronautics Company, "US Air Force, Lockheed Martin Demonstrate Manned/Unmanned Teaming," Lockheed Martin, 10 April 2017, https://news.lockheedmartin.com.

23. Lockheed Martin Aeronautics Company, "US Air Force, Lockheed Martin."

24. James Manyika et al., *Jobs Lost, Jobs Gained: Workforce Transitions in a Time of Automation* (Washington, D.C.: McKinsey Global Institute, December 2017), 2, https://www.mckinsey.com.

25. Manyika, *Jobs Lost*, 2.

26. Amanda M. Schrand, "Additive Manufacturing: From Form to Function," *Strategic Studies Quarterly* 10, no. 3 (Fall 2016): 86, https://www.airuniversity.af.edu/SSQ.

27. Schrand, "Additive Manufacturing," 84.

28. Raymond R. Ma and Aaron M. Dollar, "On Dexterity and Dexterous Manipulation" (Tallinn, Estonia, 20-23 June 2011), 6, https://www.eng.yale.edu. This paper presents a high-level discussion of dexterity in robotic systems, focusing particularly on manipulation and hands.

29. Ma and Dollar, "On Dexterity," 6.

30. Michael Moran, "Modern Military Force Structures," Council on Foreign Relations, 26 October 2006, https://www.cfr.org.

31. Stephen Losey, "Air Force Wants to Grow from 55 to 60 Fighter Squadrons," *Air Force Times*, 1 February 2017, https://www.airforcetimes.com.

32. "Hikes in Cost of Veterans' Health Care Draw Fire," *Politico*, 5 April 2012, https://www.politico.com.

33. US Government Accountability Office, "Military Base Realignments and Closures," accessed May 2019, https://www.gao.gov.

34. General Electric, "GE Agrees to Purchase Controlling Shares of Arcam AB," press release, 15 November 2016, https://www.ge.com.

35. John McCain, *Restoring American Power: Recommendations for the FY 2018–FY 2022 Defense Budget* (Washington, D.C.: Senate Armed Services Committee, 2017), 3, https://www.hsdl.org.

36. Mark Cancian, "Long Wars and Industrial Mobilization: It Won't Be World War II Again," *War on the Rocks*, 8 August 2017, https://warontherocks.com.

37. McCormick, Hunter, and Sanders, *Measuring the Impact*, xiv.

38. Defense Acquisitions University, "Federally Funded Research and Development Centers (FFRDC)," *Acquisition Encyclopedia*, accessed May 2018, https://www.dau.mil.

39. US Congress, Office of Technology Assessment, *A History of the Department of Defense Federally Funded Research and Development Centers*, OTA-BP-ISS-157 (Washington, D.C.: US Government Printing Office, June 1995), 17, https://www.princeton.edu/.

40. US Congress, *A History of the Department of Defense*, 17.

41. Aerojet Rocketdyne, "Aerojet Rocketdyne Receives Prestigious Defense Industry Award from Precision Strike Association," 18 March 2014, http://www.rocket.com/.

42. National Coordination Office for Space-Based Positioning, Navigation, and Timing, "Selective Availability," GPS.gov, 27 September 2018, https://www.gps.gov/.

43. Dwight D. Eisenhower, "The Chance for Peace," transcript of speech, Presidential Address to the American Society of Newspaper Editors, Washington, D.C., 16 April 1953, https://www.eisenhower.archives.gov.

44. Dwight D. Eisenhower, "Farewell Address," transcript of speech, Televised Presidential Address to the Nation, Washington, D.C., 17 January 1961, https://www.eisenhower.archives.gov.

45. Lisa R. Barton, *Notice of Commission Determination to Recognize Order No. 57 as an Initial Determination of the Administrative Law Judge Pursuant to the Notice of Institution of the Enforcement Proceeding* (Washington, D.C.: US International Trade Commission, 21 December 2012), 3, https://www.usitc.gov.

46. Rhys McCormick et al., *National Technology and Industrial Base Integration: How to Overcome Barriers and Capitalize on Cooperation* (Washington, D.C.: Center for Strategic & International Studies, 2018), 2, https://www.csis.org.

47. Alex Grynkewich, "The Future of Air Superiority, Part I: The Imperative," *War on the Rocks*, 3 January 2017, https://warontherocks.com.

48. Claire Apthorp, "Sizing Up the US Navy's Future Guided Missile Frigate Designs," Naval Technology, 25 April 2018, https://www.naval-technology.com.

49. US Army Futures Command, "Mission and Principles/Additional Information," accessed May 2019, https://www.army.mil.

50. Kaitlin Kelly, "MCSC Teams with Marines to Build World's First Continuous 3D-Printed Concrete Barracks," Marines Corps News, 24 August 2018, https://www.marines.mil.

51. Dorothy Leonard-Barton and William A. Kraus, "Implementing New Technology," *Harvard Business Review,* November 1985, https://hbr.org.

52. T. X. Hammes, "Cheap Technology Will Challenge U.S. Tactical Dominance," *Joint Force Quarterly* 81 (2nd quarter 2016): 83–84, https://ndupress.ndu.edu/JFQ.

53. Clay Blair, *Silent Victory: The US Submarine War against Japan* (Annapolis, MD: Naval Institute Press, 2001), 1.

Maj T. J. May, USAF

The author currently serves as a staff officer for Air Force Global Strike Command. He is a graduate of the USAF Weapons School and holds a master of arts degree in international relations and conflict resolution. This article stems from independent research conducted during his time as an Air Force Fellow with the US Department of Energy.

The INF Treaty: A Spectacular, Inflexible, Time-Bound Success

Justin V. Anderson and Amy J. Nelson

Abstract

The Intermediate-Range Nuclear Forces (INF) Treaty between the United States and the Soviet Union was a triumph of US and NATO nuclear deterrence and diplomatic strategies, bringing Moscow to the negotiating table and leading both superpowers to agree to completely and verifiably dismantle two classes (shorter-range [500–1,000 km] and intermediate range [1,000–5,500 km]) of nuclear-capable, ground-launched cruise and ballistic missiles. Three decades later, the treaty is in peril, with the United States announcing in February 2019 its intent to withdraw if the Russian Federation does not dismantle its treaty-violating SSC-8 missile. While Russia's decision to violate the treaty catalyzed the present crisis, the context within which the treaty was negotiated has significantly changed since the late 1980s. The article discusses how these changes—the growth in shorter-range and intermediate-range (IRBM) missile arsenals in third states, the breakdown in the Cold War consensus on arms control, and the changing dynamics of US-NATO extended deterrence and assurance—led first Moscow and then Washington to reevaluate the merit of the INF Treaty. It concludes that the treaty's relative rigidity may play a key role in its undoing and suggests that future arms control negotiations develop more flexible and resilient mechanisms of review, dispute resolution, and verification.

*****

The Intermediate-Range Nuclear Forces (INF) Treaty between the United States and the Soviet Union, entered into force in 1988, was the product of a set of circumstances unique to the era of Cold War superpower confrontation. As circumstances changed in the years after the collapse of the Soviet Union in late 1991, the Russian Federation, successor to the accord, increasingly chafed at the treaty's blanket, global

prohibition on shorter-range (500–1,000 km) and intermediate-range (1,000–5,500 km) ground-launched ballistic and cruise missiles.[1] In 2007 Moscow sought, with the United States' blessing, to convince other states to either consider joining the accord or unilaterally implement its dismantlement provisions.[2] When this attempt at diplomacy failed, the Kremlin decided to covertly violate the treaty by developing and testing the SSC-8 (Russian designation 9M729), a dual-capable, ground-launched intermediate-range cruise missile.[3]

The United States' detection of this missile, and subsequent decision in 2014 to publicly charge Russia with failing to comply with the treaty, led to a slow-motion crisis characterized by Russia's categorical refusal to admit to any wrongdoing (and persistent efforts to claim that the United States was cheating on the accord). On 2 February 2019, US Secretary of State Mike Pompeo announced that the United States was suspending its obligations under the treaty and would exercise its right to withdraw in six months unless the Russian Federation dismantles its illegal missiles (several battalions of which are now deployed) and returns to full compliance with the treaty.[4] As this appears unlikely, the treaty may terminate as of early August 2019.

What led to the demise of this groundbreaking treaty, which was the first agreement to allow US and Russian personnel to conduct on-site inspections of each other's bases housing nuclear-capable delivery systems (among other locations), and which ultimately resulted in the verifiable dismantlement of hundreds of these platforms?[5] The treaty reflected the statecraft and strategic calculus of two rival superpowers that were simultaneously committed to geopolitical competition and avoiding a nuclear conflagration. It focused on banning two specific classes of missiles that were high-end capabilities in the 1980s, posing an assurance crisis for one superpower and a deterrence crisis for the other. Its negotiation and terms were powerfully shaped by the specific circumstances and context of the late Cold War era.

Consequently, the INF Treaty proved both wildly successful in its time yet wholly inflexible to the sweeping changes that reshaped extended deterrence and assurance dynamics. It became out of sync with American and Russian views on strategic stability and arms control and the role of shorter-range and intermediate-range ballistic missiles (IRBM) on the global stage in the decades after the end of the Cold War. This article first assesses how these changes strained (and will likely break) the INF Treaty. It then discusses how future nuclear arms control agreements can be designed to better adapt to changing circumstances. The INF Treaty's suc-

cessful negotiation, effective implementation, slow erosion, and ultimate collapse provide important insights into the current parlous state of nuclear arms control and future negotiations aimed at reducing nuclear risk.

A Soviet Missile and NATO Assurance Crisis

The INF Treaty resolved the "Euromissile" crisis that roiled the NATO alliance from 1979 to the treaty's signature in 1987. While the origins of the crisis were complex, its proximate cause was the Soviet Union's development and deployment in the late 1970s of the SS-20 Pioneer, an intermediate-range, solid-fueled ballistic missile launched from a mobile transporter-erector-launcher (TEL). From locations in western Russia, the SS-20 could range virtually all of the European member states of NATO. But the SS-20 was not a new or novel threat; the Soviet Union had possessed the capability to strike European member states with nuclear weapons, to include intermediate-range missiles, for decades. Why did the SS-20 spark a crisis for the alliance?

The new delivery system raised concerns not because the alliance was unfamiliar with Soviet nuclear threats but because it was significantly more capable than the SS-4 and SS-5 intermediate-range missiles it replaced. The latter two types, initially deployed in the early 1960s, could carry a single warhead and required their liquid fuel be loaded shortly before launch. Many were also silo-based rather than launched from TELs.[6] The SS-20 was mobile, used solid fuel, could carry up to three warheads, and was more accurate than its predecessors. As a result, it represented a missile that was faster, more lethal, and harder to track than SS-4s and SS-5s.[7]

The challenge the SS-20 posed to the alliance, however, went beyond the fact that the missile was a significant upgrade over the Soviet Union's older intermediate-range systems. Its deployment in the late 1970s came at a time when NATO European leaders were becoming more anxious about the strength of the US commitment to their defense. It created a crisis of confidence in the credibility of the United States' commitment to defend NATO in all circumstances, up to and including a major nuclear conflict with the Soviet Union. Concerns about the United States' willingness to defend the alliance were not new, but they became acute with the deployment of the SS-20. Paradoxically, some of these concerns sprang from the limited progress of US-Russian strategic nuclear arms control talks.[8] Lengthy and laborious Strategic Arms Limitation Talks (SALT) between the United States and Soviet Union had led each side to sign two ground-breaking agreements in 1972: the SALT Interim Agreement and

the Anti-Ballistic Missile (ABM) Treaty. Further talks led the United States and Soviet Union to negotiate and on 18 June 1979 sign SALT II, an agreement that placed numerical ceilings on each side's strategic delivery systems and multiple independently-targetable reentry vehicles (MIRV).[9]

SALT II would never be ratified by the United States Senate, but the limited progress made by the two superpowers in the 1970s on arms control for strategic offensive and defensive systems posed a dilemma to NATO European leaders. They became increasingly concerned that US policy makers might be prepared to overlook, neglect, or barter away the alliance's security if doing so reduced the nuclear threat the Soviet Union posed to the US homeland. If the two superpowers could agree to balance their most powerful nuclear forces, would the United States consider abandoning its European allies in a crisis or conflict if it now believed that it enjoyed a stable nuclear deterrence relationship with Moscow? SALT, ABM, and SALT II did not initiate the latter concern. Members of the alliance worried throughout the Cold War about "decoupling" and whether in a future conflict the United States would consider accepting a Soviet land grab on the continent rather than mounting a vigorous defense in mainland Europe against the invaders. Choosing the latter could result in the conflict escalating up to Soviet missiles being launched against the US homeland (a dilemma often framed in the form of some variant on the question "why would the United States risk New York for Bonn or Paris?"). The seeming thaw in superpower relations represented by strategic arms control talks heightened NATO European leaders' fear that their own interests might be sacrificed in the interest of superpower realpolitik.[10]

These factors—the not new but heightened threat posed by the SS-20 and a tangled set of anxieties associated with the specific dynamics of superpower competition and détente during the 1970s—led European NATO leaders to press the United States for greater reassurance regarding its extended deterrence commitments to the alliance. With an eye toward the rough equality the superpowers were negotiating on numbers of strategic nuclear forces, they rallied behind West German chancellor Helmut Schmidt's 1977 call for the alliance to also realize parity with regard to the military balance in Europe.[11] Given the Soviet Bloc's numerical advantage in conventional forces and its ongoing overhaul of its theater nuclear capabilities, Germany and other key members of the alliance argued that this parity could best be achieved by new US dual-capable intermediate-range missiles stationed in Europe.[12] The allies expressly lobbied for new US delivery vehicles that could range the Soviet Union from NATO bases in the United Kingdom and Western Europe, rejecting a US proposal to

field new short-range nuclear delivery systems that would replace aging platforms of this type already deployed on the continent.[13] They believed that it was essential to hold Soviet, rather than just Warsaw Pact, targets at risk.[14] In the view of the NATO allies, these US systems ensured that both superpowers were fully invested in (and vulnerable to) the potential risks and costs of escalation and brinkmanship within the European theater.

At the same time, these leaders also recognized that their publics were deeply concerned about the risk of nuclear war and the probability that such a conflict would devastate Europe. (Indeed, in the years to come, these concerns would give rise to disarmament movements that would shake a number of their governments.) They pressed the United States to both bolster NATO's theater nuclear deterrence capabilities and commit to pursue arms control negotiations with the Soviet Union aimed at limiting theater nuclear forces.[15] The United States agreed to this "dual-track" deterrence and diplomacy strategy, and on 12 December 1979 a special meeting of NATO's foreign and defense ministers confirmed the alliance's commitment to "pursue these two parallel and complementary approaches to avert an arms race in Europe caused by the Soviet TNF [theater nuclear forces] build-up, yet preserve the viability of NATO's strategy of deterrence and defense and thus maintain the security of its member States."[16]

To meet the requirements of the first track, the United States agreed to deploy IRBMs—Pershing II mobile intermediate-range ballistic missiles and BGM-109 Tomahawk intermediate-range ground-launched cruise missiles (GLCM)—in Europe to directly counter the Soviet SS-20s. To demonstrate alliance solidarity, numerous NATO European states agreed to host these US intermediate-range missiles, to include West Germany, the United Kingdom, Italy, Belgium, and the Netherlands.

As a result, the US decision to develop and deploy intermediate-range platforms was a direct response to NATO European allies' requests for assurance rather than an effort to fill some type of gap within the United States' nuclear deterrence strategy, posture, or force structure. Indeed, in the late 1970s and early 1980s US commanders in Europe were generally satisfied that the existing nuclear forces at their disposal (which included thousands of short-range and air-delivered weapons, supplemented by 400 Poseidon submarine-launched ballistic missiles [SLBM] designated for European contingencies) were sufficient for the purposes of theater nuclear deterrence.[17] Importantly, even as the United States was preparing to deploy new intermediate-range missiles to bases in Europe, no serious consideration was made of stationing these platforms elsewhere in the world to deter the Soviet Union or its proxies. For the United States, Soviet

intermediate-range nuclear missiles were a serious concern due to the threat they posed to its European NATO allies and to the large numbers of US forces stationed in Europe. But they did not significantly affect the tentative balance of nuclear deterrence between two superpowers that possessed many other means to hold each other at risk.

In addition to bolstering the theater nuclear-deterrent capabilities of the alliance, the US Pershings and ground-launched Tomahawks also strengthened the hands of US negotiators at the arms control talks that represented the second part of the dual-track approach. The alliance was determined to demonstrate to the Soviet Union that there was no way it could "win" a competition in intermediate-range missiles and that the best solution, amenable to both sides, was to agree to negotiate an arms control treaty stabilizing and limiting this threat (initially, the idea of a total ban seemed far-fetched and was not placed on the table). NATO's commitment to arms control negotiations on intermediate-range systems was also considered important for domestic political reasons, with large domestic antinuclear protests placing pressure on several European governments.[18]

Thus, the origins and contours of the INF negotiations were inextricable from how the dynamics of 1970s and 1980s superpower competition and détente affected the security perceptions and assurance requirement of NATO's European leaders and their publics. The dual-track approach was a tightrope balancing act for the alliance but ultimately proved successful. It was driven by NATO European leaders such as Schmidt who requested a specific type of weapon and were willing to host it, even in the face of significant domestic opposition (indeed, it would cost Schmidt his job as chancellor in 1982).[19] For the United States, the missiles met an alliance assurance, rather than a US military, requirement. A US Department of Defense official involved in the alliance's deliberations during this time later noted that a military rationale for the missiles was never seriously discussed. He remarked, "In all the discussions with the [NATO High Level Group] and in Washington, I never heard any mention of what any of these missiles might be targeted against, other than Soviet territory. *Having* them was all that was important for deterrence. In the end, the United States spent $10 billion of its own money for these 572 missiles, deployed them for only three years, and then dismantled them" (emphasis in original).[20]

The value of the intermediate-range ballistic and cruise missiles to the alliance was not in their military utility but in their ability to demonstrate the alliance's transatlantic unity in the face of Soviet coercion. For the United States, the missiles assured its skittish NATO European allies

while also strengthening the hand of its negotiators, who could present the Soviet Union with the dilemma of having to accept a higher degree of vulnerability as the price paid by rejecting offers to limit (and later, fully eliminate) these types of missiles. It proved to be a logical, balanced, and ultimately highly successful approach to a difficult assurance challenge, and the completion and ratification of the treaty in 1987–88 was universally cheered by members of the alliance.[21]

Shorter- and Intermediate-Range Missiles in the late Cold War

At the time of the 1 June 1988 entry into force of the INF Treaty, the United States and Soviet Union fielded the world's most capable ballistic and cruise missiles. The Soviet Union also represented the most important supplier of missiles to other states; in particular, the Soviet Scud-B 300 km short-range ballistic missile (SRBM) and its variants were the most common missiles in third-country missile fleets.[22] The US and Soviet shorter-range and intermediate-range missile fleets dismantled under the treaty were at the top of two very small classes of delivery systems.

In the late 1980s and early 1990s, unclassified US government and nongovernment analyses concluded that only eight states were capable of producing missiles with ranges greater than 300 km either indigenously or with limited foreign assistance.[23] Moreover, of these eight, North Korea and India had not yet deployed IRBMs; India first successfully tested its Agni missile (which would eventually become a family of SRBMs and IRBMs) in 1989, and North Korea's tests of its Hwasong-6/Scud-C shorter-range ballistic missile and Nodong-1 IRBM did not occur until 1990 or later.[24] Other countries pursuing mostly indigenous shorter- or intermediate-range missile programs in the 1980s, such as Argentina and Brazil, faced both internal challenges and external pressure that ultimately led both states in the 1990s to abandon their efforts to build these types of systems.[25] This in turn may have derailed or short-circuited other states' ambitions to acquire or develop delivery systems beyond short-range missiles (for example, Argentina's Condor-II IRBM was linked with Egypt's and Iraq's interest in improving the capabilities of their missile fleets).[26] In 1987 Saudi Arabia purchased the CSS-2 (also known as DF-3) IRBM from China but was likely only able to operate the missiles with considerable Chinese assistance.[27] It did not attempt to reverse-engineer the missile, and as of the mid-2000s its operational status may still have relied on Chinese help.[28]

Concerns about missile proliferation led the United States and several of its closest and most technologically adept allies (the then "G-7" states)

to form the Missile Technology Control Regime (MTCR) in April 1987, a few months prior to the December signing of the INF Treaty.[29] Members of the regime, which would grow steadily over time, agreed not to sell or otherwise transfer key components, technologies, or completed systems of missiles that could carry a 500 kg warhead 300 km.[30] With nuclear and WMD warheads generally understood to be heavier than 500 kg (~1,000 kg was often used as a default estimate for the weight of a nuclear warhead) and 0–300 km representing the range of a short-range missile, the regime was intended to limit the international market for, and potential proliferation of, missiles to short-range delivery systems carrying conventional warheads. The MTCR's restrictions posed major (if not insurmountable) hurdles to actors outside of the regime's participating states that wished to develop more capable, longer-range missiles and likely complicated and delayed the development of several intermediate-range missile programs.

By mid-1991, when the United States and Soviet Union completed the INF Treaty's mandated dismantlement of their shorter-range and intermediate-range missile arsenals, effective, accurate missiles of these types largely remained the preserve of the two superpowers and a handful of close US allies. While missile proliferation and development were key US security concerns (as evidenced by the United States and its G-7 allies forming the MTCR and then lobbying other technologically advanced states to join), Washington hoped that a combination of the regime, the INF Treaty (which had additionally stipulated the United States and Soviet Union could not transfer any shorter-range or intermediate-range missiles prior to their destruction), and diplomatic pressure could effectively curtail the ambitions of other states seeking to develop and deploy longer-range missiles. Furthermore, at the time of the negotiation of the INF Treaty the United States' operating assumption was that the superpower rivalry, while undergoing a welcome period of cooling, would endure. Within this construct, the Soviet Union and its bloc allies would remain the primary military threat to the United States and its allies for the foreseeable future; by extension, the INF treaty's global elimination of two classes of Soviet missile systems removed the greatest near- to medium-term shorter-range and intermediate-range missile threats.

Moreover, the Soviet Union appears to have reached a similar conclusion with regard to its own security interests. The Kremlin viewed the US Pershing IIs and Tomahawk BGM-109s as particularly dangerous US capabilities that could potentially launch a sudden, devastating surprise attack on its command and control (to include perhaps decapitating its leadership).[31] The INF Treaty's elimination of these missiles thus also directly

addressed a major concern of the Soviet Union regarding the threat posed by these types of delivery systems. Soviet political and military leaders may also have viewed resources spent on ground-based intermediate-range nuclear forces as better used for improving other types of conventional weapons, giving Moscow another reason to eventually agree to the "zero" option that eliminated all of these systems on both sides.[32]

At a 6 May 1991 ceremony marking the last elimination of US systems covered by the treaty, Maj Gen Robert W. Parker, USAF, director of the US On-Site Inspection Agency, emphasized the importance of the two sides successfully implementing the accord: "Please remember that what we are witnessing is not just the passing of this noble weapon system, but also an important milestone in an historic agreement between the two most powerful nations on earth."[33] Both sides hoped the total elimination of their respective ground-launched shorter-range and intermediate-range missile fleets had, for the foreseeable future, removed the threat posed to each party by these types of delivery systems.

Nuclear Arms Control and Strategic Stability in the 1970s and 1980s

The SALT Interim Agreement and ABM Treaty established key principles and parameters for the formation of a stable nuclear deterrence balance between the two Cold War superpowers. These principles were codified by these agreements and the Strategic Arms Reduction Treaty (START) signed on 31 July 1991, just 11 weeks after the ceremony marking full US implementation of the INF Treaty. The logic of strategic arms control framed and informed negotiations of the INF Treaty but also kept the latter, and the missiles it dismantled, separate from the concepts and calculus of superpower "strategic stability." The erosion of both this logic and a shared understanding between Washington and Moscow of this form of stability would spell trouble for the treaty three decades later.

The key principles of strategic nuclear arms control and strategic stability were initially developed by scholars such as Thomas Schelling and Henry Kissinger and then refined over the course of tough negotiations between the United States and Soviet Union that began in earnest in the late 1960s. Before these talks could commence, however, the two sides had to reach some tacit agreements on the basic parameters of these negotiations. The first and most important agreement was that, despite their bitter rivalry, arms control talks were necessary and beneficial to both sides. In an era of scientific and technological breakthroughs such as the intercontinental ballistic missile (ICBM) and the atomic (and then hydrogen) bomb, both

superpowers, despite their animosity, had a common interest in avoiding a mutually devastating nuclear war. This recognition informed efforts to negotiate accords such as the "Hot Line" agreement after the Cuban missile crisis, instituting basic confidence-building measures that created a foundation for future arms control talks. A second—and closely related—agreement was that there were high risks and costs to both sides of continued, unfettered nuclear arms racing, and thus each party had an interest in reaching an agreement to slow or otherwise limit their arms competition.

These tacit agreements brought the superpowers to the table for nuclear negotiations in the late 1960s, but the two sides still needed to determine how they could achieve some form of stable balance between their growing and diversifying nuclear arsenals. Both sides rejected the prospect of total nuclear disarmament; each believed it needed to field a nuclear force to deter the other. Each superpower recognized that it had sufficient nuclear forces to destroy the other several times over, however, and by the late 1960s was prepared to discuss the possibility of placing a ceiling on its deployed nuclear forces. At the same time, both sides also feared the possibility that the other might prepare for, and seriously contemplate, launching a sudden, surprise attack—a massive nuclear first strike—in an effort to knock out and defeat their opponent, potentially within the first hour of conflict. In short, both sides needed to deter the other, but in numbers, structure, and posture their forces could neither invite nor precipitate a nuclear attack. What both superpowers sought was "strategic stability"—a stable, balanced form of mutual deterrence between their respective nuclear forces that could control the burgeoning arms race while also sharply reducing the likelihood of either side viewing any benefit to engaging in nuclear brinkmanship or considering launching a nuclear attack. This stability had two components: "arms race stability," whereby both sides could agree to slow, limit, or halt their nuclear arms competition, and "first strike stability," whereby both sides believed the other had no incentive to attack first and each possessed a nuclear force capable of delivering a devastating riposte (a second strike) in response to any nuclear attack.

This understanding of the potential benefits of mutual nuclear deterrence provided a lodestar for superpower arms control negotiations. But each side fielded large, diverse nuclear forces spread across multiple platforms and locations. How could they limit and scope negotiations? The answers informed the first nuclear arms control agreements reached by the two superpowers—the SALT I Interim Agreement and the ABM

Treaty—and set the standards for subsequent strategic nuclear arms control talks and treaties.

With regard to their respective arsenals, the two sides agreed that their "strategic" nuclear delivery systems represented the armaments most central to any assessments or comparisons of the relative strength or weight of their respective nuclear arsenals. Delivery systems were considered strategic if their range allowed them to initiate a nuclear attack from a location far distant from their target (in time, this was fixed as 5,500+ km). This designation was applied to each side's ICBMs, SLBMs, and long-range bombers. These three types of platforms came to be known as the triad; due to their speed (ballistic missiles could hit the opponent's homeland in 30 minutes) and power (by the 1970s, for example, ICBMs and SLBMs could carry multiple warheads, while long-range bombers could carry multiple bombs and, later, multiple air-launched cruise missiles) they were viewed as the delivery vehicles posing the greatest threat to each side. These delivery systems thus became the focus of efforts to realize a strategic nuclear balance between the superpowers.

This agreement was not easily reached, as the Soviet Union initially sought to also capture US nuclear delivery systems based in Europe. But US negotiators argued forcefully, and ultimately successfully, that these systems—including nuclear artillery, short-range missiles, and fighter-bombers—were not a threat to the Soviet homeland (which most of them could not range). As a result, all "nonstrategic" delivery systems, to include shorter-range and intermediate-range missiles, were separated from the strategic nuclear arms control talks between the superpowers. Inasmuch as both sides recognized their criticality in theaters such as Europe, these delivery systems were set aside as less relevant to fears of nuclear Armageddon and less strategically valuable then their larger, faster, and more powerful strategic cousins.

Attempting to negotiate a cap on strategic nuclear delivery vehicles, however, was not possible without both sides also agreeing to limit antiballistic missile systems that could, in theory, provide a shield against incoming ballistic missiles. Neither side could agree to limit its offensive strategic nuclear forces if it feared that its rival possessed the defensive means to destroy these delivery vehicles before reaching their targets. This capability would not only wreak havoc with any attempt to balance numbers of deployed delivery systems, it could also give rise to fears that one side might initiate a first strike in the belief that the other's remaining forces would be soaked up by a layer of strategic defenses in the form of antiballistic missiles. In the absence of any limits on strategic defenses,

however, each side had a strong incentive to pursue them; the United States began designing its Safeguard antiballistic missile system in 1968, and the Soviet Union began deploying antiballistic missile systems around Moscow in the late 1960s.[34]

Limits to strategic defenses were thus directly intertwined with efforts to place a ceiling on strategic nuclear delivery systems, and the ABM Treaty and SALT I Interim Agreement were negotiated in parallel and signed at the same time. The former placed a limit on each side's antiballistic missile systems (initially 200, later changed to 100 at one base), and the latter placed temporary limits on the numbers and construction of ICBMs and SLBMs, with each side pledging to continue negotiating to reach a more permanent arrangement on offensive systems.[35]

While Cold War strategic arms control negotiations were far from simple or straightforward, they contained a shared understanding of common goals including strategic stability, a mutual view of key principles governing nuclear deterrence and balancing (such as the central importance of limiting strategic defenses), and an agreement on what to include—and what to leave out—of strategic arms control talks. This commonality helped establish a framework for negotiations and a template for treaties that would endure into the post–Cold War era with the 1994 START agreement. It would also ensure that other nuclear-delivery systems, to include those later subject to the negotiation and promulgation of the INF Treaty, were treated as separate from the logic and calculus of Cold War strategic stability.

The End of an Era

Three years after its entry into force, the treaty had fully realized its primary zero-zero objective and had completely dismantled all US and Soviet shorter-range and intermediate-range missiles. A few months later the Soviet Union would collapse. The United States considered the now-independent Soviet republics to be successor states of the treaty. Several did not have any obligations under the accord, but six (Russian Federation, Belarus, Kazakstan, Turkmenistan, Ukraine, and Uzbekistan) had at least one site subject to inspection. The United States viewed four as active participants in the treaty, inasmuch as the United States and Russian Federation were recognized as the primary players.[36] On-site inspections continued until May 2001 when, per the terms of the treaty (which mandated inspections for 13 years after its entry into force), they came to an end.[37]

The treaty then entered into a caretaker phase. The United States and Russian Federation continued to exchange a handful of required notifica-

tions each year through their respective Nuclear Risk Reduction Centers, the central communication nodes for exchanging information on the INF Treaty and other agreements. While the Special Verification Commission (SVC), the bilateral forum expressly established by the treaty to resolve any disagreements over its implementation, remained on the books, its meetings became less frequent as for several years after the closeout of inspections there were no treaty-related disputes or issues to resolve.[38] In the early 2000s, the treaty represented an unqualified success.

A few years later, however, the United States began to suspect Russia was violating the treaty. In 2013 it confronted Russia on its testing of the SSC-8, in 2014 it informed its allies of the violation, and in early 2019 it announced its readiness to withdraw if Russia continued to violate the treaty.[39] Russia responded with a lengthy list of spurious allegations that it was the United States that was the violator, not Russia.[40] A treaty forged in the crucible of the Cold War superpower confrontation in Europe proved too inflexible for the complex tensions and torsions of the twenty-first century's dynamic geopolitical environment.

In retrospect, the INF Treaty successfully addressed multiple interdependent variables; when these variables changed, it became unbalanced in the views of its two major parties. Many of the factors critical to bringing Washington and Moscow to the negotiating table in the 1980s had changed, and the perspective and value associated with the accord in both capitals also differed.

Post–Cold War Shorter-Range and Intermediate-Range Missiles

In the post–Cold War era, shorter-range and intermediate-range ballistic and cruise missiles have increased in quantity, quality, and strategic value. These increases were not linear and did not involve a large number of states. But the states that pursued these capabilities included major and regional powers, creating issues and challenges for both the Russian Federation and United States that were unanticipated during the 1980s INF negotiations.

The National Air Intelligence Center's (NAIC) *Ballistic and Cruise Missile Threat* and Congressional Research Service's *Missile Survey* have chronicled these developments during the post–Cold War era. The 1999 NAIC report, for example, lists five countries (China, India, Pakistan, North Korea, and Iran) as pursuing IRBMs but found that only China had produced missiles of this type that were operationally deployed.[41] By 2000, the report listed one additional IRBM (North Korea's Nodong) as deployed; three years later, the Nodong was joined by Pakistan's Ghauri

and Iran's Shahab-3 IRBMs, but overall numbers of deployed systems remained relatively limited.[42] The 2003 report also listed five states with shorter-range missile programs: China, North Korea, India, Egypt, and Iraq.[43]

The 2005 CRS *Missile Survey,* which covers all states regardless of their relationship with the United States, listed one Slovakian shorter-range ballistic missile (without noting its status), one Chinese shorter-range ballistic missile as deployed, and two Egyptian shorter-range ballistic missiles of uncertain status. It also found, however, that seven countries now either deployed IRBMs or had programs under development (listing three Chinese IRBMs as deployed, four Indian IRBMs in development, three Iranian IRBMs in development, one Israeli IRBM as deployed and one in development, one North Korean IRBM as deployed and three in development, four Pakistani IRBMs as in development, and one Saudi IRBM system [from China, as noted above] that was "possibly not operational").[44]

Moscow watched this slow but steady growth of shorter-range and intermediate-range missiles in a number of Eurasian states with growing concern. If sometimes halting in their progress, the overall advancement of these missile programs led the Kremlin to question whether the INF Treaty was still in Russia's best interest. In 2005 Russian foreign minister Sergei Ivanov spoke with US officials about possibly leaving the accord.[45] He would later publicly refer to the treaty as a "relic of the Cold War."[46] At the 2007 Munich Security Conference, Russian Federation president Vladimir Putin stated, "Today many other countries have [shorter-range and intermediate-range ground-launched] missiles, including the Democratic People's Republic of Korea, the Republic of Korea, India, Iran, Pakistan and Israel. Many countries are working on these systems and plan to incorporate them as part of their weapons arsenals. And only the United States and Russia bear the responsibility to not create such weapons systems. It is obvious that in these conditions we must think about ensuring our own security."[47]

Speaking at the same conference, Ivanov predicted that the treaty "will not last forever."[48] Russia asked the United States if it would be open to jointly abrogating the treaty; the United States was not prepared to retire the pact, but both states agreed they would float the idea of having other countries join. In October 2007, the United States and Russia issued a joint statement at the United Nations marking the INF Treaty's 20th anniversary and appealed to other countries to "discuss the possibility of imparting a global character to this important regime."[49] The appeal proved unsuccessful. China and other states fielding or developing shorter-range or intermediate-range missiles were uninterested in, or flatly opposed

to, dismantling systems considered important to their security (to include for the purposes of deterring major powers such as Russia and the United States).

The uneven growth but persistent pursuit of IRBM and other missile capabilities by many of these actors continued over the next decade. By 2017, six states fielded shorter-range ballistic missiles and six states fielded IRBMs. Several of these states had robust, mature programs, to include the following:

- China fields six types of shorter-range ballistic missiles and four IRBMs, such as the road-mobile, dual-capable antiship DF-26 IRBM. First unveiled in 2015, the missile was described by China's official media (quoting unnamed Chinese military officers) as an "aircraft carrier killer."[50]
- In addition to Iran possessing "the largest inventory of ballistic missiles in the Middle East" per reporting by the United States Intelligence Community (including two shorter-range ballistic missiles and three IRBMs at various stages of development and deployment), Maj Gen Ali Jafari of the Iranian Revolutionary Guard Corps stated in October 2017 that Iran fields missiles reaching "2,000 kilometers and that can be increased, but we believe this range is enough for the Islamic Republic as most of the U.S. forces and most of their interests in the region are within this range."[51]
- North Korea has one shorter-range ballistic missile (the 500 km Scud-C) and five IRBMs at various stages of development or deployment, having conducted its first flight tests of the Bukkeukseong-2 and Hwasong-12 IRBMs in 2017, and has boasted that these missiles allow it to strike US bases across the Asia-Pacific.[52]

These developments pose a number of challenges to the United States and its allies. First, the MTCR and other US-led efforts to counter missile proliferation may have succeeded in limiting the numbers of actors that develop, sell, and field shorter-range and intermediate-range missiles, but it did not prevent a number of states from building (and subsequently improving) these types of missile fleets. Indeed, rogue actors such as North Korea and Iran have proven willing to take significant risks, and incur substantial costs, to pursue these types of delivery systems. Lacking the resources to develop expensive strike platforms such as fifth-generation aircraft, these states turned to these types of ballistic and cruise missiles

as an alternative to give them the ability to launch attacks against more sophisticated opponents.[53]

Second, while US missile defenses continue to improve, the substantial cost difference between theater-range offensive missiles (to include in the form of shorter-range and intermediate-range missiles) and the defensive missiles that can intercept them continues to strongly favor the attacker. In the near- to medium-term, the United States and its allies will field defensive systems such as the PAC-3 and THAAD against these types of missiles, but offenses will continue to retain a numerical advantage. Passive defenses (such as hardening potential targets) can also play an important role in defending against missile strikes, but they cannot fully address potential vulnerabilities, particularly against adversaries that can build and field large numbers of missiles. As such, there are not defensive means to negate all the shorter-range and intermediate-range missiles within the arsenals of states such as Iran and North Korea, so these missiles will likely remain an appealing strike option for both.[54]

Third, beyond the rogue states, shorter-range and intermediate-range missiles are also an important part of China's and Russia's armed forces (to include the latter's INF-violating SSC-8). Both states have closely analyzed the US way of warfare with an eye toward finding ways to counter and defeat it. They recognize that in recent contingencies and conflicts the United States has fully leveraged advantages—such as the ability to rapidly achieve air dominance and flow forces into the theater at little to no risk to US bases and platforms—to dismantle and defeat enemy armed forces. Shorter-range and intermediate-range missiles, particularly when dual capable and carried by mobile TELs, however, can place US bases and forces in-theater at risk of attack from the outset of a potential conflict. This threat complicates the ability of the United States to generate ISR and strike sorties, move reinforcements, and otherwise operate key high-value platforms (such as aircraft carriers) to quickly and decisively respond to provocation or aggression against itself or its allies.[55] As such, missiles such as China's DF-26 and Russia's SSC-8 represent important capabilities within both states' broader antiaccess/area denial (A2/AD) strategies.[56]

These developments have also led the Trump administration to reconsider the potential merits of systems banned by the INF Treaty. If US air and naval platforms for cruise missiles face increasing risk in future operating environments, ground-based systems may provide a valuable option to both offset adversary systems of this type and hold adversary A2/AD assets (and the forces and infrastructure they are designed to protect) at risk.

As such, should the United States withdraw from the treaty in August 2019, it is prepared to move forward with research and development on conventional intermediate-range ground-launched systems.[57]

In sum, shorter-range and intermediate-range missiles, which did not pose a threat to either Washington of Moscow in 1991, increasingly became a challenge to both states, leading them to again view ground-launched intermediate-range systems as an important strike system (Russia) and potential future strike option (United States).

Extended Deterrence and Allied Assurance, Post–Cold War

NATO's European leaders had greeted the arrival of the SS-20 in the 1970s with alarm. As described above, the missile, and extended deterrence questions it raised, led them to seek renewed and revitalized demonstrations of assurance in the form of US intermediate-range missiles. They were the chief advocates for the US Pershing IIs and ground-launched Tomahawks and pressed for the alliance's dual-track approach.

By contrast, when the United States informed NATO in January 2014 that Russia was in violation of the INF Treaty due to tests of the SSC-8/9M279, the news was met with expressions of concern but not consternation by its European allies.[58] In general, the European members of the alliance viewed the Russian violation as an arms control compliance problem rather than a security threat, and hoped that US diplomacy would persuade Moscow to fully abide by the treaty. The appearance of the missile did not catalyze an alliance-wide assurance crisis. By early 2019, however, the Trump administration concluded that Russia's continuing violation of the treaty and deployment of multiple SSC-8 battalions, combined with the United States remaining bound by the treaty, was untenable for the purposes of US national security and the requirements of extended deterrence.

Why did the United States and its European allies react differently to the SSC-8 than to the SS-20? The United States had not viewed the SS-20 as a major threat to its extended deterrence posture in Europe. The dual-capable SSC-8, however—when combined with other Russian theater nuclear assets, conventional forces, and A2/AD capabilities—became viewed as a potential threat to US efforts to deter Russian plans and strategies of coercion and aggression in Europe.

The SSC-8 joins several other types of currently operational, dual-capable Russian platforms that can launch nuclear attacks in-theater. By comparison, while NATO has three members that field nuclear forces, for the purposes of theater nuclear deterrence the alliance relies on one type

of platform (fighter-bomber aircraft, often termed "dual-capable" aircraft [DCA]) that in a notional future nuclear crisis could be armed with only one type of weapon (US B61 gravity bombs, potentially carried by US and other allied DCA). Unclassified estimates suggest a significant disparity between the arsenals of US and Russian nonstrategic nuclear weapons. A January 2019 Congressional Research Service report estimates that the United States has 500 of these weapons (with perhaps 200 in Europe) while Russia possesses 1,000 to 6,000.[59] With the SSC-8 potentially further bolstering Russia's theater nuclear capabilities, the Kremlin may feel emboldened to use its nuclear forces for the purposes of coercion and aggression against NATO.[60] Russia has already issued a number of veiled and overt nuclear threats against NATO partners and allies in recent years, and it may view the SSC-8 as another means to threaten political, economic, and military targets across the territory of NATO's European states.[61] Moreover, should a future NATO-Russian conventional conflict begin to go badly for the Kremlin, the SSC-8 might be employed by Moscow to launch a theater nuclear strike to force a hard stop on NATO operations (and perhaps convince US and European political leaders to come to the negotiating table).[62]

The SSC-8 is also the latest example of Russia's ongoing integration of conventional, dual-capable, and nuclear platforms into a military force designed to challenge NATO within the murky, competitive grey zone between peace and war, and, if necessary, prevail in a limited, regional armed conflict. With Russia developing and upgrading layered defenses against NATO air assets, for example, the Kremlin may believe it can shield future operations along its borders and even into NATO territory from US and NATO aircraft and surface ships. If so, it may conclude that it can launch swift, accurate nuclear or conventional attacks against key NATO forces or bases from platforms such as the SSC-8 deep within its own territory at little risk to these assets. In addition, with the nuclear or conventional status of the SSC-8 likely unknown, Russia may also believe US and NATO commanders will be reticent to act against these platforms out of concerns that attacking them could inadvertently cause a conventional fight to escalate into a nuclear conflict—an ambiguity the Kremlin might be happy to leverage in a future crisis.

Beyond its direct military utility, all of the above considerations underline the challenge the SSC-8 poses for the purposes of extended deterrence. Its deployment provides Russia with an accurate, mobile, dual-capable intermediate-range strike asset that may cause it to reevaluate the cost-benefit assessments of various actions against NATO, from low-level

mischief and malfeasance up to possible theater nuclear strikes in a future conflict. Among other targets, it can range bases and airfields in Europe critical to the potential US response to attacks against its NATO allies. To whatever degree the SSC-8 gives Russia additional confidence that it can continue to violate treaties and undertake actions such as the illegal annexation of Crimea with impunity, it could undermine ongoing US efforts to deter Moscow from seeking to strain, crack, and possibly combat the alliance.

NATO's European members were publicly united in joining the United States in condemning Russia's violation of the INF Treaty and then supporting Washington's stated intent to withdraw in February 2019.[63] Not all members of the alliance, however, had initially agreed with the United States' assessment that the treaty could not be saved. Germany, for example, lobbied the United States in late 2018 to allow additional time for diplomacy (thus pushing back the date of the US announcement).

Even though deployed, the SSC-8 has not triggered an existential assurance crisis for the alliance. Europe in 2019 is not territorially divided between two superpowers and their proxies, with both sides poised to wage mass conventional (and potentially also nuclear) war across Central Europe. Russia is a serious security challenge, particularly in the wake of its illegal seizure of Crimea in 2014, but perspectives across the alliance differ (in most cases, reflecting the specific party's geographic proximity to Russia) on how best to counter Russia. Across the alliance, however, most nations first seek conventional means of reassurance. They have cheered measures such as the European Reassurance Initiative, which has brought additional rotations of US conventional forces to Europe to beef up NATO planning, training, and exercise efforts, with a focus on the alliance's eastern flank.[64] With Russia meddling in the cyberspace domains and domestic elections of NATO states and using exotic radioactive and chemical weapons for assassinations on their sovereign territory, alliance members also seek support and reassurance to counter a broad swathe of Russian actions that are malign but fell short of actual armed conflict.

Unlike in 1979, allies did not press the United States to either develop or deploy its own intermediate-range, ground-launched nuclear-capable platform to counter the SSC-8. Indeed, some countries were wary of having to field a future request from the United States to place these types of systems in Europe, and Germany's foreign minister stated his flat opposition to hosting US nuclear-armed intermediate-range missiles in December 2018.[65] A recognition that US European allies have concerns about the placement of additional nuclear-capable platforms and/or weapons in Europe has already led the United States to conclude that pursuing two

offshore theater nuclear options (a low-yield SLBM warhead and a potential new sea-launched nuclear-armed cruise missile) represents the best means to bolster NATO's theater nuclear forces in response to the SSC-8.[66] Allies broadly support this approach (publicly communicated in the US 2018 *Nuclear Posture Review*) with new US intermediate-range ground missiles developed as non-nuclear, conventional strike options.

In addition, for a number of allies a larger concern than the SSC-8 per se is the broader breakdown of strategic stability and, by extension, the erosion and demise of various arms control and confidence-building measures between the United States and the Russian Federation. Arms control treaties, and particularly the INF, are viewed by a number of NATO allies as important to establishing a relative peace between Washington and Moscow that ensures Europe will not get trampled in any future wrestling match between these two titans.[67] As such, even if the INF Treaty represented a largely inactive and increasingly ineffective treaty, it had critical symbolic importance to many of NATO's European members as an accord that played a key role in banishing, for a time, the specter of major power nuclear brinkmanship and conflict in Europe. In this regard, a significant number of NATO states viewed the INF Treaty as buttressing an important facet of European security and had hoped it could be repaired rather than withdrawn.

The contemporary assurance needs of NATO European states are thus multivariate and complex, are not limited to the Russian nuclear threat, and at present are also playing out against the backdrop of tensions in the alliance over matters such as budget contributions. The SSC-8 is thus one of several headaches facing the alliance. When its existence was revealed by the United States to the rest of NATO in 2014, it was viewed differently than the news of the SS-20's deployment, which in the late 1970s appeared to NATO European leaders as both a fundamental threat to the alliance's theater nuclear deterrence posture and a delivery system that could drive a wedge between its European members and its largest, most capable military power. For the United States, in contrast, the Trump administration's evaluation of the SSC-8, when combined with Russia's other nonstrategic nuclear forces and its integration of nuclear and conventional force for the purposes of challenging NATO, led it to conclude the now-deployed missile posed a serious threat to the US approach to extended deterrence in Europe. Together with Russia's increasingly poor record of compliance with arms control treaties and international law, these factors caused the administration to determine that it could not indefinitely remain in a treaty that constrained the United States but did

nothing to halt Russia from further deployments of a highly capable platform.[68]

Loss of Consensus on Strategic Stability

The shared agreement between the United States and Soviet Union that a stable mutual deterrence relationship could be governed by agreements on offensive and defensive strategic forces—and that by extension, other platforms, including those covered by the INF Treaty, could be treated as an important but separate problem set—eroded in the post–Cold War era.

For the United States, the logic of this approach remained valid so long as both parties continued to field robust, survivable strategic nuclear delivery systems capable of launching a devastating retaliatory counterattack against the other party even after a massive first strike. US strategists observe that the Russian Federation continues to field large numbers of ICBMs, SLBMs, and long-range bombers capable of promptly attacking the US homeland while also devoting significant resources to modernizing these systems and developing new strategic delivery vehicles. As such, for most of the post–Cold War era the United States has stated that it views the status quo of mutual nuclear deterrence, and the strategic stability associated with it, as continuing to apply to the US-Russia relationship for the foreseeable future.[69]

Russia disagrees. Beginning with the US withdrawal from the ABM Treaty, President Putin and his military leadership became increasingly convinced that the United States is determined to take steps to undermine Russia's strategic deterrent as part of broader efforts to give Washington a free hand to interfere within Moscow's sphere of influence, undermine (externally and internally) its ruling regime, and generally relegate it to the sidelines as a second-tier power.[70] Russia's concerns go beyond missile defenses; its strategists paint a dark picture whereby the United States contemplates waging full-spectrum warfare against Russia. This scenario envisions the US using space and cyberspace weapons as well as advanced precision-strike platforms to cripple Russia's command and control, knock out its strike platforms (with a focus on its strategic nuclear forces), and then negate a ragged, disorganized second strike with a globally networked system of national and theater missile defenses. For the Kremlin, this nightmare scenario is not only plausible, it also inherently undermines its ability to deter the United States from a broad range of actions well short of major conflict between the two powers. It fears that if Washington

dismisses Russia's nuclear forces, it will be emboldened to challenge Moscow everywhere (and will not hesitate to intervene anywhere).

Russia thus accuses the United States of walking away from a shared concept of the importance of maintaining an offense-defense balance that was central to the concept of strategic stability and past efforts at negotiating nuclear arms control agreements. It also argues that this abandonment of a core principle of strategic stability, coupled with improvements to US conventional strike systems, has collapsed any useful distinction between the strategic value and deterrence role of intermediate-range and strategic-range systems. If American cruise missiles launched from various platforms can quickly and lethally strike Russian nuclear forces deep within its borders, it contends, these systems are now part of cost-benefit calculations associated with weighing the merits of a first strike.[71] These concerns blend with Russian accusations that NATO theater missile defense sites in Eastern Europe can be converted from firing missile interceptors to launching cruise missiles against Russian nuclear assets.[72]

The United States has countered the above charges with technical evidence and strategic arguments that US conventional strike systems and theater missile defenses are not intended for, and lack the capability to, negate Russia's strategic nuclear deterrent. It has also pushed back against Russia's unsubstantiated claims that the United States has violated the INF Treaty (claims that only emerged after the United States confronted Russia with its violation of the accord).[73] For its part, Russia's failure to comply with, or fully respect, a number of treaties and agreements has led the United States to reexamine its views on strategic stability. If Russia can brazenly violate agreements such as the INF Treaty to realize a military advantage, and leverage this advantage as part of a broader effort to compete with the United States, then "strategic stability" between strategic nuclear forces may be a narrow and outmoded view of what constitutes a stable strategic relationship between Washington and Moscow.

As a result, both the United States and Russia, albeit following different logic, have concluded that the INF Treaty, and the missiles it banned, cannot be viewed as entirely separate and distinct from the architecture and understandings of strategic stability and strategic nuclear arms control. In addition, the tacit and formal agreements on strategic nuclear deterrence that provided a broader framework for negotiating the INF Treaty and other nuclear arms control treaties have eroded, are in dispute, or—in the case of New START—are due to expire.

A Purpose-Built and Inflexible Accord

The strategic context and concepts informing the negotiation of the INF Treaty in the mid- to late 1980s significantly changed over the course of the next three decades. These changes placed the treaty under stress in the post–Cold War era.

On the potential eve of the end of the treaty it is important to recognize that in its negotiation and initial years of implementation, the pact represented a major success for the United States and NATO. The accord combined elements of deterrence and diplomacy to realize a critical US and allied security objective by eliminating Soviet shorter-range and intermediate-range ground-launched missiles. This dual-track approach is a potential template for how to effectively and simultaneously deter and negotiate with a nuclear-armed adversary.

It is also critical to recognize that the INF Treaty is not the only agreement that the Russian Federation has chosen to violate; indeed, the Kremlin has castigated the treaty and other agreements dating from the late Cold War and early post–Cold War period as undercutting Russian security interests. For the current generation of Russian political and military leaders, the accord is emblematic of a time (now past) of comparative weakness and uncertainty regarding their country's place in regional and global affairs. These headwinds were likely to place the treaty in jeopardy regardless of its other merits.

With the INF Treaty in perhaps its terminal phase, however, it is instructive to assess how the architecture and implementation of the treaty itself may have made it vulnerable to outside forces. In turn, this assessment can help inform future efforts to develop treaties and agreements on nuclear arms control.

Treaty Implementation, Violations, and Anomalies

In both architecture and implementation, the INF Treaty has features that render it unique. It was crafted with a distinct goal in mind: it is the only bilateral nuclear arms control treaty that prohibits and eliminates, rather than merely limits, entire categories of nuclear-capable delivery systems.

Architecture

First among the treaty's distinct features is its overall duration provision, stipulating indefinite implementation provided no party withdraws—the treaty itself never expires (Article XV defines it as "of unlimited duration").

The majority of bilateral arms control agreements, by contrast, are commonly negotiated to be of finite duration. Countries show a distinct aversion either to tying their hands or planning for the future when negotiating these types of accords.

Second, while the INF Treaty itself does not expire, its abolition of shorter-range and intermediate-range ground-launched missiles, launchers, and support equipment outlived state party rights to conduct verification inspections. Per the treaty's Protocol on Elimination, ground-based missiles, launchers, and support equipment were all to be eliminated within a three-year period for perpetuity. As noted above, however, the treaty's Protocol on Verification required on-site inspections to end 13 years after the treaty's entry into force. The design of the treaty assumed that confidence would be sufficiently established, and uncertainty adequately diminished, at the time both arsenals of missiles covered by the treaty were eliminated, allowing for the effective retirement of the pact's inspection regime. As such, the treaty was crafted both in its time and for its time, presuming détente (or at least mutual agreement on a stabilizing approach to theater nuclear deterrence) would remain in place for the long term.

Third, the treaty's SVC, intended to "resolve questions relating to compliance" and facilitate other discussions on the "viability and effectiveness" of the treaty, was an ad hoc body that would convene upon request of one of the two participating states to address specific disputes.[74] During the treaty's initial phase of implementation, it met regularly and was considered an effective tool in the resolution of ambiguities and disputes. Its long-term role and mandate, however, was left vague and open to interpretation.

Fourth, the treaty had no provision for a regular review conference, no standing working group meetings for maintaining the integrity of the treaty, and no mechanism for modernization (such as some means for reviewing how evolving technologies might affect the classes of missiles it eliminated and/or change the value of these delivery systems in light of other types of weaponry). When the SVC met regularly, it served some of these purposes by resolving interpretation, implementation, and technical questions. But the lack of reliance on the body or any mechanism to maintain and evolve the treaty proved problematic in light of the changing nature of military technologies and increasing innovation, to include with regard to shorter-range and intermediate-range missiles.

Implementation

The INF Treaty's implementation was also relatively unique. While early implementation was successful and both parties complied in its early

years with the standards and timelines of the treaty's Elimination Protocol, US efforts to address Russia's violation of the treaty proved problematic. Despite having concerns over Russian missile development since the mid-2000s, the United States did not raise these concerns with Russian counterparts until the spring of 2013. It then made Russia's violation a matter of public record in its annual report on arms control and nonproliferation compliance to Congress in 2014.[75] To resolve the dispute over alleged violations, the United States adopted a strategy of continuing diplomatic overtures consisting largely of bilateral consultations with the Russians at various levels for the next two and a half years. The United States only convened the SVC in November of 2016, which ultimately produced little in the way of results or resolution.

Just prior to a second convening of the SVC in November of 2017, the Trump administration presented its plan of action to the Russians when the US ambassador to Russia, Jon Huntsman, Jr., met with the Russian deputy foreign minister, Sergei Ryabkov. The US government's "Integrated Strategy" outlined the diplomatic, military, and economic steps the United States would take to coerce Russia back into compliance with the INF Treaty, including a review of "military concepts and options" should the Russians not return to compliance.[76] The United States continued to "discuss its concerns" with Russia and indicate Russian noncompliance in its annual compliance reports through 2018.

The arms control literature on treaty violations, disputes, and resolutions offers some insight into best practices in this area, particularly with respect to the use of a treaty's dispute resolution body. Scholars Antonia and Abram Chayes indicate that "the consultative body specified in an arms control agreement should be the forum of first choice for raising compliance issues," but that "if after a reasonable period" the dispute is not satisfactorily resolved and the violation appears "clear and deliberate," stronger actions, including a formal charge of violation, may be warranted.[77] In the case of the INF Treaty, however, the SVC was clearly not the United States' first choice for addressing Russia's violation of the accord, as it waited a great deal of time before convening the body, preferring a strategy of trying to resolve the dispute outside the official margins of the treaty instead. US diplomatic declarations and actions in the interim, however, which took place outside of the treaty, may have led Moscow to conclude that the United States preferred to resolve the dispute quietly, was reluctant to impose consequences, and was uncertain of how much it valued the accord. Edwin Smith, an expert in treaty law, has argued that, on their own, "authoritative formal determinations of non-compliance contribute

little to the arms control treaty relationship."[78] The United States resorted to such determinations and confrontations over a protracted period without taking any "clear and deliberate" action to either bolster the fading treaty or impose real costs on Russia for its continuing, willful violation of the treaty.

As a result, it was not until several years after the United States first detected the Russian violation of the treaty that it took "stronger action" in the form of the Integrated Strategy. The United States pressured Russia with this policy for approximately a year before setting the wheels in motion for the ultimate consequences of suspension and withdrawal.

The United States also did not make a significant effort to coordinate with the other non-Russian Federation treaty members in addressing Russia's INF violation, nor did it formally consult with its NATO allies on this matter until January 2014. Harald Müller, former director of the Peace Research Institute of Frankfurt, has argued that in arms control implementation "leadership must be transparent—the fellow treaty parties must know what leaders are doing to help restore compliance . . . and coordinate with other community partners."[79] In this case, US consultation with NATO allies occurred months after initial US diplomatic engagement directly with Russia. Further, some allies were later surprised by the Trump administration's statement in October 2018 that it was prepared to exit the treaty. These actions set in motion a flurry of diplomatic activity yielding a NATO statement at the end of the month that "no arms-control arrangement can be effective if it is only respected by one side."[80] This sequence of events appears to belie advance coordination. A more cohesive alliance response may not have saved the INF Treaty, but better coordination on future treaty violations may play a role in impacting Russia's cost-benefit calculus for its compliance with treaties and agreements.

Adaptive Change for Enduring Arms Control

Although not yet dead, the INF Treaty offers lessons for future treaty negotiators. First, the treaty's construction as a pact of unlimited duration coupled with a relatively limited and ad hoc mechanism—in the SVC—for addressing later questions of effectiveness failed to provide either a channel or a means to allow both parties to regularly review and discuss adapting the treaty when necessary. The Nuclear Nonproliferation Treaty, for example, has review conferences every five years to discuss and debate its implementation and future. The pace of technological and geopolitical change in the twenty-first century suggests that any agreement on limit-

ing types or numbers of armaments would likely benefit from a regular review process codified in the original text. Doing so would allow participants to determine whether the treaty's arms limitations are still in their best interests and, if not, discuss whether the treaty can be expanded or contracted to render a compact that can continue to provide transparency and stability benefitting the security of all parties.

Second, the treaty should not have placed a time limit on its verification regime, particularly given its indefinite duration. National technical means, such as overhead satellites, offer abundant information allowing the United States to assess the compliance of other parties with treaties and agreements. However, there is no full substitute for the on-site inspection and portal monitoring teams that can directly observe treaty-limited equipment, or its absence, at designated bases, manufacturing plants, and other locations.[81] It would be reasonable to scope the number and tempo of inspections, and perhaps other elements of a verification regime, with the life cycle of a treaty—for example, having more inspections in its initial implementation phase. However, ending these types of verification activities after a treaty has reached its initial objectives limits a vital means of maintaining trust and confidence in continuing compliance with the accord. Problems can ensue later if either side begins to question the continuing fidelity of other participating states with the terms of the pact. For any treaty of lengthy or indefinite duration, a verification regime should be designed to satisfy President Reagan's arms control maxim of "trust, but verify" across the entire life of the accord.

Third, the experience of the INF Treaty may indicate that accords having a significant impact on alliance assurance and extended deterrence matters may benefit from a review and dialogue process—separate from, but parallel to, the treaty itself —whereby the United States and its allies can regularly discuss the treaty and its relationship to the security of alliance members. Within such a process, the United States should be clear whenever it views any particular treaty as no longer in the best interests of its national security; the gatherings would be for discussion and consultation, and the forum would not represent a separate decision-making body. Its value in terms of communication and coordination on treaty matters, however, would be beneficial to the United States and its allies. Putting forward a seamless US-allied front on all actions regarding treaties is particularly important given Russia's long-standing objective of using multiple means to try and create division between the United States and its allies.

Fourth, the potential end of the INF Treaty underscores the challenges facing future rounds of US-Russia arms control negotiations and proposals

for future multilateral talks that could include additional nuclear states. Access to advanced military technologies is not restricted to major powers, and competition between major powers is not restricted in terms of types of weapons or strategic domains. Russia and other actors have integrated their nuclear forces with other means of warfare due to their assessment that nuclear weapons will remain critical to regional and international security for the foreseeable future. Given these challenges, is it possible for the United States and Russia to have future nuclear arms control agreements solely addressing their strategic nuclear arsenals?

It remains in the best interest of Washington and Moscow to continue to engage in negotiations aimed at reducing nuclear risk, particularly if treaties such as the INF come to an end. Indeed, these types of talks are even more critical as Cold War agreements and understandings continue to erode or expire. Future agreements, however, must be designed with greater flexibility in mind. The great success of the INF Treaty should be remembered and celebrated. If it passes into history, perhaps the INF can teach us that the future of arms control will need to prove as nimble and adaptable as the weaponry it seeks to limit. SSQ

Notes

1. The full formal title of the treaty is the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Elimination of Their Intermediate-Range and Shorter-Range Missiles. The INF Treaty does not ban any short-range missile (SRBM) systems with a range of 300–500 km. It defines and bans "shorter-range" missiles as missiles with a range of 500–1,000 km (art. II, par. 5) and "intermediate-range" missiles as missiles with a range of 1,000–5,500 km (art. II, par. 6). The INF Treaty, entered into force 1 June 1988, https://www.state.gov/t/avc/trty/102360.htm. This article will use these terms and range definitions throughout. The treaty differs from a number of US government publications that do not generally include a "shorter-range" missile category.

2. Department of State, Office of the Spokesperson, "Joint U.S.-Russian Statement on the Treaty on the Elimination of Intermediate-Range and Shorter-Range Missiles at the 62nd Session of the UN General Assembly," 25 October 2007; and Rose Gottemoeller, "Looking Back: The Intermediate-range Nuclear Forces Treaty, Arms Control Today," Arms Control Association, June 2007, https://www.armscontrol.org/.

3. Office of the Director of National Intelligence, "Director of National Intelligence Daniel Coats on Russia's INF Treaty Violation," press statement, 30 November 2018, https://www.dni.gov/.

4. Department of State, "U.S. Intent to Withdraw from the INF Treaty," press statement, Secretary of State Michael Pompeo, 2 February 2019, https://www.state.gov/secretary/remarks/2019/02/288722.htm.

5. The treaty led to the verifiable dismantlement of 1,846 Soviet short and intermediate-range missiles (654 SS-20s, 718 SS-12s, 149 SS-4s, 6 SS-5s, 239 SS-23s, 80 SSC X-4s) and 846 US short and intermediate-range missiles (169 Pershing 1As, 234 Pershing IIs, 443 BGM-109s). Joseph P. Harahan, *On-Site Inspections under the INF Treaty* (Washington, DC: US Government Printing Office, 1993), 1–3, 8–9, https://www.dtra.mil/Portals/61/Documents/History/On-Site%20Inspections%20INF%20Treaty-opt.pdf.

6. Central Intelligence Agency, "The Changing Shape of the Soviet Peripheral Ballistic Missile Force," 9–13, June 1970, CIA Reading Room, https://www.cia.gov/.

7. Jeffrey Record, *NATO's Theater Nuclear Force Modernization Program: The Real Issues* (Washington, DC: Institute for Foreign Policy Analysis, 1981): 38–39; and Gerhard Wettig, "The Last Soviet Offensive in the Cold War: Emergence and Development of the Campaign against Euromissiles, 1979–1983," *Cold War History* 9, no. 1 (February 2009): 82–83.

8. Andrew J. Pierre, "The SALT Agreement and Europe," *The World Today* 28, no. 7 (July 1972): 288. Authors note: "Strategic" referred to long-range delivery systems, such as intercontinental ballistic missiles (ICBM), submarine-launched ballistic missiles (SLBM) on nuclear submarines (SSBN), and long-range bombers capable of launching strikes deep into the adversary's homeland. Other delivery systems were considered "theater," "tactical," or "nonstrategic," inasmuch as both sides readily understood the strategic implications of where these systems were located and how they were postured.

9. Department of State, SALT II Treaty, signed at Vienna 18 June 1979, https://www.state.gov/t/isn/5195.htm; and Edward Walsh, "Carter and Brezhnev Sign SALT II," *Washington Post*, 19 June 1979, A1, http://cc.bingj.com/.

10. Edward Rhodes, "Nuclear Weapons and Credibility: Deterrence Theory beyond Rationality," *Review of International Studies* 14, no. 1 (January 1988): 45, https://www.jstor.org/.

11. Helmut Schmidt, "The 1977 Alastair Buchan Memorial Lecture," *Survival* 20, no. 1 (1978): 2–10.

12. Fred Kaplan, "Warring over New Missiles for NATO," *New York Times*, 9 December 1979, https://www.nytimes.com/.

13. Leopolodo Nuti, "The Origins of the 1979 Dual-Track Decision: A Survey," in Leopolodo Nuti, ed., *The Crisis of Détente in Europe: From Helsinki to Gorbachev, 1975–1985* (Abingdon, Oxford: Routledge, 2009): 64.

14. Rose Gottemoeller, *Looking Back: The Intermediate-range Nuclear Forces Treaty, Arms Control Today,* June 2007, https://www.armscontrol.org/act/2007_06/LookingBack.

15. The Carter administration issued Presidential Review Memorandum (PRM)-38 ("Long-Range Theater Nuclear Capabilities and Arms Control"), ordering a high-level study of the "dual track" approach that later informed the United States' subsequent support for this approach. The 22 June 1978 PRM directed the Special Coordination Committee to assess the "political and military aspects of . . . [1] possible increased long-range theater nuclear force capabilities in Europe for strategic strikes on the Soviet Union [and] [2] possible inclusion in future arms control negotiations of long-range theater nuclear systems." Zbiegnew Brzezenski, National Security Council, to Vice President, Secretary of State, and Secretary of Defense, Presidential Review Memorandum/NSC 38, 22 June 1978, https://www.jimmycarterlibrary.gov/assets/documents/memorandums/prm38.pdf.

16. NATO Headquarters, Special Meeting of Foreign and Defense Ministers, Brussels, chairman: Mr. J. Luns, 12 December 1979, NATO Ministerial Communiqué, https://www.nato.int/.

17. Henry H. Gaffney, "Euromissiles as the Ultimate Evolution of Theater Nuclear Forces in Europe," *Journal of Cold War Studies* 16, no. 1 (Winter 2014): 186.

18. Jonathan Kandell, "One Killed in France at Nuclear Protest," *New York Times*, 1 August 1977, https://www.nytimes.com/; BBC, "CND [Campaign for Nuclear Disarmament] March Attracts Biggest Ever Crowd," 22 October 1983, http://news.bbc.co.uk/; and Sam Marsden, *The Telegraph*, "Thatcher Said Greenham Common Anti-Nuclear Protestors Were an 'Eccentricity,'" 1 August 2013, https://www.telegraph.co.uk/.

19. Stefan Dege, "Former Chancellor Helmut Schmidt: World Citizen, Crisis Manager and Chain Smoker," *Deutsche Welle*, 20 December 2018, https://www.dw.com/.

20. Henry H. Gaffney, "Euromissiles as the Ultimate Evolution of Theater Nuclear Forces in Europe," *Journal of Cold War Studies* 16, no. 1 (Winter 2014): 196–97.

21. Gale A. Mattox, "The Bundeswehr and Arms Control," in *The Bundeswehr and Western Security,* ed. Stephen F. Szabo (New York: St. Martin's Press, 1990), 84–85; and North Atlantic Council,

"Declaration of the Heads of State and Government Participating in the North Atlantic Council," 2–3 March 1988, https://www.nato.int/.

22. W. Seth Carus, *Ballistic Missiles in the Third World: Threat and Responses*, The Washington Papers #146 (Washington, DC: CSIS, 1990): 33.

23. Aaron Karp, *Ballistic Missile Proliferation: The Politics and Techniques* (New York: OUP, 1996): 17. The eight states were the United States, Soviet Union/Russia Federation, China, United Kingdom, France, Israel, India, and North Korea.

24. Martin S. Navias, *Going Ballistic: The Build-Up of Missiles in the Middle East* (London: Brassey's, 1993): 80; "North Korean Missile Launches and Nuclear Tests: 1984–present," CSIS, 29 November 2017, https://missilethreat.csis.org/; and Amarnath K Menon, "Agni: India Successfully Launches Its First Intermediate Range Ballistic Missile," *India Today*, 15 June 1989, https://www.indiatoday.in/.

25. William R. Long, "Argentina Abolishes Missile Program with Iraq," *Los Angeles Times*, 26 September 1993, http://articles.latimes.com/; Andrew Feickert, *Missile Survey: Ballistic and Cruise Missiles of Foreign Countries* (Washington D.C.: Congressional Research Service, 2004): 5; and Karp, 18–21.

26. Robert D. Shuey et al., *Missile Proliferation: Survey of Emerging Missile Forces* (Washington D.C.: Congressional Research Service, 1989): 38-39.

27. Robert G. Nagler et al. *Ballistic Missile Proliferation* (Washington DC: System Planning Corporation, 1992): 41; and Michael A. Levi, "Would the Saudis Go Nuclear?," Brookings Institution, 2 June 2003, https://www.brookings.edu/articles/would-the-saudis-go-nuclear/.

28. The Saudi purchase of the missiles led to a diplomatic crisis between Riyadh and Washington that was ultimately resolved by the Kingdom agreeing to join the Nuclear Nonproliferation Treaty.

29. The G-7 consisted of Canada, (then) West Germany, Italy, Japan, France, and the United Kingdom.

30. Missile Technology Control Regime, "Frequently Asked Questions," accessed March 2019, http://mtcr.info/frequently-asked-questions-faqs/.

31. Alexei Arbatov, "What Lessons Learned?," 40–62, in *Turning Points in Ending the Cold War*, ed. Kiron K. Skinner (Palo Alto, CA: Hoover Institution Press, 1988), 55; and Benjamin B. Fischer, *A Cold War Conundrum: The 1983 Soviet War Scare* (Washington, DC: Central Intelligence Agency, 1997), https://www.cia.gov/.

32. Strobe Talbott, "The Road to Zero: Behind the Scenes of a Surprising but Potentially Troubling Triumph," *Time* 130, no. 24 *(*14 December 1987): 18–29.

33. Harahan, *On-Site Inspections,* 111.

34. Sharon Watkins Lang, "SMDC History: Army Accepts Safeguard System," US Army, 27 September 2018, https://www.army.mil/; and Central Intelligence Agency, "Soviet Strategic Air and Missile Defenses," National Intelligence Estimate 11-3-65, 18 November 1965, 2, 11–12, CIA Reading Room, https://www.cia.gov/library/readingroom/docs/nie_11_3_65.pdf.

35. Department of State, Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems [ABM Treaty], Entry into force 3 October 1972, https://www.state.gov/; and Department of State, Interim Agreement Between the United States of America and the Union of Soviet Socialist Republics on Certain Measures with Respect to the Limitation of Strategic Offensive Arms [SALT I Interim Agreement], Entry into force 3 October 1972, https://www.state.gov/.

36. As noted by the State Department, "Of these six, four—Belarus, Kazakstan, Russia, and Ukraine—are active participants in the process of implementing the Treaty. With the agreement of the other Parties, Turkmenistan and Uzbekistan, each with only one inspectable site on its territory, while participants have assumed a less active role, foregoing attendance at sessions of the SVC and participation in inspections." INF Treaty, narrative.

37. See INF Treaty (art. XI, par. 5) regarding the 13-year limit.

38. As the 2010 State Department arms control and nonproliferation compliance report noted, "The Parties to the Treaty last met in the Special Verification Commission in October 2003. There have been no issues raised in the intervening period." Department of State, *Adherence to and Compliance with Arms Control and Nonproliferation Agreements and Commitments* (Washington, DC: Bureau of Arms Control, Verification and Compliance, 2010), 7, https://www.state.gov/.

39. State Department, Office of the Spokesperson, "Russia's Violation of the Intermediate-Range Nuclear Forces Treaty," fact sheet, 4 December 2018, https://www.state.gov/r/pa/prs/ps/2018/12/287868.htm.

40. Russian Federation Ministry of Foreign Affairs, "Russia's Assessment of the US Department of State's Report on Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments," 24 April 2018, http://www.mid.ru/en/foreign_policy/news/-/asset_publisher/cKNonkJE02Bw/content/id/3192916.

41. National Air Intelligence Center (NAIC), *Ballistic and Cruise Missile Threat* (Wright-Patterson AFB, OH: US Air Force, 1999), 9. It is important to note that the NAIC/NASIC reports do not cover US allies and partners; for example, Israel's Jericho missiles do not appear in these reports.

42. NAIC, *Ballistic and Cruise Missile Threat* (Wright-Patterson AFB, OH: US Air Force, 2000), 10–11; and NAIC, *Ballistic and Cruise Missile Threat* (Wright-Patterson AFB, OH: US Air Force: 2003), 10–11.

43. NAIC, *Ballistic and Cruise Missile Threat*, 2003, 7.

44. Andrew Feickert, *Missile Survey: Ballistic and Cruise Missiles of Selected Foreign Countries* (Washington, DC: Congressional Research Service, 2005), 28–38, https://fas.org/sgp/crs/weapons/RL30427.pdf. The CRS survey lists the Shahab-3 as "tested" but also remaining "in development" rather than deployed in small numbers (Feickert, *Missile Survey*, 35).

45. Steven Pifer, "The INF Treaty, Russian Compliance, and the U.S. Policy Response," Brookings Institution, 17 July 2014, https://www.brookings.edu/. Testimony of Pifer on H.A.S.C. No. 113-120, "Russian Violations of the INF Treaty: After Detection," before the Committee on Armed Services House of Representatives, 113th Cong., 2d sess., 17 July 2014.

46. Kay Bailey Hutchinson, "How Russia Undermined over 30 Years of Arms Control," *New York Times*, 10 February 2019, https://www.nytimes.com/

47. President of Russia, "Speech and Following Discussion at the Munich Security Conference on Security Policy," 10 February 2007, http://en.kremlin.ru/

48. As noted in a 2019 opinion-editorial by the US ambassador to NATO, Kay Bailey Hutchinson, these speeches and quotes—both directly referenced in her piece—were clear signals that the Russian Federation had already assessed that the treaty no longer addressed its security needs and required some form of redress. Hutchinson, "How Russia Undermined over 30 Years of Arms Control."

49. Department of State, Office of the Spokesperson, "Joint U.S.-Russian Statement on the Treaty on the Elimination of Intermediate-Range and Shorter-Range Missiles at the 62nd Session of the UN General Assembly," 25 October 2007, https://2001-2009.state.gov/.

50. Zhao Lei, "Missile Capacity Gives PLA Cutting Edge," *China Daily*, 4 September 2015, http://www.chinadaily.com.cn/.

51. Daniel R. Coats, "Statement for the Record: Worldwide Threat Assessment of the U.S. Intelligence Community," to the Senate Select Committee on Intelligence, 11 May 2017, 8, https://www.dni.gov/files/documents/Newsroom/Testimonies/SSCI%20Unclassified%20SFR%20-%20Final.pdf; and Reuters, "Iran Says No Need to Increase Missile Range as Can Already Hit U.S. Forces," 31 October 2017, https://www.reuters.com/.

52. National Air and Space Intelligence Center (NASIC), *2017 Ballistic and Cruise Missile Threat* (Wright-Patterson AFB, OH: US Air Force, 2017), 23, https://www.nasic.af.mil/Portals/19/images/; and Michale Elleman, "North Korea's Hwasong-12 Launch: A Disturbing Development," *38 North*, 30 August 2017, https://www.38north.org/.

53. Lt Col John T. Bowen, "The Poor Man's Air Force: Implications of the Evolving Cruise Missile Threat," Strategy Research Project (Carlisle Barracks, PA: US Army War College, 1997), 3, https://apps.dtic.mil/dtic/tr/fulltext/u2/a326588.pdf.

54. Michael Elleman and Michael J. Zagurek, Jr. *THAAD: What It Can and Can't Do*, *38 North*, 10 March 2016, 7, https://www.38north.org/; and Michael Eisenstadt, "The Role of Missiles in Iran's Military Strategy," Washington Institute for Near East Policy, *Research Notes* 39 (November 2016): 9, https://www.washingtoninstitute.org/.

55. Alan J. Vick, *Air Base Attacks and Defensive Counters: Historical Lessons and Future Challenges* (Santa Monica, CA: RAND, 2015), 33–36, https://www.rand.org/.

56. For example, Russia "is developing a new generation of advanced regional ballistic and cruise missiles that support its anti-access/area denial (A2/AD) strategy intended to defeat U.S. and allied will and capability in regional crises or conflicts." John Rood, Under Secretary of Defense for Policy, statement on "President's Fiscal Year 2019 Budget Request for Nuclear Forces and Atomic Energy Defense Activities" before the Subcommittee on Strategic Forces, House Armed Services Committee, 17 April 2018, 115th Cong., 2nd. sess., https://docs.house.gov/meetings/AS/AS29/20180417/108171/HHRG-115-AS29-Wstate-RoodJ-20180417.pdf; and Tate Nurkin et al., *China's Advanced Weapons System*s, Report prepared for U.S.-China Security and Economic Review Commission (London: Jane's by IHS Markit, 12 May 2018), 33, 48, https://www.uscc.gov./

57. Jennifer Hansler, Nicole Gaouette, and Michael Conte, "US Officials Indicate Development Could Begin on Missiles Barred by INF," CNN, 7 February 2019, https://www.cnn.com/.

58. NATO, "Statement by the Secretary General on the INF Treaty," Press Release 113, 30 July 2014, https://www.nato.int/; and NATO, "Wales Summit Declaration," Press Release 120, 5 September 2014, https://www.nato.int/

59. Amy F. Woolf, *Nonstrategic Nuclear Weapons,* CRS Report RL32572 (Washington, DC: Congressional Research Service, 17 January 2019), 1, https://fas.org/sgp/crs/nuke/RL32572.pdf.

60. Office of the Secretary of Defense, *Nuclear Posture Review* (Washington, DC: Department of Defense, 2018): 7–8.

61. Reuters, "Russia Threatens to Aim Nuclear Missiles at Denmark Ships if It Joins NATO Missile Shield," 22 March 2015, https://www.reuters.com/; and Andrew Osborn, "After Putin's Warning, Russian TV Lists Nuclear Targets in U.S.," Reuters, 25 February 2019, https://www.reuters.com/.

62. David Johnson, *Russia's Conventional Precision Strike Capabilities, Regional Crises, and Nuclear Thresholds*, Livermore Papers on Global Security no. 3 (LLNL Center for Global Security Research, February 2018): 84–88.

63. North Atlantic Council, "Statement on Russia's Failure to Comply with the Intermediate-range Nuclear Forces (INF) Treaty," Press Release 15, 1 February 2019, https://www.nato.int/cps/en/natohq/news_162996.htm.

64. Office of the White House Press Secretary, "Fact Sheet: European Reassurance Initiative and other U.S. Efforts in Support of NATO Allies and Partners," 3 June 2014, https://obamawhitehouse.archives.gov/.

65. Reuters, "Germany Would Oppose New U.S. Nuclear Missiles in Europe: Foreign Minister," 27 December 2018, https://www.reuters.com/

66. Office of the Secretary of Defense, *Nuclear Posture Review,* xii–xiii.

67. Beatrix Immenkamp, "The End of the INF Treaty? A Pillar of European Security Architecture at Risk," briefing, European Parliamentary Research Service, 4 February 2019, http://www.europarl.europa.eu/.

68. White House, "Statement from the President Regarding the Intermediate-range Nuclear Forces (INF) Treaty," press release, 1 February 2019, https://www.whitehouse.gov/.

69. Department of Defense, *Report on Nuclear Employment Strategy of the United States Specified in Section 491 of 10 U.S.C.* (Washington, DC: Department of Defense, 12 June 2013), 3, https://apps.dtic.mil/dtic/tr/fulltext/u2/a590745.pdf.

70. TASS, "Buildup of US Global Missile System Breaks Strategic Balance—Putin," 1 March 2018, http://tass.com/politics/992189.

71. Alexei Arbatov, "Challenges of the New Nuclear Era: The Russian Perspective," in Linton Brooks, Francis J. Gavin, and Alexei Arbatov, *Meeting the Challenges of the New Nuclear Age: US and Russian Nuclear Concepts, Past and Present* (American Academies of Arts and Sciences: Washington D.C., 2018), 30–31.

72. President of Russia, "Meeting with Sergei Lavrov and Sergei Shoigu," 2 February 2019, transcript, http://en.kremlin.ru/events/president/news/59763; and TASS, "US Missiles and Drones Violating INF Treaty According to Moscow," 8 February 2019, http://tass.com/world/1043895.

73. State Department "Refuting Russian Allegations of U.S. Noncompliance with the INF Treaty," fact sheet, 16 November 2018, https://www.state.gov/t/avc/inf/287413.htm

74. INF Treaty, art. XIII.

75. Department of State, *Adherence to and Compliance with Arms Control and Nonproliferation Agreements and Commitments* (Washington, DC: Bureau of Arms Control, Verification and Compliance, 2014), 8–10, https://www.state.gov/documents/organization/230108.pdf.

76. Heather Nauert, "Trump Administration INF Treaty Integrated Strategy," press statement, Department of State, 8 December 2017, https://www.state.gov/.

77. Antonia Handler Chayes and Abram Chayes, "From Law Enforcement to Dispute Settlement: A New Approach to Arms Control Verification and Compliance," *International Security* 14, no. 4 (Spring 1990): 161.

78. Edwin Smith, "Understanding Dynamic Obligations: Arms Control Agreements," *Southern California Law Review* 64 (1990/1991): 1549, 1603.

79. Harald Müller, "Compliance Politics: A Critical Analysis of Multilateral Arms Control Treaty Enforcement," Viewpoint, *Nonproliferation Review 7,* no. 2 (Summer 2000): 80, https://pdfs.semanticscholar.org/beba/90f6dfe9feba8bc15f9cdc6862a20717a714.pdf.

80. Radio Free Europe/Radio Liberty, "NATO Urges Russia to Honor INF Treaty amid U.S. Threat to Withdraw," 31 October 2018, https://www.rferl.org/.

81. Per art. IX, pars. 6(c) and (d) of the INF Treaty, the two parties to the INF Treaty were allowed to "install at the portal . . . equipment for measuring the length and diameter of missile stages contained inside of launch canisters or shipping containers . . . [and] non-damaging image producing equipment for imaging the contents of launch canisters or shipping containers declared to contain missiles or missile stages." As noted in the DTRA history of on-site inspections for the treaty, the US continuous portal monitoring mission was set up at the "Votkinsk Machine Building Plant in the Udmurt Autonomous Soviet Socialist Republic, USSR" to ensure that the USSR did not assemble the banned SS-20 missile under the guise of an SS-25 missile. US on-site inspectors would not enter the plant; instead, they would continuously monitor the portal and patrol the perimeter." Harahan, *On-Site Inspections*, 10, 222.

Justin V. Anderson

Dr. Anderson is a senior research fellow at the Center for the Study of Weapons of Mass Destruction at National Defense University. He earned an MA and a PhD in war studies at King's College London and a BA in diplomacy and world affairs at Occidental College.

Amy J. Nelson

Dr. Nelson is a research fellow at the Center for the Study of Weapons of Mass Destruction at National Defense University. She was previously a Bosch Fellow in Berlin, Germany. She earned a PhD in political science from the University of California, Berkeley; an MA in intellectual history from Colombia University; and an AB in philosophy from Stanford University.

Emotional Choices: How the Logic of Affect Shapes Coercive Diplomacy by Robin Markwica. Oxford University Press, 2018, 384 pp.

How are you feeling right now? If you talked to someone next to you, would that person be able to accurately tell how you are feeling? How about someone 4,800 miles away, separated by different cultures, deep-seated suspicion, and cognitive biases? If you are a state leader and you or your opponent's emotions are misleading, the result could be nuclear war. Emotions have been critical drivers of state security policy since the beginnings of the state, but the quest to study and categorize these emotions, and their effects, is just beginning to bear fruit.

Robin Markwica, a Max Weber Fellow in the Robert Schuman Centre for Advanced Studies at the European University Institute, steps into this growing field of inquiry with his book *Emotional Choices: How the Logic of Affect Shapes Coercive Diplomacy*. The promise and peril of coercive diplomacy, as Markwica describes, is that it can "persuade" a weaker opponent to accede to the stronger actor's demands short of war, but history shows repeatedly that such threats—even from a clearly militarily superior power—have a low success rate. The rational actor model of state action is hard-pressed to explain why this is the case, as is the social norms / constructivist model. Both models have valuable insights, but Markwica believes a "theory of affect"—an examination of leadership emotions—can help fill in the gaps of knowledge as to why leaders of weak states choose to submit or resist great power coercion.

Two broadly defined academic groups seek to explain human decision-making in international relations: rationalists view man as *homo economicus*, making decisions based on a cost-benefit analysis of consequences, while constructivists view man as *homo sociologicus*, making decisions based on social norms and appropriateness within a community. Markwica seeks to add a third group to help explain decision-making, *homo emotionalis*, "emotional, social, and physiological beings whose emotions connect them to and separate them from significant others." Markwica quickly, and correctly, notes that these three groups are not mutually exclusive and often work in an interrelated, if complicated, manner.

He then identifies five primary emotions—fear, anger, hope, pride, and humiliation—that, if dominating a leader's emotional state, could increase the likelihood of either compliance or noncompliance with the coercer's demands. Although all of these emotions could lead to noncompliance with the coercer's demands, Markwica identifies only the emotions of fear and humiliation as also potentially leading to compliance. Thus, the coercer's dilemma is that to succeed, the coercer must instill the fear and humiliation of noncompliance in the victim state but not to the point where those same emotions could prompt it to resist. This dilemma yields perhaps Markwica's greatest insight of the book: "Coercers not only need to develop a good understanding of target leaders' identities and emotion norms . . . [but also] require empathy, i.e., the capacity to infer how someone else is currently feeling and to imagine how someone will likely feel in response to certain signals."

To test his theory of "how and to what extent" emotions play a role in decision-making within the context of coercive diplomacy, Markwica examines two case studies: the Cuban missile crisis in 1962 and the lead-up to and beginning of the Gulf War in 1990–91. In each case, Markwica examines eight pivotal decisions of the coerced state leadership and whether, or how intensely, emotions played a role in their decisions to comply or resist. To his great credit, Markwica readily acknowledges when there is not enough evidence to support either the expression of certain feelings or their relevance, using the categories of unknown, irrelevant, minor, relevant, and important to describe the role of each of the five emotions in each decision for each case.

Markwica provides adequate primary source citations, so the reader will feel mostly confident in the presence and relevance of each emotion for each decision; however, the nagging thought that the historical record may be grossly undocumented remains. Again, to his credit, Markwica acknowledges that some emotions that may even play a major role in decision-making will remain undocumented as participants haven't recorded those instances or have forgotten them. The most likely reason for the scarcity of such evidence, however, is that leaders generally keep their emotions to themselves or mask them in language of cold rationality. In group dynamics, for example, there are strong tendencies toward groupthink and social acceptance, which disincentivize expressing certain emotions. In this the reader must humbly accept, as Markwica does, that in the human condition, uncertainty is a feature and not a bug to be fixed.

While Markwica does an admirable job of explaining the number of ways emotions can be documented, his work does fall short in acknowledging that state leaders have often purposely sought to mislead or deceive other state leaders by expressing false emotions. President Roosevelt famously sought to manipulate a desperate Joseph Stalin by inundating him with concessions to gain personal rapport and a better bargaining position.[1] One thinks of Sun Tzu's famous advice, "If your opponent is of choleric temper, seek to irritate him. Pretend to be weak, that he may grow arrogant." Markwica's model, which advocates attempting to recognize and exploit the opponent's emotional state, will be frustrated by the clever bluffer, and history shows there are many. In response, Markwica may fairly argue that such bluffs bedevil both the rationalist and constructivist camps, but the emotional theory he advocates is especially vulnerable. State leaders often believe they can connect with each other on an emotional level, à la George W. Bush looking into Putin's eyes and getting "a sense of his soul."[2]

Another flaw in *Emotional Choices*, though somewhat minor, is the lack of discussion of what factors may influence certain emotions, particularly the effect of mental illness on emotions. President Lincoln and Prime Minister Churchill undoubtedly had some form of depression affecting their emotions and thus decision-making.[3] In some cases, these illnesses helped them to avoid the trap of unjustified optimism, or "hope" and "pride" in Markwica's terms. As political psychologist Jerrold Post has written on prolifically, narcissism ranging from the benign to the malignant to the clinical/psychopathological surrounds political leaders in many cultures.[4] Thus, mental illness from the mild to severe may play a constraining role in how leaders are able to regulate their emotions and therefore their decisions.

That being said, this book lays an excellent foundation for future researchers to explore, both in the areas of psychology and international relations. For instance, in the area of international relations, were the coercers successful in producing the desired emotions, or did they produce different emotions outside of those intended? Did the coercers even realize they produced certain emotions within the coerced? What signals did the coercer focus on as a check for whether a certain emotion and the desired result were produced?

Another fruitful area for research lies in the psychological realm, by exploring how test subjects react knowing that another subject may be trying to manipulate their emotions. Humans, of course, have a natural tendency to think that they are in control of their emotions or have the ultimate say over how they feel. But knowing that someone else, whether someone stronger or in authority, is trying to make you feel a particular emotion may induce a natural desire to resist.

The author brilliantly combines the latest insights from neuropsychology and international relations to produce an excellent framework for understanding how emotions can affect state leaders under the most stressful circumstances. His findings not only have great theoretical value but also provide policy makers insight on the psychological

processes involved in coercive diplomacy, their relevance, and the great caution they should induce. Markwica's insight that "the capacity to empathize is just as important to the success of coercive diplomacy as the perceived credibility of threats" may be his most important. "Think of how others will feel" is not just an important piece of advice our parents told us, it may be one of the primary determinants in the success of diplomacy and the avoidance of war.

Matthew R. Costlow
National Institute for Public Policy

Notes

1. Gary Kern, "How "Uncle Joe" Bugged FDR," *Studies in Intelligence* 47, no. 1 (2003), CIA Library, posted 14 April 2007, https://www.cia.gov/library/.
2. Jane Perlez, "Cordial Rivals: How Bush and Putin Became Friends," *New York Times*, 18 June 2001, https://www.nytimes.com/.
3. Nassir Ghaemi, *A First-Rate Madness: Uncovering the Links Between Leadership and Mental Illness* (New York: Penguin Books, June 2012).
4. Jerrold M. Post, *Narcissism and Politics: Dreams of Glory* (New York: Cambridge University Press, 2014).

Rationality in the North Korean Regime by David W. Shin. Lexington Books, New York, 333 pp.

Someone reading just the headlines about the actions of North Korea's young leader, Kim Jong Un, during his 2017 verbal and cyber sparring with President Donald Trump might wonder about the rationality of the North Korean leader. Engaging in seemingly aggressive behavior not only to provoke the United States and South Korea but also to draw the ire of longtime allies in China and Russia—with the frightening prospect of a nuclear engagement—does not seem like the actions of a rational leader. In fact, many of the actions of the 70-year-old Democratic People's Republic of Korea (DPRK) appear irrational, if not insane. Yet a further analysis reveals that far from the actions of a series of mad rulers, the Kim Dynasty, to include Kim Jong Un, undertakes most of its actions, however provocative, with a rational and deliberate purpose.

To emphasize the logic behind North Korean leadership and their actions, David Shin, a professor at the National Intelligence University, offers his analysis and insight in his *Rationality in the North Korean Regime*. Shin looks at the decision-making processes and actions of the three Kims (Kim Il Sung, Kim Jong Il, Kim Jong Un) who have lead the country. Shin theorizes that the regime's various undertakings reflect a logic of seeking to achieve a strategic objective for the regime, from attempting to reunify the Korean peninsula under the North Korean flag to attempting to stabilize and protect the North Korean government from collapse due to economic and international factors. By providing a theoretical framework for defining what rational decisions mean for the regime, Shin offers a historical analysis—from Kim Il Sung's revolutionary days to the present day's (circa 2017) Kim Jong Un—and places those actions within the context of that framework.

The results of those decisions varied in their degrees of success. Some actions did not result in the desired end states, such as the Korean War of 1950–53 to try to reunify all of Korea and the bombing of Korean Air flight 858 in 1987 to punish South Korea for not including North Korea as part of the bid to host the 1988 Olympics and also to

disrupt the Games. However, other actions, such as the seizure of the USS *Pueblo* and the negotiations with Japan over abductees in the 2000s as well as leveraging Russia, China, and the United States against each other to achieve regime objectives in the 2010s, proved more successful. Even if the actions appeared confrontational, they resulted in either an improved security position for North Korea or offered the regime the chance to limit sanctions/obtain more economic and international concessions.

For most who would read Shin's work, the theory of the rationality of North Korean leadership is not revolutionary. Away from the press and social media realm, most understand that the Kims, even the young Kim Jong Un, have a rational mind and will not just act without an objective or end state in mind. Without such rationality, the Kim regime could not have survived over 70 years in power, especially given the various hardships (many self-inflicted). Even if the actions and decisions of Kim Jong Un, like his father and grandfather before him, did not appear logical or rational to outsiders at first, those actions had a purpose and more often than not fulfilled a certain objective.

The history and subsequent analysis of the Kims' actions rate as the most interesting and insightful parts of the book. For all the headlines that North Korea generates, it still mystifies the outside world. Its system of total control of information flow into and out of the country and restrictions on its citizens' movements in and out of its borders limit the depth of knowledge that an outside observer can glean about the nation and its leaders. Any information for analysis about North Korea that can offer more chances to decipher the country's actions and intentions is useful for anyone looking to learn about the regime. The age and inexperience of Kim Jong Un proves especially challenging as there is that much less to go on about him than there was for his predecessors; thus, this work helps to add to that limited understanding about the leader and his actions.

Using the analysis offered by Shin regarding North Korean leadership and their actions in the past, his framework can offer insights into what future interaction with the country will look like. Since the publication of this book, the June 2018 Singapore meeting between Kim Jong Un and Donald Trump can be viewed as a major political coup for the North Korean regime. The war talk between the two nations dominating headlines the year before faded into the background, along with much of the passion for maintaining crippling sanctions on the country, especially from China and Russia. Ramping down the war talk and meeting with Trump also achieved another aim of the regime: the reduction of combined US/South Korean military exercises, a long-standing goal of the North Korean leadership. As 2019 progresses, the actions of Kim Jong Un will offer more insight into the strategic objectives of North Korea, to include further reducing sanctions and looking to deal with the United States and its neighbors from a position of strength not seen in decades.

The book is academic in nature but very readable. The theoretical portion is dry but significant to understanding the author's thesis. This work is a good complementary read for those planners and analysts looking at the North Korean problem set and attempting to figure out the decision-making calculus for a still relatively unknown regime.

Lt Col Scott Martin, USAF

The End of Strategic Stability?: Nuclear Weapons and the Challenge of Regional Rivalries
edited by Lawrence Rubin and Adam N. Stulberg. Georgetown Press, 2018, 314 pp.

The term "strategic stability" originated from the Cold War competition between the United States and the Soviet Union. It referred to the idea that, despite their global

competition, Washington and Moscow had a vested self-interest in establishing a stable, balanced deterrent relationship between their respective military forces and avoiding nuclear war. Reducing incentives for nuclear arms racing or launching a preemptive nuclear strike thus became central organizing principles for Cold War diplomacy and the pursuit of superpower détente.

Despite decades of talks, however, a fully realized and jointly shared understanding of strategic stability proved elusive. Both parties agreed strategic stability was an important end state, but neither could agree on a concrete definition of the term. As Adam N. Stulberg and Lawrence Rubin discuss in their introduction to this edited volume, this phenomenon persists in the Great Power competitions and regional rivalries of today. The concept of strategic stability remains a touchstone for scholars and policy makers attempting to understand the complex role played by nuclear weapons in contemporary international affairs. But it also remains devilishly difficult to define, negotiate, and implement between today's nuclear rivals.

The book makes a compelling case, however, that despite these difficulties, ongoing efforts to redefine and adapt the concept can offer key insights into how nuclear weapons contribute to stability or instability in the complex regional and international security dynamics of today. The book's chapters, each written by a different expert, provide an impressive depth and breadth of analysis into how "strategic stability" continues to represent a lodestar for efforts to address both the current competition between the United States, Russia, and China and between regional powers in East Asia, South Asia, and the Middle East. At the same time, each author also provides a clear-eyed assessment of how the term can be contested, leading to differing and divergent conclusions regarding whether nuclear weapons resolve or exacerbate present security dilemmas.

Several chapters merit particular attention from international relations scholars and national security policy professionals. Sadia Tasleem of Quaid-i-Azam University and Happymon Jacob of Jawaharlal Nehru University, for example, provide in-depth analyses of Pakistan and India's understandings of strategic stability and how these compare and contrast both with each other and with the United States' Cold War understanding of the concept. As Tasleem describes, Pakistan views its nuclear arsenal as essential to securing it against a bitter rival whose conventional strength it cannot match. This disadvantage leads Islamabad to attempt to realize "a balance with full-spectrum [nuclear] deterrence" (p. 80) that drives Pakistan's ongoing pursuit of multiple nuclear delivery systems and weapons, to include "tactical" weapons intended to halt any Indian armed force that breaches its border. Whether this creates the conditions for bilateral stability, however, is uncertain; as Tasleem notes, the utility or credibility of this deterrent might come into question very early within a high-stakes showdown or clash of arms with India. Jacob then juxtaposes Islamabad's understanding of strategic stability with New Delhi's. The latter's arsenal is primarily for the purpose of confirming India as a first-tier scientific and military power. Indian strategies and policy makers are relatively unconcerned with the mechanics of possible nuclear warfighting with Pakistan, pointing to violent extremist organizations aided (or at least not abetted) by Islamabad as the primary source of instability on the subcontinent. As Jacob explains, each side is committed to leveraging asymmetric advantages to achieve a form of "stability" that is inimical to the interests of its rival. These differences have repeatedly derailed bilateral and Track 1.5 efforts aimed at negotiating some form of strategic stability for South Asia; at present, neither side views the quantitative and qualitative improvements of their nuclear arsenals as part of an arms race that both have an incentive to slow or limit.

Three other chapters that should receive broad circulation within the strategic studies community are authored by Tong Zhao of the Carnegie Endowment, Dmitry Adamsky of the Interdisciplinary Center at Herzliya, and Ala' Alrababa'h, a PhD candidate at

Stanford. All three share the strength of authors who are experts in the military and international affairs literature of the country on which they focus. Zhao provides a detailed examination of Chinese scholars and military officers grappling with the potential implications of hypersonic delivery systems for their country's security and the viability of their nuclear deterrent. His survey of these works provides critical context to China's decision to pursue these platforms due to deep concerns that its own nuclear deterrent is vulnerable to the United States, particularly as the latter improves its missile defenses. From this perspective, fielding hypersonic delivery systems contributes to stability vis-à-vis the United States. Adamsky's chapter is an excellent description of Russia's views of cyberspace as a critical strategic domain and its efforts to employ means of information warfare to redress what it considers a dangerous and destabilizing strategic imbalance with the United States. From the Kremlin's perspective, this deficit allows it to counterpunch against a United States it concludes is committed to negating Russia's strategic nuclear deterrent. Alrababa'h's chapter focuses on Saudi Arabia, a state for whom strategic stability is synonymous with regime stability. He uses this paradigm to explain why the kingdom is relatively unconcerned about the nuclear opacity of Israel but deeply worried about the potential nuclear ambitions of Iran. His chapter provides an important window into understanding how a non-nuclear state's understanding of strategic stability is very different from the language and concepts of the United States and other nuclear powers.

Readers may disagree with certain arguments in specific chapters, but they will leave the volume better informed about how differing perspectives on nuclear weapons are an important driver of policy, strategy, and statecraft in regions key to US and allied security. The only discordant note in an otherwise well-orchestrated volume is that most of the chapters appear to reflect research completed prior to the last two years. This does not diminish its effectiveness in describing how different approaches to strategic stability are rooted in long-standing national perceptions of security, but in some cases the reader is left with questions as to how recent developments may have altered the strategic calculus of certain states. For a literature historically dominated by works focused on the Cold War, however, this volume provides a welcome and valuable contribution to how Great Powers and regional actors believe nuclear weapons—whether fielded by themselves, by an ally, or by an adversary—either undergird or undermine strategic stability, however they define it.

Justin Anderson
National Defense University

Disclaimer: The views expressed in this review are those of the author and are not an official policy or position of the National Defense University, the Department of Defense, or the US government.

The Hell of Good Intentions: America's Foreign Policy Elite and the Decline of U.S. Primacy
by Stephen M. Walt. Farrar, Straus, and Giroux, 2018, 291 pp.

Stephen Walt's most recent work is especially intriguing given the international relations developments in the last week of 2018; he uses a critical eye to examine the foreign policy record of the United States since the end of the Cold War .

Following the fall of the Soviet Union, Walt argues, the United States could have proceeded with a more restrained grand strategy as tensions and security threats were reduced in the resulting unipolar world. But, as he articulates, the opposite occurred, and the United States engaged in a foreign policy called "liberal hegemony." He asserts that this policy of liberal hegemony, although a "costly failure," has been followed by

each successive US administration for the last 25 years. His assessment of this dynamic and the foreign policy community that works to continue this effort makes *The Hell of Good Intentions* a must read for international relations students and academics alike.

Walt's book is a critique of what he terms the foreign policy establishment and their "deep engagement" posture toward international relations. His argument is that this established bipartisan elite, largely residing in the Beltway of Washington, DC, has managed to sustain a robust posture for the United States in the international arena—even as the execution of this policy has been less than ideal. Walt's thesis asserts that the momentum for liberal hegemony is sustained by its advocates exaggerating international dangers, overstating the benefits, and concealing the true costs, and all the while there are few accountability measures for those furthering this posture.

Walt posits that in addition to a lack of accountability, the tolerance for any dissenting opinion is limited due to the pervasive nature of the interest in spreading democratic values and a democratic system of government to all parts of the world. This grand idea for our policy can only be accomplished by the indispensable nation that is the United States of America. Any opinion advocating a more limited posture, Walt writes, is construed as weakening US credibility and is isolationist thinking. In this book, Walt warns that this liberal hegemony policy is solely focused on remaking the world in America's image—rather than focused on protecting the best interests of the citizens of the United States.

Interestingly enough, Walt begins by recounting his original intention for this work and his idea that it would be an assessment of US foreign policy at the end of the first year of what would be Pres. Hillary Clinton's administration—the underpinning assumption being that the liberal hegemony policy would be alive and well in 2018. His intriguing assessment is that the American people's loss of patience for the foreign policy status quo surfaced in November 2016.

Supporting the main argument for this work, Walt offers thorough analysis for each aspect of his thesis and bolsters his assessment with 69 pages of citations. The format of the book makes the content easy to navigate, and I could easily envision this book incorporated into a foreign policy course, especially given the critical argument opposing the popular bipartisan international relations policy.

His analysis is not above some critique, most notably his assessment of the military and military senior leaders in support of liberal hegemony. As an example, he cites the escape of Osama bin Laden through the failure of the senior military commander to order Rangers to secure Tora Bora in 2001 (which, in fact, is a task akin to securing the Rocky Mountains). Walt does, however, make up for this evaluation by offering a harsh assessment of the media in supporting the liberal hegemon policies' lack of accountability. In the end, his overall analysis is well supported, and he does make compelling arguments in this work.

In keeping with the original purpose for the book, Walt includes a review of foreign policy for the president who was actually elected in 2016 rather than the one most thought would win. There is an entire chapter dedicated to how President Trump has gotten it all wrong. Initially intended as a critique of the anticipated Hillary Clinton administration, Walt instead carefully lays out the first year of US foreign policy under the Trump presidency and how Trump's record does not stray too far from the practices of the previous US heads of state since the end of the Cold War. This chapter of the book is far from unbiased and at times digresses into simple Trump bashing, although the points Walt articulates are consistent with the previous thesis of the book and acknowledge areas where the current administration deviates from the status quo. He also examines how the election of President Trump was partially a reaction by the American

constituency to the previous status quo and that Hillary Clinton, in the eyes of the voters, represented a policy of more of the same.

Stephen Walt closes the book with a chapter dedicated to his own proposal for a sustainable approach to US foreign policy. His recommendations are grounded in ideas that would protect the interests of the United States but reduce reliance on deep engagement as in policies of the past. Offshore balancing anchors his thoughts on how the United States could approach the world in the future. Refreshingly, he acknowledges the challenges this approach would face with a rising China and other states' desire for influence within their respective regions. Walt's evidence in support of offshore balancing is not as thorough as his dislike for liberal hegemony, but his book is clearly thought-provoking reading—especially as President Trump takes measures to reduce our military footprint across the globe toward the end of 2018.

COL Patrick T. Budjenska, US Army

Will China's Economy Collapse? by Ann Lee. Polity Press, 2017, 137 pp.

Many pundits around the world suggest that China's economy is likely to collapse. Author Ann Lee, a frequent commentator on global economics and financial issues and adjunct professor of economics at New York University, assesses this topic in her book. She asserts otherwise by systematically refuting the purported macroeconomic issues creating the so-called economic fragility of China by drawing upon a number of direct comparisons to the United States. Her premise is, how could China's economy be so at risk when it is in better shape than the US economy?

In setting the stage, the author notes that China has sustained an annualized growth rate of 10 percent over the last 20-plus years, an unrivalled and remarkable accomplishment. China's economic turnaround is largely attributable to embracing a state-centered, export-oriented economic model—an approach closely resembling that which led to the economic successes of the "Asian Tigers"—Singapore, Taiwan, South Korea, and Hong Kong.

Lee begins her quest by highlighting the perceived debt issue China faces and quickly points out that China's debt is largely internal to China. She believes that debt is only a possible problem when it is denominated in a currency other than your own. China's debt is almost exclusively denominated in its own currency. Furthermore, China's public debt is less than half that of the United States. China's banks are healthier and more transparent than US banks. Lee espouses that China's debt is trending down while its personal savings rate remains high at 50 percent—much more than that of the United States at less than ten percent. China's government and state-owned enterprises' aggregated debt is also relatively low at only 30 percent of the GDP—a fraction of that of the US GDP. Lee alleges that the shadow banking debt problem in China is greatly overblown and that the Chinese government has a better handle on its banking system than the United States does (e.g., the 2007 US banking and mortgage financial crisis).

The author considers the ghost cities and property bubble facing China as exaggerated. She asserts that unlike those of the United States, China's fiscal policies are growth oriented. Capital controls on foreign currency are merely to keep foreign reserves high in China as a financial stabilizing force. China does not need financial reforms in regulating its foreign currency reserves, currency valuation, or interest rates. These reforms would only help the West. She ultimately sees the Chinese Renminbi rising to become an international currency, ultimately replacing the US dollar as the premier vehicle of currency.

The author believes that the chances of an economic crash in China are remote due to the complex and diverse nature of the Chinese economy. She claims the Chinese government has the innate ability to use monetary and fiscal policy to overcome any economic slowdown, thus averting the possibility of an economic crisis. Author Lee lauds China's monetary policy that targets industries for growth, whereas US policy does not.

She emphasizes that the population decline in China will only cost its GDP a half percent in growth, raising real wages of Chinese workers to their benefit while not hurting China's international competitiveness. Shortages in skilled workers are readily dealt with through worldwide recruiting. She further suggests that the personal consumption level of China's GDP is grossly understated and that the country is not overly export dependent to grow its economy.

The poverty and healthcare issues China faces are swiftly being tackled by private and state investment. China's anticorruption campaign has made for better corporate citizens in China than exist in the United States. China's corruption campaign led to a significant reduction in US luxury goods sales in China. She claims these goods were previously used to bribe Chinese business leaders and are no longer marketable in China.

Lee believes that China is the world's growth engine and a better investment than the United States. China provides opportunities for skilled workers while the United States focuses on empowering the rich. The United States spends its time opposing vice-fostering Chinese initiatives that promote trade, foreign investment, and infrastructure development for evolving countries, thus undermining China's economic growth (e.g., US opposition to China's Belt and Road Initiative and the China-led Asian Infrastructure and Investment Bank). Finally, China's growing defense expenditures are a direct counterbalance to US presence in East Asia and a reflection of its goal to protect its interests against US aggression.

Although the author touches upon some of the most notable pundit concerns affecting the Chinese economy, she comes up woefully short in substantively challenging them and then meaningfully assessing them against the United States. As such, the book reads as very shallow; rather than scholarly rigor, it uses conversationally reasoned conjecture supported by anecdotal analysis. Indicative of the lack of the book's rigor is that of the 21 sources she does cite—one being herself, the vast majority are newspaper pieces and popular Asian-focused monthly business journals. This fact also undermines the credibility and value of the book.

Finally, it is blatantly biased toward China. The reader will find little in the way of objective perspective. Lee fails to mention or adequately report on such things as China's controversial trade policy and foreign business practices, patent violations, lack of intellectual property protection, and state-sponsored corporate espionage. Regarding China's macroeconomics, she makes light of China's habitually false or misleading economic data reports that indicate greater economic growth than the ground truth. She provides no reference to shrinking foreign direct investment into China. Nor does she mention China's struggle to shift from an industrial-based to a service-based economy or that China is now investing more in manufacturing in other countries than in its own. All of these factors are telltale signs that China is losing its manufacturing competitive edge. Additionally, China faces huge demographic issues undermining its economic growth going forward. China has an aging population and a low birth rate, resulting in a labor shortage and higher labor costs that are adversely affecting its trade competitiveness. The author does not acknowledge this situation at all. Moreover, China has an underfunded healthcare system, making the aging population situation even more problematic. China also has an aggregate debt per capita greater than that of the United States and an environmental cleanup crisis requiring trillions in US dollars to adequately address. In other words, the Chinese government is facing growing social welfare obligations

that are outpacing tax revenues. In closing, the above-mentioned is all under a backdrop of growing resentment toward China throughout the international community—not an enviable position to be in. Unfortunately, this book is best read by those merely interested in a purely Chinese opinion piece rather than an enlightening, well-informed, objective, and thought-provoking body of work on one of the most critical global economic concerns/challenges impacting the international community today.

David A. Anderson
US Army Command and General Staff College

Mission Statement

Strategic Studies Quarterly (*SSQ*) is the strategic journal of the United States Air Force, fostering intellectual enrichment for national and international security professionals. *SSQ* provides a forum for critically examining, informing, and debating national and international security matters. Contributions to *SSQ* will explore strategic issues of current and continuing interest to the US Air Force, the larger defense community, and our international partners.

Disclaimer

The views and opinions expressed or implied in *SSQ* are those of the authors and should not be construed as carrying the official sanction of the US Air Force, the Department of Defense, Air Education and Training Command, Air University, or other agencies or departments of the US government.

Comments

We encourage you to e-mail your comments, suggestions, or address change to: **StrategicStudiesQuarterly@us.af.mil**.

Article Submission

The *SSQ* considers scholarly articles between 5,000 and 15,000 words from US and international authors. Please send your submission in Microsoft Word format via e-mail to:

StrategicStudiesQuarterly@us.af.mil

Strategic Studies Quarterly (SSQ)
600 Chennault Circle, Building 1405
Maxwell AFB, AL 36112–6026
Tel (334) 953–7311

View *Strategic Studies Quarterly* online at
https://www.airuniversity.af.edu/SSQ/

Free Electronic Subscription

Like Air University Press on Facebook at https://www.facebook.com/AirUnivPress
and follow us on Twitter at https://www.twitter.com/AirUnivPress

Strategic Studies Quarterly (*SSQ*) (ISSN 1936-1815) is published quarterly by Air University Press, Maxwell AFB, AL.