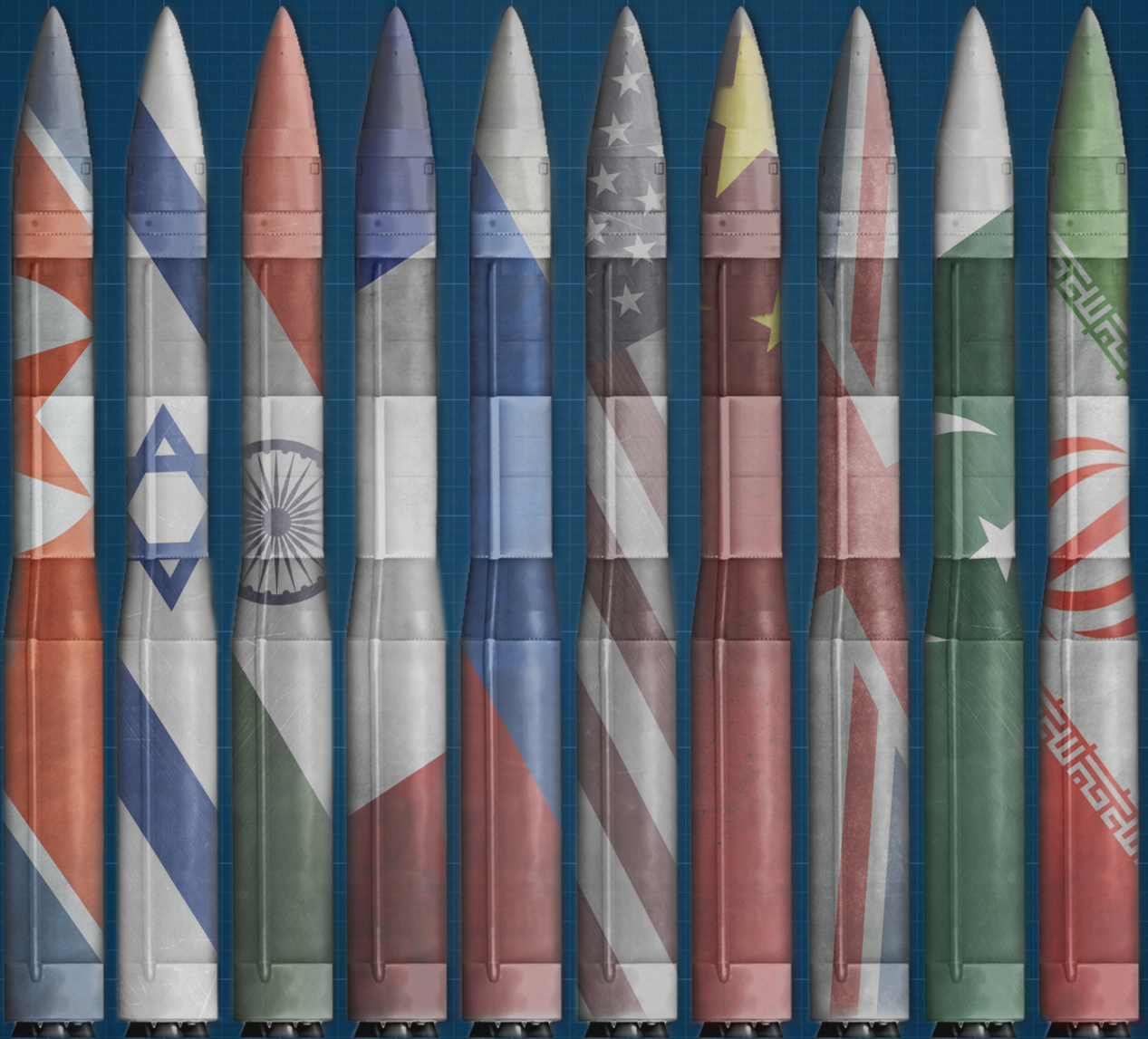


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Center for Strategic and Budgetary Assessments

RETHINKING ARMAGEDDON

SCENARIO PLANNING IN THE SECOND NUCLEAR AGE



ANDREW F. KREPINEVICH
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The Center for Strategic and Budgetary Assessments is an independent, nonpartisan policy research institute established to promote innovative thinking and debate about national security strategy and investment options. CSBA's analysis focuses on key questions related to existing and emerging threats to U.S. national security, and its goal is to enable policymakers to make informed decisions on matters of strategy, security policy, and resource allocation.

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Executive Summary

For much of the forty-six-year Cold War between the United States and the Soviet Union, many of the West's most gifted strategists focused their talents on how to prevent the two nuclear superpowers from engaging in a war that could destroy them both as functioning societies—and perhaps the rest of the human race along with them. With the Soviet Union's collapse in 1991, the threat of nuclear Armageddon receded dramatically.

The Cold War was also characterized by a bipolar international system and a corresponding bipolar nuclear competition between the United States and the Soviet Union. While a few other states, such as Great Britain and France, also possessed nuclear arms, their arsenals were very small compared to those of the two superpowers.

The world is far different today. On the one hand, both the United States and Russia have far smaller nuclear arsenals than they did at the Cold War's end. The New START (Strategic Arms Reduction Treaty) agreement limits each country to no more than 1,550 strategic nuclear weapons. At the same time, new nuclear powers have emerged. These developments have introduced a shift from the bipolar Cold War nuclear competition to an increasingly multipolar competition among nuclear powers.

This assessment employs scenario-based planning as a means of better understanding the competitive dynamics of what has become known as the Second Nuclear Age and the implications for U.S. interests, with an emphasis on preserving the seventy-one-year tradition of non-use of nuclear weapons (since their only use in 1945), also known as the “nuclear taboo.” With this in mind, the assessment explores, among other things, the implications of the Second Nuclear Age for extended deterrence, crisis stability, missile defense, prompt conventional global strike, growing multipolar or “n-player competitions, and planning assumptions as they have been influenced by advances in the cognitive sciences, to include prospect theory.

Why Scenarios?

Scenarios can be thought of as a vision of what the future world might look like, or a set of plausible and strategically relevant futures. Done well, scenarios can help us identify potential

threats and opportunities with an eye towards taking steps now to avoid the former and increase the odds of realizing the latter. By describing a path from the current world to a future world, scenarios can also help us understand the factors that may divert the world from its current course. Identifying these factors can be important since they may serve as early indicators that we are moving into a different and potentially more dangerous future.

Scenarios are not intended to predict or forecast the future. There are too many variables, dynamically interacting in exponentially growing ways, shaping the nuclear competition to attempt to predict with precision what it will be like even a few years into the future. Rather, scenarios help us to think about the future, in part by helping us challenge our embedded assumptions about what it might look like. By developing scenarios that include obvious as well as less obvious futures, this process also enables policymakers to hedge against uncertainty. Indeed, a crucial lesson that emerges from scenario-based planning is the need to prepare, or at least hedge, against the prospect that a future that reflects the characteristics of one or several scenarios may emerge.

Key Insights

This assessment includes five scenarios divided between three regions where tensions among nuclear and other major regional powers are increasing: Europe, the Middle East, and East Asia. The scenarios also have a temporal aspect to them with four focusing on the immediate issue of crisis stability and one focusing on a long-term competition among China, Russia, and the United States. The insights below were identified in the scenarios, and indicate how the Second Nuclear Age might be different than the First.

Competitive Dynamics of the Second Nuclear Age

The scenarios suggest that the increasing importance of non-nuclear strategic weapons, the shift from bipolar to multipolar competition, and a rewritten and expanded escalation ladder will characterize the Second Nuclear Age. Put another way, the Cold War “nuclear balance” has evolved into the broader “strategic balance” that includes non-nuclear weapons capable of achieving strategic effects, such as cyber weapons and precision weapons, as well as advanced air and missile defenses.

Nuclear proliferation and the potential expansion of China’s nuclear arsenal suggest that the Second Nuclear Age strategic competition might be increasingly multipolar. This competition might exist within the kind of fluid and dynamic international system not seen since before World War II. Establishing a stable strategic balance becomes much more complicated in a fluid international system where the nuclear powers can quickly shift into new alliances and partnerships. For instance, the branch within the Iran scenario suggests that the addition of even one nuclear power, in this case Saudi Arabia, to an Iran-Israel competition complicates efforts to maintain crisis stability. The growing importance of non-nuclear strategic weapons (such as cyber munitions, conventional precision-strike forces, and advanced missile defenses)

will give technically advanced non-nuclear powers like Germany and Japan the ability to exert a significant effect on the strategic competition. And if the nuclear arsenals of the major powers continue to shrink, the ability of minor nuclear powers to influence the competition will likely grow as well.

Finally, when Herman Kahn developed his metaphorical escalation ladder over half a century ago, thinking about escalation was dominated by the U.S.-Soviet rivalry and how to avoid nuclear war. While the objective of avoiding nuclear use still obtains, as these scenarios show, the escalation ladder's structure is badly in need of an update, given the geopolitical and military-technical changes over the past quarter century.

Implications for U.S. Force Posture, Crisis and Alliance Management, and Arms Control with New Nuclear States

The diagnostic nature of scenarios dictates that detailed prescriptions regarding the size and composition of U.S. nuclear forces or specific policy or diplomatic initiatives necessary to preserve the nuclear taboo are beyond the scope of this assessment.

U.S. Force Posture

The scenarios do, however, suggest potential gaps within the arsenal. In the crisis scenarios—those involving Iran, North Korea, and Russia—decision-makers explore non-nuclear options in responding to nuclear use or the threat of use, including precision strikes, air and missile defenses, and cyber weapons in deterring or responding to nuclear use. The scenarios also suggest the need for a greater range of nuclear options in terms of weapon yield and delivery systems.

While the U.S. strategic nuclear arsenal's size does not play a major role in the crisis scenarios, it does in the China scenario, which explores an emerging nuclear great-power competition among Beijing, Moscow and Washington. It raises questions regarding the proper size and composition of the U.S. nuclear arsenal and, more broadly speaking, its strategic arsenal.

Crisis and Alliance Management

The crisis scenarios covered in this assessment also identify several factors likely to influence crisis stability. For instance, limitations in smaller nuclear powers' early warning and command-and-control systems might result in their nuclear forces operating on a hair-trigger alert or with their leaders predelegating release authority to protect against a decapitating enemy first strike. Moreover, limited early warning systems complicate the attribution problem—when confronted by multiple adversaries, a country subjected to attack may not be able to determine promptly the source, restricting its ability to retaliate with confidence against the aggressor and thus undermining deterrence.

Providing extended deterrence to allies and key partners will likely remain challenging. Throughout the scenarios, U.S. allies want different, incompatible forms of reassurance. For instance, in the North Korea scenario, Tokyo desires a far more robust response to North

Korean aggression than does Seoul. In the Russia scenario, diverging interests and threat perceptions within the North Atlantic Treaty Organization (NATO) prevents the alliance from taking a united stand.

Haystack Tactics

During the Cold War, the United States and Soviet Union had large nuclear arsenals before developing ballistic missiles. The reverse is true today. The Iran and North Korea scenarios focus on how a country with plenty of missiles, but nuclear scarcity, might employ its arsenal. If Iran or North Korea determines that it must strike a defended target with a nuclear weapon, it might employ “haystack” attack tactics involving large missile salvos in which only a few are armed with nuclear warheads. Since the defender cannot distinguish between nuclear-armed missiles and decoys, it must attempt to intercept all missiles. In so doing, the attacker can increase the likelihood that a nuclear weapon will penetrate advanced missile defenses by saturating them.

Arms Control and Deterrence with New Nuclear States

It follows that if geopolitical and military-technical changes require us to rethink in fundamental ways our view of strategic warfare, so too must we rethink how this military competition might best be regulated through diplomacy to achieve the United States’ priority interest of preserving the nuclear taboo.

One might compare the shift from the First to the Second Nuclear Age to the change in naval competition after World War I. Germany and Great Britain were engaging in a furious race to build *Dreadnought*-type battleships prior to the war. Then, in 1922, all the principal naval powers signed the Washington Naval Treaty to restrain the ongoing multipolar maritime competition. The treaty, however, covered not only the traditional capital ship—the battleship—but also newly emerging vessels like aircraft carriers and diesel-powered submarines. Just as the Washington Naval Treaty had to address a multipolar competition and broaden its efforts to include new capabilities affecting the competition, so too will arms control in the Second Nuclear Age.

Final Thoughts

Thomas Schelling once lamented that it took twenty years after the dawn of the nuclear age for strategists and policymakers to think through the implications of nuclear weapons. If we mark the advent of the Second Nuclear Age as the point the Soviet Union collapsed and the United States introduced precision warfare, then we are a quarter-century along in this new era.

Yet this new age has yet to produce the kind of foundational analyses contributed by the leading strategists of the First Nuclear Age, such as Bernard Brodie, Herman Kahn, William Kaufmann, Henry Kissinger, Andrew Marshall, Thomas Schelling, and Albert and Roberta Wohlstetter. Perhaps it is because the Second Nuclear Age appears so much more complex than the first—although a big challenge has hardly discouraged brilliant and ambitious strategists in the past. Or maybe it is because the Second Nuclear Age lacks the immediate

existential danger posed by the Soviet Union so soon after a major war that did so much to incentivize thinking during the First Nuclear Age. Or it may be that in the current age the best analytic talent has been devoted primarily to reducing the number of nuclear players (nonproliferation) and number of weapons (arms control and disarmament), rather than the consequences of these efforts achieving only partial success.

Whatever the reason for this benign neglect, the existing and prospective challenges posed by the Second Nuclear Age, as reflected in the scenarios presented here, are sobering. If the United States seeks to preserve the nuclear taboo, it ignores them at its peril.

CHAPTER 1

Introduction

Andrew F. Krepinevich

This assessment employs scenario-based planning as a means of better understanding the competitive dynamics of what has become known as the Second Nuclear Age and the implications for U.S. interests, with emphasis on preserving the 71-year tradition of non-use of nuclear weapons, also known as the “nuclear taboo.” With this in mind, the assessment explores, among other things, the implications of the Second Nuclear Age for extended deterrence, crisis stability, missile defense, prompt conventional global strike, growing multipolar or “n-player competitions, and planning assumptions as they have been influenced by advances in the cognitive sciences, to include prospect theory. The assessment finds that the Second Nuclear Age poses substantially different security challenges to policy makers and defense planners. Moreover, it concludes that these challenges may change in both their form and scale over the next decade.

For much of the forty-year Cold War between the United States and the Soviet Union, many of the West’s most gifted strategists focused their talents on how to prevent the two nuclear superpowers from engaging in a war that could destroy them both as functioning societies—and perhaps the human race along with them. With the Cold War’s end and the collapse of the Soviet Union, the threat of nuclear Armageddon receded dramatically. The *Bulletin of Atomic Scientists* moved the arm of its Doomsday Clock, which had stood at three minutes to midnight in 1984, back to seventeen minutes in 1991, the furthest it had ever been set.¹

Since that time, the United States and other members of the global community have redoubled their efforts to stem the proliferation of nuclear weapons. The results have been mixed.

¹ According to the editors of *The Bulletin*, “The Clock evokes both the imagery of apocalypse (midnight) and the contemporary idiom of nuclear explosion (countdown to zero).” Over time the factors considered in setting the Clock have expanded to include climate change and emerging technologies in the life sciences, such as the threat of biological weapons. “About Us,” *The Bulletin of Atomic Scientists*, available at <http://thebulletin.org/about-us>.

Efforts aimed at removing nuclear weapons from former Soviet republics proved successful,² while attempts to arrest efforts by India, North Korea, and Pakistan to acquire nuclear weapons have failed. The jury is out regarding Iran's apparent efforts to create a nuclear capability in the face of ongoing efforts by the international community to dissuade it from doing so.³

Aside from non-proliferation issues, there are growing concerns over internal instability in nuclear-armed states, such as North Korea and Pakistan. A failed nuclear state could increase the prospect that organized criminal elements and radical transnational terrorist organizations might find ways to gain access to nuclear weapons or materials. This combination—an increase in the number of nuclear-armed states, potential instability in several of these states, and the rise of non-state entities with substantial resources—has been a principal motive behind calls from distinguished security experts and former policymakers to move vigorously toward eliminating all nuclear weapons as the best way of ensuring they would never be used.⁴

In response to these disturbing trends, the Doomsday Clock now stands at three minutes to midnight again, the closest it has been in over thirty years.⁵ Indeed, the challenges of minimizing the risk of nuclear weapons use are exacerbated by a fundamental shift to a new nuclear regime, or Second Nuclear Age, whose defining characteristics extend well beyond concerns over proliferation and the securing of nuclear materials.⁶

N-Player Nuclear Competitions

The Cold War was characterized by a bipolar international system and a corresponding bipolar nuclear competition between the United States and the Soviet Union. While a few other states, such as Great Britain and France, also possessed nuclear arms, their arsenals were very

2 Success was also achieved in getting Argentina, Brazil, Libya, and South Korea to abandon their nascent nuclear programs.

3 The Joint Comprehensive Plan of Action (JCPOA) signed between Iran and China, the European Union, France, Germany, Japan, Russia, the United Kingdom, and the United States positions Iran, at a minimum, as a nuclear-threshold state.

4 Distinguished public figures have advocated eliminating nuclear weapons. See, for example, George P. Shultz, William J. Perry, Henry A. Kissinger, and Sam Nunn, "Toward a Nuclear-Free World," *Wall Street Journal*, January 15, 2008; and George P. Shultz, William J. Perry, Henry A. Kissinger, and Sam Nunn, "A World Free of Nuclear Weapons," *Wall Street Journal*, January 4, 2007. Both articles are available at the *Nuclear Security Project*, <http://www.nuclearsecurityproject.org/publications/wall-street-journal-op-eds>. Still other notable strategists have argued strongly against the proposition. See, for example, Thomas C. Schelling, "A World Without Nuclear Weapons?" *Daedalus*, Fall 2009, pp. 124–129; and Harold Brown and John Deutch, "The Nuclear Disarmament Fantasy," *Wall Street Journal*, November 19, 2007.

5 "Timeline," *The Bulletin of the Atomic Scientists*, available at <http://thebulletin.org/timeline>. *The Bulletin* notes, "Unchecked climate change, global nuclear weapons modernizations, and outsized nuclear weapons arsenals pose extraordinary and undeniable threats to the continued existence of humanity."

6 On the issue of securing nuclear materials, see Matthew Bunn, Martin B. Malin, Nickolas Roth, and William H. Tobey, *Advancing Nuclear Security: Evaluating Progress and Setting New Goals* (Cambridge, MA: Belfer Center for Science and International Affairs, 2014).

small compared to those of the two superpowers.⁷ The two European powers were also long-standing U.S. allies. China, an independent actor for much of the latter part of the Cold War, became a nuclear power in 1964, but its arsenal remained modest, numbering only a few hundred weapons in contrast to the superpower inventories, which ran into the tens of thousands. Israel, like China, maintained a relatively small nuclear arsenal. Unlike China, Israel did not even acknowledge its nuclear capability.

The world is far different today. On the one hand, both the United States and Russia have far smaller nuclear arsenals than they did at the Cold War's end. The New START agreement limits each country to no more than 1,550 strategic nuclear weapons. At the same time, new nuclear powers have emerged. These developments have introduced a shift from the bipolar nuclear competition that dominated the Cold War to an increasingly multipolar competition among nuclear powers. For example, with the emergence of India and Pakistan as nuclear states, their long-standing rivalry now has a nuclear tint to it. Moreover, India must also take into account China's nuclear arsenal, given Islamabad's long-standing relationship with Beijing, as well as China's decades-old competition with New Delhi for influence in Asia. Similarly, if Iran were to acquire a nuclear capability, it could quickly lead to a proliferation cascade in the Middle East, with Saudi Arabia and Turkey the most likely candidates for crossing the nuclear threshold, perhaps along with Egypt and the United Arab Emirates (UAE).⁸ If Pakistan, which has close ties to Saudi Arabia, facilitates the latter's acquisition of nuclear weapons, it could link any Middle East nuclear competition with the South Asian nuclear rivalry.

On a global scale, the growing U.S. rivalry with China and Russia could, if it has not already, produce a corresponding three-player nuclear competition involving the world's two leading economic powers and the country with the world's largest nuclear arsenal. In summary, there may be several overlapping "n-player" or multipolar nuclear competitions under way, with the prospect of more emerging over the next decade.

7 The United States possessed over 30,000 nuclear weapons by the early 1960s and over 20,000 at the Cold War's end. By the early 1960s the Soviet Union had several thousand weapons with its inventory peaking in the mid-1980s at over 40,000. At the time of the fall of the Berlin Wall, the USSR's nuclear weapons inventory stood at over 35,000. Data provided by the Natural Resources Defense Council, "Table of U.S. Nuclear Warheads," available at <http://www.nrdc.org/nuclear/nudb/datab9.asp>; and "Table of USSR/Russian Nuclear Warheads," available at <http://www.nrdc.org/nuclear/nudb/datab10.asp>. By contrast Great Britain's nuclear forces never exceeded 400 weapons, while France's inventory peaked at roughly 500 weapons. China's nuclear arsenal is believed to have never numbered more than some 450 weapons. Data provided by the Natural Resources Defense Council, "Table of Global Nuclear Weapons Stockpiles, 1945–2002," available at <http://www.nrdc.org/nuclear/nudb/datab19.asp>.

8 See Eric S. Edelman, Andrew F. Krepinevich, Jr., and Evan Braden Montgomery, "The Dangers of a Nuclear Iran," *Foreign Affairs*, January–February 2011; Andrew F. Krepinevich, *Critical Mass: Nuclear Proliferation in the Middle East* (Washington, DC: Center for Strategic and Budgetary Assessments, 2013); Commission on the Prevention of Weapons of Mass Destruction, Proliferation and Terrorism, *World at Risk* (New York: Vintage Books, December 2008), pp. 61–63; and Daniel Coats and Charles Robb, co-chairs, Independent Task Force, *Meeting the Challenge: U.S. Policy Toward Iranian Nuclear Development* (Washington, DC: Bipartisan Policy Center, September 2008), pp. 52–53.

Multipolar nuclear competitions are different from bipolar competitions in important ways. For example, an n-player nuclear competition among comparable powers would likely be characterized by higher levels of uncertainty regarding the nuclear balance and, perhaps, crisis instability as well. Consider a simple thought experiment involving three competitors, each with nuclear arsenals comprising 500 weapons employed on similar delivery systems. Each nuclear power would have to contend with the prospect of competing with two rivals whose combined arsenals are double that of its own. Planning metrics that had been established during the Cold War to enhance crisis stability and reduce the prospects of nuclear use, such as maintaining nuclear parity with one's rival and preserving an assured second-strike capability, could prove difficult (and perhaps impossible) to achieve in an n-player competition.

For instance, in the example provided, three powers each possess 500 nuclear weapons. It is not possible for each power to have parity with the other two combined. Yet each power might want to hedge against the possibility that its two rivals could join in an alliance against it. In that case the isolated power might want to increase its arsenal to offset, at least partially, the shortfall of 500 weapons it confronts in the form of its rival alliance. This could produce an arms race as each of its rivals might, in turn, seek to hedge against the possibility of the alliance dissolving and being placed in an inferior position.⁹

The potential for a crisis to escalate out of control could be significantly greater in a multipolar nuclear system than in the Cold War era. For example, a crisis that begins with a confrontation between India and Pakistan could become less stable were China to weigh in on the side of Pakistan, or if China's intervention triggered Russian involvement on India's behalf. Simply put, increasing the number of decision centers in a crisis in which the prospect belligerents are all armed with nuclear weapons would appear to pose challenges significantly different and, perhaps, more destabilizing than those associated with a confrontation between two nuclear powers.¹⁰

9 This assumption regarding parity and deterring a disarming first strike by fielding a secure second-strike capability appeared to hold with respect to the United States and the Soviet Union during the Cold War. Neither side appeared comfortable with the other having a significant advantage in numbers of weapons. Yet other nuclear powers have not followed a similar course of action. India, for example, has not sought to keep pace with Pakistan's ambitious rate of nuclear weapons production, although this may change. See, for example, Adrian Levy, "Experts Worry That India Is Creating New Fuel for an Arsenal of H-Bombs," *The Center for Public Integrity*, December 16, 2015, available at <http://www.publicintegrity.org/2015/12/16/18874/experts-worry-india-creating-new-fuel-arsenal-h-bombs>. During the Cold War and especially in recent years, China could have increased its modest nuclear arsenal but has apparently chosen not to do so. During the U.S.-Soviet nuclear rivalry, China's decision may have been influenced by the sheer cost involved in attempting to match the superpowers' arsenals. Yet both the American and Russian arsenals are far smaller today, and China is financially far more able to match their numbers.

10 To be sure, Cold War French theories of deterrence stressed the stabilizing impact of additional centers of decision to justify their nuclear forces, a position the United States rejected. That being said, the circumstances described in the scenarios comprising this assessment—nuclear-armed states close to one another; the prospective absence of effective early attack warning and command-and-control structures; the likelihood that leaders from different cultures may experience great difficulty in understanding their rivals' calculation of costs, benefits, and risks—are arguably markedly different from the Cold War era, and in ways likely to undermine stability.

There is also the matter of the dynamics of multipolar competitions apart from crisis situations. Nuclear powers may be engaged in a long-term competition where each is likely to seek to improve its security or its competitive position over an extended period of time. What paths will be open to them to gain a competitive advantage? Will such efforts increase or reduce the prospects for conflict? Can the security of any one or several competitors be enhanced without coming at the expense of the others, or will they find themselves confronting a “security dilemma?”¹¹

History also suggests that it may be difficult for some powers to avoid adopting military doctrines that call for employing nuclear weapons in the event of war. For example, nuclear powers that suffer from a significant inferiority in conventional military power relative to their rivals have demonstrated a tendency to adopt doctrines calling for nuclear weapons use as a means of offsetting their inferiority. The United States arguably adopted such a doctrine during the Cold War, while more recently both Pakistan and Russia have embraced a similar posture—with respect to India in the case of Pakistan, and China and the United States/NATO in the case of Russia.

The Blurring of the Nuclear-Conventional Firebreak

During the Cold War the line, or “firebreak,” between conventional and nuclear weapons was relatively bright and unambiguous compared to the conditions following the revolution in precision warfare. The first large-scale, intensive use of precision-guided weaponry in the First Gulf War preceded the Soviet Union’s collapse only by a few months. In the years leading up to the war, Soviet military theorists had written on the potential of precision-guided weaponry combined with modern sensors and communications systems to form a “reconnaissance-strike complex” that would herald what some called a “military-technical revolution” and others a “revolution in military affairs.” In 1984, for example, Soviet Marshal V. N. Ogarkov declared:

Rapid changes in the development of conventional means of destruction and the emergence in the developed countries of automated reconnaissance-strike complexes, long-range high-accuracy terminally-guided combat systems, unmanned flying machines, and qualitatively new electronic control systems make many types of weapons global and make it possible to sharply increase, by at least an order of magnitude, the destructive potential of conventional weapons, bringing them closer, so to speak, to weapons of mass destruction in terms of effectiveness.¹²

11 A security dilemma exists when the actions taken by Competitor A to enhance its security are viewed as threatening by one or more of its rivals, which lead them to take steps to offset the threat, producing a net decrease in Competitor A’s security. Should Competitor A take further steps in response to its rivals’ offsetting measures, and its rivals respond again in kind, it can create a spiral effect characterized by increasing arms, hostility, and tension between the rival competitors. For a discussion of the security dilemma, see Robert Jervis, *Perception and Misperception in International Politics* (Princeton, NJ: Princeton University Press, 1976), pp. 62–94.

12 Interview with Marshal of the Soviet Union N. V. Ogarkov, chief of the general staff, “The Defense of Socialism: Experience of History and the Present Day,” *Krasnaya Zvezda*, May 9, 1984, pp. 2–3. Cited in Michael J. Sterling, *Soviet Reactions to NATO’s Emerging Technologies for Deep Attack* (Santa Monica, CA: RAND, August 1985), p. 8. Cited in Barry D. Watts, *Six Decades of Guided Munitions and Battle Networks: Progress and Prospects* (Washington, DC: Center for Strategic and Budgetary Assessments, 2007), p. 25.

Around that time, an article published in *Ekonomika, Politika, Ideologiya* argued that the weaponry described by Ogarkov had a power and effectiveness “similar to weapons of mass destruction in terms of their combat features.”¹³

Nearly a decade earlier, U.S. military planners working on the Long Range Research and Development Planning Program, whose purpose was to identify technologies that could provide “the National Command Authority with a variety of response options as alternatives to massive nuclear destruction,” concluded:

Near zero miss, non-nuclear weapons could provide the National Command Authority with a variety of strategic response options as alternative[s] to massive nuclear destruction. In fact, it is not outside the realm of possibility for the United States, while maintaining or improving present military capabilities, safely to take the lead in reducing the world inventory of theater nuclear weapons as it once led the world in the introduction of nuclear weapons.¹⁴

For the past quarter-century, the U.S. military’s mastery of precision warfare enabled by the fielding of battle networks (Ogarkov’s “reconnaissance-strike complexes”) provided it with a significant advantage over its prospective rivals. Both China and Russia have been working to offset this advantage, in part by developing their own reconnaissance-strike complexes. In the interim, the Russians in particular have sought to offset the U.S. advantage in precision warfare and Russia’s declining demographic profile¹⁵ by enhancing its atomic arsenal and changing its nuclear doctrine.

With respect to the latter, we find the Russian military emphasizing low-yield nuclear weapons to offset their conventional inferiority relative to the United States/NATO and China. Since 1999, Russian military exercises depicting wars against both NATO and China have included the employment of nuclear weapons. Nuclear weapons may be employed if Russia’s conventional forces appear to be on the cusp of defeat. By escalating to nuclear use, the Russian doctrine seeks to convince their enemy to deescalate the war to avoid further nuclear use. It may

13 V. R. Bogdanov and A. I. Podberезkin, “Notes on the Qualitative Arms Race,” *Ekonomika, Politika, Ideologiya*, March 1984, p. 125. The term “weapons of mass destruction” as used by Soviet writers includes, in addition to nuclear weapons, chemical and biological weapons. In this context, however, the reference is clearly to nuclear weapons. Sterling, *Soviet Reactions to NATO’s Emerging Technologies for Deep Attack*, p. 8.

14 Dominic A. Paolucci, *Summary Report of the Long Range Research and Development Planning Program* (Falls Church, VA: Lulejian and Associates, February 7, 1975), p. 45. Cited in Barry D. Watts, *Nuclear-Conventional Firebreaks and the Nuclear Taboo* (Washington, DC: Center for Strategic and Budgetary Assessments, 2013), p. 17.

15 Absent remedial action, Russia’s population could shrink from 144 million today to 113 million by mid-century. This is driven by several factors, including a rapid decline in the number of women of childbearing age, high mortality rates, and low fertility rates. Ilan Berman, “Moscow’s Baby Bust?” *Foreign Affairs*, July 8, 2015, available at <https://www.foreignaffairs.com/articles/russian-federation/2015-07-08/moscows-baby-bust>.

be that Russia's leaders do not consider nuclear use in this manner as crossing of the once wide conventional-nuclear firebreak into the realm of nuclear war.¹⁶

China has pursued its own path. In 2001, the People's Liberation Army (PLA) Academy of Military Sciences published an English version of the *Science of Strategy*. Much of its contents are focused on the central role of the struggle for dominance between opposing information systems in local "high-tech" wars. Yet also it contained the following observation concerning nuclear electromagnetic pulse (EMP) weapons:

As information technology develops and it has more influence on the function of nuclear weapons, the discharge of nuclear energy will also be included into information control and applied in the struggle over the control of information rights (such as the electromagnetic pulse weapon being developed). Nuclear weapons may walk out of deterrence and be used in actual combat. But this kind of nuclear war is the nuclear war included in hi-tech local wars, and its essence is hi-tech local war.¹⁷

In summary, as conventional weapons have become increasingly precise and capable of achieving strategic effects, and as nuclear weapons design has enabled the fielding of more discriminate weapons, the clear distinction that existed in the first decades of the nuclear era between conventional and nuclear weapons has become progressively blurred. This could make sustaining the seventy-one-year-old tradition of non-use of nuclear weapons more difficult.

The Role of Defenses

One characteristic of both the first and second nuclear eras is the enduring advantage of the offense over the defense. Despite efforts to erect effective defenses against nuclear attack by air and missile forces, it has consistently been less costly to overcome these defenses by fielding new offensive systems to saturate defenses than by investing symmetrically in one's own defenses. In large part this stems from the enormous destructive potential of nuclear weapons. In the latter stages of the Cold War, both the United States and the Soviet Union possessed thousands of "strategic" nuclear weapons capable of striking the other's homeland. Even if 99 percent of these weapons had been successfully intercepted in flight, hundreds

16 Since 1999, the use of very-low-yield nuclear weapons has been regularly included in operational-strategic exercises conducted by the Russian General Staff. In *Zapad-1999* (West-1999), the Russians postulated a NATO attack on the Kaliningrad oblast, and, after three days of defensive action, Russian troops resorted to a limited nuclear strike with four air-launched cruise missiles from heavy bombers to deescalate the conflict. More recently, in *Vostok-2010* (East-2010) in eastern Russia—the largest military exercise in post-Soviet history—the exercise culminated with two live launches of nuclear-capable Tochka-U (SS-21) missiles against the command post of a "hypothetical opponent." Cited in Watts, *Nuclear-Conventional Firebreaks and the Nuclear Taboo*, p. 44. That being said, Russia's efforts to develop a "nuclear scalpel" are controversial and there is a debate over whether or not the Russian doctrine of use to deescalate has actually led to any operational changes in Russian nuclear posture. See Dmitry Adamsky, "Nuclear Incoherence: Deterrence Theory and Non-Strategic Nuclear Weapons in Russia," *Journal of Strategic Studies*, 37, No. 1, January 2014, pp. 91–134.

17 Peng Guangqian and Yao Youzhi, eds., *Science of Strategy* (Beijing: Military Science Press, 2001), p. 361. China's Military Science Publishing House published an English translation of this book in 2005. Cited in Watts, *Nuclear-Conventional Firebreaks and the Nuclear Taboo*, p. 64.

would have reached their targets, more than enough to inflict catastrophic damage upon the two superpowers.

That said, we are now in a period where there are nuclear-armed states with relatively small numbers of nuclear weapons when compared to the arsenals created by the Cold War superpowers. To counter a minor nuclear power, employing modern air and missile defenses may make sense. This is especially true where the country employing defenses enjoys a huge advantage in economic scale and technological sophistication as in the case, for example, of U.S. efforts to establish missile defenses to address the threat posed by North Korea's relatively small nuclear arsenal.

Defenses may also be attractive against a minor nuclear power if its rival adopts a strategy of preventive or preemptive war. Take the case of Israel and a prospective nuclear-armed Iran. Israel has a strong and generally successful history of striking first when it feels threatened.¹⁸ Should Iran acquire a nuclear capability, Israel could be tempted to conduct military operations to eliminate the threat while it is in its infant stages. Such an attack might eliminate most of Iran's small arsenal, leading to a "broken back" nuclear counter-strike against Israel against which air and missile defenses might prove effective.

In cases where a nuclear confrontation involves more than two competitors, it may be possible for a coalition to combine its defenses against an isolated power to good effect, especially in cases where a major power with substantial air and missile defenses is willing to supplement a minor nuclear power's defenses against another minor nuclear power. Nor can we discount the possibility that recent impressive advances in directed-energy weaponry and rail gun technology could significantly enhance the capability of defenses to intercept nuclear cruise and ballistic missiles as well as strike aircraft.¹⁹

Arms Control

During the Cold War, arms control—especially placing limits on the size and character of nuclear arsenals—was principally the purview of the two superpowers. Owing to the enormous (and still relatively large) arsenals the United States and Russia have maintained relative to those of the other nuclear powers, this practice of bilateral arms control was extended following the Cold War in the form of the START (Strategic Arms Reduction Treaty) and New

18 Israel attacked Egypt in the 1956 Suez War and again (as well as Jordan and Syria) in the 1967 Six-Day War. Israel also undertook preventive attacks against nuclear reactors in Iraq in 1981 and Syria in 2007. In each case Israel was successful. When Israel did not strike first in the October 1973 Yom Kippur War, it suffered substantial losses before recovering. Israel has been far less successful in cases where it initiated war against irregular forces, as when it invaded Lebanon in 1982 and in the Second Lebanon War in 2006.

19 See Mark Gunzinger with Chris Dougherty, *Changing the Game: The Promise of Directed-Energy Weapons* (Washington, DC: Center for Strategic and Budgetary Assessments, 2012), pp. 9–34. The U.S. Navy has recently deployed a laser weapon system (LaWS) on one of its warships, the USS Ponce, and the initial tests against drones and small watercraft have been encouraging. Both the Chinese and Russian militaries have major directed-energy programs underway. Richard Scott, "Laser Weapon Breaks Cover on USS Ponce," *IHS Jane's 360*, November 23, 2014.

START treaties. Yet as with other Cold War-era characteristics of the nuclear competition, bipolar nuclear arms control may also become part of a bygone era.

There are several reasons for this. First, thanks to successive rounds of nuclear arms reductions, the size of both the American and the Russian arsenals have declined dramatically. New START obligates both parties to reduce their strategic warhead levels to 1,550, and the Obama administration has proposed further reductions to 1,000 weapons. Thus the difference in nuclear arsenal size between the two nuclear superpowers and other nuclear states has narrowed dramatically. It may no longer be prudent to effect additional major reductions in the U.S. and Russian arsenals without considering the security implications with respect to other “medium” nuclear powers like China, India, and Pakistan.²⁰ Moreover, given that the barriers to nuclear superpower status have been greatly eroded, one cannot discount the possibility that lesser nuclear powers may reasonably aspire to expand their nuclear arsenals to first-rank status. For example, Pakistan is now leading the world in the rate of production of nuclear weapons, and is building nuclear reactors capable of producing fissile material for still more weapons.²¹ Given these trends, nuclear arms control may become a multilateral affair, more akin to a version of the Washington Naval Conference during the multipolar international system that existed between the two world wars than the bipolar system of the Cold War era.²²

Second, as noted above, the firebreak between nuclear and advanced precision-guided munitions (PGMs) is far less clear than in the early days of the Cold War. It is conceivable that PGMs could substitute for nuclear weapons against some targets. Not surprisingly, the U.S. PGM arsenal and the Defense Department’s emphasis on prompt global conventional strike finds rivals like Russia and China arguing that this capability needs to be factored into

20 Russian Deputy Foreign Minister Sergei Ryabkov has stated, “We cannot endlessly negotiate with the United States the reduction and limitation of nuclear arms while some other countries are strengthening their nuclear and missile capabilities.” Rachel Oswald, “Russia Insists on Multilateral Nuclear Arms Control Talks,” *Global Security Newswire*, May 28, 2013, available at <http://www.nti.org/gsn/article/russia-insists-next-round-nuke-cuts-be-multilateral/>.

21 Various estimates of Pakistan’s nuclear arsenal place it in the range of 100–120 weapons. “Nuclear Weapons: Who Has What at a Glance,” *factsheet*, Arms Control Association, updated October 2015, available at <http://www.armscontrol.org/factsheets/Nuclearweaponswhohaswhat>. Gregory Koblenz estimates that Pakistan could have 200 nuclear weapons by 2020. See “Pakistan could have 200 nuclear weapons by 2020,” *Deutsche Welle*, December 2, 2015, available at <http://www.dw.de/pakistan-could-have-200-nuclear-weapons-by-2020/a-18105706>. There are reports that Pakistan may have completed a second nuclear plutonium production reactor (Khushab-II) near Khushab, which is the site of the country’s first plutonium production reactor (Khushab-I). A third reactor, Khushab-III, is under construction. The two reactors are estimated to produce roughly 22 kg of plutonium a year, enough for ten nuclear weapons. Assuming the third reactor is similar in design to the second (which it appears to be), within a few years Pakistan will be producing enough plutonium for thirty or more nuclear weapons each year. Paul K. Kerr and Mary Beth Nikitin, *Pakistan’s Nuclear Weapons: Proliferation and Security Issues* (Washington, DC: Congressional Research Service, June 2012), pp. 5–6, 26–27. See also Christopher Clary and Mara E. Karlin, “The Pak-Saudi Nuke, and How to Stop It,” *The American Interest*, July–August 2012, pp. 24–31.

22 The Washington Naval Conference of 1921–1922 occurred in a period of multipolar naval competition among France, Italy, Japan, the United Kingdom, and the United States. It resulted in the Washington Naval Treaty of 1922, also known as the Five Power Treaty. The treaty allocated limits on the fleets of the five victorious powers of World War I, to include limits on the various types of ships (such as battleships and aircraft carriers) and their characteristics (e.g., displacement). Germany, the principal defeated power, was reduced to minor naval power status by the Treaty of Versailles.

the strategic balance.²³ This could greatly complicate efforts to arrive at new nuclear arms control agreements.

The arms control waters could be muddied even further depending upon the development of cyber weapons, which can potentially compromise the reliability of early warning, command-and-control systems, integrated air and missile defense systems, and perhaps nuclear delivery systems as well.²⁴ Could cyber weapons be factored in to arms control agreements so as to enhance crisis stability and reduce the risk of nuclear weapons use? This seems problematic, given the difficulty in identifying the source of cyber attacks with a high degree of confidence.

Third, existing arms control agreements are already under stress as they confront the realities of the Second Nuclear Age. According to the Obama administration, the Russians may be in violation of the Intermediate-Range Nuclear Forces (INF) Treaty, signed by the United States and the Soviet Union in 1987.²⁵ Russia appears to have several motives for skirting the agreement. At the time the treaty was signed, the two superpowers enjoyed overwhelming advantage in the numbers and variety of nuclear forces at their disposal relative to those of the other nuclear powers. As noted above, as the United States and Russia have progressively drawn down their nuclear forces following the Cold War, this advantage has diminished. Moreover, Russia also finds itself increasingly at a disadvantage with respect to U.S. conventional military forces and China's inventory of medium-range and intermediate-range ballistic missiles (MRBMs and IRBMs, respectively).²⁶ Similarly, with concerns growing in Washington over China's expansionist aims in the Western Pacific, some U.S. strategists have argued that China's advantage in these systems represents a significant disadvantage for the United States and its regional allies.²⁷ Given U.S. and Russian concerns, it appears the INF Treaty may at some point need to be expanded to include China, lest it be terminated.

23 See Lora Saalman, *China and the U.S. Nuclear Posture Review* (Washington, DC: Carnegie Endowment for International Peace, February 2011), available at <http://carnegieendowment.org/2011/02/28/china-and-u.s.-nuclear-posture-review>.

24 While unconfirmed, there are allegations that Israel employed cyber weapons as part of Operation Orchard, the attack that destroyed Syria's nuclear reactor at al-Kabir on September 6, 2007. See "Electronic Attack Was Key to Syrian Raid, Official Says," *Aviation Week & Space Technology*, May 2, 2008, available at <http://aviationweek.com/awin/follow-satellite-imagery>. See also Richard A. Clarke and Robert K. Knake, *Cyber War* (New York: Harper Collins, 2010), pp. 1–11.

25 The administration's concerns appear to center on two prospective violations relating to Russian activities that may extend as far back as 2008. One involves an alleged Russian testing of an RS-26 ballistic missile to a distance falling within the INF Treaty's prohibited range—between 500–5,500 kilometers (km). The second alleged violation concerns Russia's development and flight-testing of the R-500 (Iskander-K) ground-launched cruise missile, or GLCM. Although the Russians assert the R-500 has a range of less than 500 km, there have been reports that its actual range significantly exceeds that limit. See Paul N. Schwartz, *Russian INF Treaty Violations: Assessment and Response* (Washington, DC: Center for Strategic and International Studies, October 16, 2014), available at <http://csis.org/publication/russian-inf-treaty-violations-assessment-and-response>.

26 MRBMs are defined as missiles with a range between 1,000–3,000 km. IRBMs are missiles with a range between 3,000–5,500 km.

27 See, for example, Evan Braden Montgomery, "China's Missile Forces Are Growing: Is It Time to Modify the INF Treaty?" *The National Interest*, July 2, 2014, available at <http://nationalinterest.org/feature/chinas-missile-forces-are-growing-it-time-modify-the-inf-10791>.

Multilateral arms control agreements may also be at risk in the new era. For example, several Middle East states have voiced strong concerns over Iran's progressive march toward a nuclear capability, even following the agreement reached between Iran and the P5+1 powers to forestall such an outcome.²⁸ Both Turkey and Saudi Arabia have issued veiled warnings that, should the U.S.-led negotiations with Tehran fail to arrest Iran's efforts in a way that would provide strong assurances to them, they would seek their own nuclear capability. Depending upon how this is achieved, it could lead to the breakdown of the Nuclear Non-Proliferation Treaty and the non-proliferation regime.²⁹

In summary, given the very different characteristics between the Cold War-era nuclear competition and what exists today, different approaches may be needed in negotiating limits on nuclear weapons and on how best to arrest their spread.

Geography

The Cold War era was dominated by two nuclear superpowers, the United States and the Soviet Union, whose land-based intercontinental ballistic missiles (ICBMs), population, and industrial centers were separated from one another by thousands of miles. This geographic separation provided each side with between twenty and thirty minutes' warning of a major nuclear attack launched from the other's territory. Importantly, however, when one side sought to position its land-based forces in ways that greatly reduced warning time, the risks of nuclear use increased. When the Soviet Union attempted to place nuclear-armed ballistic missiles in Cuba in 1962, it led directly to a nuclear confrontation with the United States. When the United States deployed Pershing II ballistic missiles to Western Europe in 1983, it contributed to Soviet fears that the United States was engaged in war preparations against it. It also led the Soviet leadership to adopt a semi-automatic nuclear launch-on-warning posture known as Perimeter.³⁰

From a geographic perspective, the Second Nuclear Age finds a growing number of situations in which nuclear attack warning time is reduced to levels that threaten to erode crisis stability.

28 The term "P5+1" refers to the five permanent members of the United Nations Security Council (China, France, Russia, the United Kingdom, and the United States) plus Germany.

29 Saudi King Abdullah stated, "If Iran developed nuclear weapons. . . everyone in the region would do the same." A similar statement was made by Prince Turki al-Faisal, former head of Saudi Arabia's General Intelligence Directorate. In 2012, a senior Saudi source declared, "There is no intention currently to pursue a unilateral military nuclear program but the dynamics will change immediately if the Iranians develop their own nuclear capability. . . . Politically, it would be completely unacceptable to have Iran with a nuclear capability and not the kingdom." On the persistent but unconfirmed reports of a Saudi-Pakistani nuclear connection, see Naser Al-Tamimi, "Clear or Nuclear: Will Saudi Arabia Get the Bomb?" *Al Arabiya*, May 21, 2013, available at <http://english.alarabiya.net/en/News/middle-east/2013/05/21/Will-Riyadh-get-the-bomb-.html>; *Chain Reaction: Avoiding a Nuclear Arms Race in the Middle East*, Report to the Committee on Foreign Relations, United States Senate (Washington, DC: Government Printing Office, 2008), pp. ix, 12, 20; and Ibrahim al-Marashi, "Saudi Petro-Nukes? Riyadh's Nuclear Intentions and Regime Survival Strategies," in William C. Potter and Gaukhar Mukhatzhanova, eds., *Forecasting Nuclear Proliferation in the 21st Century*, Vol. II, *A Comparative Perspective* (Stanford: Stanford University Press, 2010), pp. 77–78.

30 David E. Hoffman, *The Dead Hand* (New York: Anchor Books, 2009), pp. 150–54.

Today a number of nuclear powers are geographically close to each other, such as China, India, Pakistan, and Russia. All have a hundred nuclear weapons or more, and all possess ballistic missile delivery systems. All are modernizing both their missile forces and their nuclear arsenals. In China's case, for example, the upgrading of its missile forces to make them more responsive and reliable could produce fears in the Kremlin similar to those in the early 1980s when the Pershing IIs arrived in Europe. More recent entrants into the nuclear club, like India and Pakistan, share a common border (as does China with India and with Russia).

In the case of India and Pakistan, owing to the speed at which ballistic missiles travel, both sides' attack warning times would be compressed from the twenty to thirty minutes or so that existed between the two superpowers during the Cold War to perhaps as little as five to six minutes. This could place enormous strain on their early warning and command-and-control systems—assuming they have the technical, human, and materiel resources to field, man, and maintain them at high levels of readiness. Depending on how their missile forces are deployed, the same situation could quickly obtain with respect to Chinese and Russian nuclear forces, as well as Chinese and Indian nuclear forces. A similar problem may arise if Iran acquires nuclear weapons, given its geographic proximity to Israel.

There is also the matter of geographic size. Both Iran and Israel are far smaller countries than China, India, Pakistan, and Russia—and Israel is much smaller than Iran.³¹ Because they lack the strategic depth of larger countries, some nuclear force postures the Cold War superpowers used to establish a survivable force, such as mobile missile basing requiring large land areas, are more difficult for countries like Iran and (much more so) for Israel to undertake on a significant scale.³²

Israel's small size and lack of strategic depth presents it with crucial vulnerabilities. In terms of a nuclear strike, Israel has been described as a “one-bomb” country.³³ While this may be an overstatement, even a few nuclear detonations over cities like Tel Aviv and Haifa would have catastrophic consequences. Put another way, the number of nuclear weapons required to create an “assured destruction” capability against a country like Israel would be far less than the number required for a much larger country like China or India.

31 Israel covers roughly 8,500 square miles, Iran about 636,000 square miles. This makes Israel a little more than 1 percent the size of Iran. The United States encompasses roughly 3.8 million square miles, while the USSR extended over 8.65 million square miles. Today, Russia comprises some 6.5 million square miles (not including Crimea), China 3.7 million square miles, India 3.3 million square miles, and Pakistan 800,000 square miles. For a discussion of the prospective characteristics of an Iranian-Israeli bipolar nuclear competition, see Krepinevich, *Critical Mass*, pp. 25–32.

32 Both countries might consider hiding solid-fuel missiles on transporter erector launchers (TELs) in underground shelters, but to employ them following a first strike, they would presumably have to maintain their command-and-control system and be able to move the missiles above ground. The latter might prove difficult if an enemy targeted the entryways. A seaborne nuclear force might represent a better deterrent in terms of its survivability, but it might encounter even greater problems with respect to maintaining robust command and control with higher headquarters.

33 For example, former Iranian president Hashemi Rafsanjani argued that, “One nuclear bomb inside Israel will destroy everything, [but] it will only harm the Islamic world. It is not irrational to contemplate such an eventuality.” Thomas C. Reed and Danny B. Stillman, *The Nuclear Express* (Minneapolis, MN: Zenith Press, 2009), p. 298.

In addition to the geographic distance between nuclear powers and their relative size, there is also the matter of third-party geography. For example, during the Cold War, with the exception of Canada (a close ally of the United States) there were no intervening countries—let alone nuclear powers—between the nuclear superpowers along the most direct route of attack over the North Pole. This is not the case today. Despite the geographic proximity of some rival nuclear powers, there are situations—depending upon the axis of attack—that find third-party states positioned between two nuclear rivals. In the case of China and the United States, for example, Russia lies along the most direct path of attack. If India and Russia were to become rivals, a nuclear-armed China as well as Kazakhstan would separate them, along with several other central Asian states. If Iran acquires a nuclear capability, geography dictates that the most direct strike routes between it and Israel run through states occupied by either Arabs or Turks, neither of whom are allies or terribly friendly toward either state. In circumstances where a third-party state lies between two nuclear-armed rivals, ballistic missile flight paths might need to be radically altered, lest the third-party power believe it is the target of the attack. Relying on an airborne deterrent (i.e., strike aircraft) is problematic for the same reason. The problem becomes even more acute if the third-party state is also a nuclear power.

In summary, geography could exert significant influence over the nuclear posture of states, crisis stability, and the prospects for avoiding nuclear war. In so doing it adds to the factors mentioned above and challenges the efforts of defense planners to avoid nuclear use.

Human and Cultural Factors

In the Cold War's aftermath, it became clear that at times the political leadership in both Moscow and Washington had misjudged their adversary's intentions. Moreover, differences in how the two sides tended to calculate the balance of power between them, as well as relative costs, benefits, and risks, became clear.³⁴

Indeed, problems of communication even emerged with respect to basic terminology. During their Vienna Summit in April 1961, Soviet premier Nikita Khrushchev was put off by President John Kennedy's emphasis on the word "miscalculate," which in translation sounded as though the president questioned his ability to calculate.³⁵

As Robert Jervis observes:

Deterrence posits a psychological relationship, so it is strange that most analyses of it have ignored decision makers' emotions, perceptions, and calculations and have instead relied on deductive logic based on the premise that people are highly rational. Once one looks in detail at cases of international conflict, it becomes apparent that the participants almost never have a good understanding of each other's perspectives, goals or specific actions. Signals that seem clear to the sender are missed or misinterpreted by the receiver; actions meant to convey one

³⁴ See Krepinevich, *Critical Mass*, pp. 6–24.

³⁵ John Newhouse, *War and Peace in the Nuclear Age* (New York: Vintage Books, 1990), p. 150.

impression often leave quite a different one; attempts to deter often enrage, and attempts to show calm strength may appear as weakness.³⁶

It should come as no surprise that misperceptions and miscommunications brought the two countries uncomfortably close to nuclear war on several occasions.³⁷

As noted earlier, what began chiefly as a nuclear competition primarily among Western and European powers has, since the Cold War's end, expanded to include Asian states as well. Their relationships with each other and with the two major nuclear powers are complicated by the factors mentioned above, but also by the increasingly multicultural character of the Second Nuclear Age. Simply put, if American and Soviet leaders could misjudge each other's intentions during the Cold War to the point of flirting with Armageddon, the risks of miscalculation would seem even greater given the widening cultural differences among today's nuclear powers. Recent research strongly suggests that calculations of cost, benefit, and risk can and often do vary significantly, and perhaps dramatically, across cultures.³⁸ Should cyber weapons prove effective in corrupting the information received by senior policymakers, the potential for miscalculation would increase further. Consequently, efforts to find common ground, defuse crises, or "signal" resolve across cultural divides could prove even more difficult than during the Cold War.

To this must be added other research in the cognitive sciences that strongly indicates that, economic theory notwithstanding, humans do not consistently act to maximize their prospective gains. Put another way, *humans cannot be counted on to act rationally—even by their own personal or cultural standards*. While this condition obviously existed during the Cold War, our understanding of this characteristic of human nature has only recently been established.³⁹ Yet the foundation of strategies designed to avoid nuclear use has been rooted in deterrence. Deterrence relies on a "rational" enemy whose calculations of cost, benefit, and risk are sufficiently well understood to enable its rival to establish, with high confidence, a condition in

36 Cited in Keith Payne, *The Fallacies of Cold War Deterrence and a New Direction* (Lexington, KY: University Press of Kentucky, 2001), p. 74. See also Jervis, *Perception and Misperception in International Politics*.

37 See, for example, Hoffman, *The Dead Hand*, pp. 27–100.

38 Joseph Henrich, Steven J. Heine, and Ara Norenzayan, "The Weirdest People in the World," *Behavioral and Brain Sciences*, June 2010, pp. 61–83. The authors' research finds that while researchers—often implicitly—assume that there is little variation across human populations, they found through their experiments that there is, in fact, substantial variability across cultures. Among the variations identified are those in the domains of fairness, cooperation, moral reasoning, and reasoning styles. Specifically, they found that, "Members of Western, educated, industrialized, rich, and democratic societies, including young children, are among the least representative populations one could find for generalizing about humans. . . . [H]ence, there are no obvious *a priori* grounds for claiming that a particular behavioral phenomenon is universal based on sampling from a single subpopulation."

39 Amos Tversky and Daniel Kahneman were among the first and foremost scholars to write on this phenomenon as part of their work on the psychology of judgment and decision-making. Kahneman shared the 2002 Nobel Prize in Economic Sciences with Vernon L. Smith, although Kahneman himself is a research psychologist. (Tversky, having died in 1996, was not eligible to receive the prize, as it is not awarded posthumously.) For a summary of his research findings, see Daniel Kahneman, *Thinking Fast and Slow* (New York: Farrar, Straus and Giroux, 2011). See also Daniel Kahneman, "Maps of Bounded Rationality: A Perspective on Intuitive Judgment and Choice," Nobel Prize Lecture, December 8, 2002, available at http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2002/kahnemann-lecture.pdf.

which the object of deterrence views the costs of nuclear use as exceeding the possible benefits. The experience of the Cold War combined with advances in the cognitive sciences over the past two decades suggest that, to borrow from the Cold War-era nuclear strategist Albert Wohlstetter, the delicate balance of terror preserved by mutual deterrence may be more fragile than is commonly supposed.

Why Scenarios?

Given the above-cited changes over the last two decades with respect to the character of the competition among nuclear-armed states for influence and security, it seems appropriate to examine how they might influence this competition and, more specifically, their implications for efforts to forestall the use of nuclear weapons, to include the role of extended deterrence. One method that has proven useful in addressing issues such as these involves the use of scenarios.

Scenarios can be thought of as simply a vision of what the world might look like at some future point, or a set of visions (or futures) that present a range of plausible and strategically relevant futures. Done well, scenarios can help us identify potential threats and opportunities with an eye toward taking steps now to avoid the former and increase the odds of realizing the latter. By describing a path from the current world to a future world, scenarios can also help us understand those factors that will divert the world from its current course. Identifying these factors can be important since they can serve as early warning indicators that we are moving into a different and potentially more dangerous future.⁴⁰

Scenarios are *not* intended to predict or forecast the future. There are simply too many variables shaping the environment affecting the nuclear competition to attempt to predict what that environment will be even a few years into the future. Moreover, forecasts often default to a linear extrapolation of current trends, a world in which tomorrow looks only slightly different from today. While forecasting that focuses on a single future enables planners to prepare for *that* future in great detail, it does so at the expense of assuming away uncertainty. Consequently, forecasts typically fail in illuminating the information that is needed most—those factors that could trigger a discontinuous shift in the competitive environment.⁴¹

Just because it is impossible to predict the future does not mean that thinking about it is a useless enterprise. To be sure, if the future were entirely uncertain, such an effort would be a waste of time. But certain things are predictable, or at least highly likely. Scenario planners

40 For a discussion of the value of scenarios in strategic planning, see Peter Schwartz, *The Art of the Long View* (New York: Doubleday, 1991); and Kees van der Heijden, *Scenarios: The Art of Strategic Conversation* (Hoboken, NJ: John Wiley and Sons, Ltd., 2006). For a classic description of the use of scenarios in strategic planning, see Pierre Wack, “Scenarios: Uncharted Waters Ahead,” *Harvard Business Review*, September–October 1985; and Pierre Wack, “Scenarios: Shooting the Rapids,” *Harvard Business Review*, November–December 1985. For an assessment of how scenarios can be used in defense planning, see Andrew F. Krepinevich, *7 Deadly Scenarios* (New York: Bantam Books, 2009).

41 “All forecasts are based on the assumption that the past can be extended into the future.” Van der Heijden, *Scenarios: The Art of Strategic Conversation*, p. 26.

call them “predetermined elements.” Factors such as demography, the periodicity of pandemics, the growth rates of mature economies, and the time needed to produce substantial quantities of nuclear weapons when starting from scratch are generally more predictable than many other relevant factors shaping the security environment. These predetermined elements should be reflected in all scenarios, while uncertainties should be reflected in the way they play out across the different scenarios.

Put another way, scenarios are not employed to determine how to proceed on a particular course of action to address a particular future. Nor are they meant to be prescriptive. Rather, they are diagnostic: assisting decision-makers to better understand the security environment by enabling them to examine a set of plausible but different futures that capture the inherent uncertainty in planning efforts, while incorporating predetermined elements. They are a means for producing information and insights that can help us in crafting a course of action that is robust—that enables us to meet our security objectives—across a range of plausible alternative futures. In this way scenario-based planning enables decision-makers to focus on the key factors shaping the environment and, in so doing, enhance the quality of their thinking about how best to take them into account in their decisions. Not surprisingly, then, decision-makers who engage in scenario-based planning often find themselves interpreting information from the environment differently—and more usefully—than those who do not.

Scenario-based planning does this by taking existing mental models of the decision-makers as the starting point. Experience strongly suggests that these mental models are generally linear extrapolations of past experiences projected into the future. Thus the default future is a slightly different version of the world that exists today. Of course, what policymakers need most is to understand how tomorrow might look very different from today. Thus the scenario planner’s job is to reframe the situation through the introduction of new perspectives, or factors, that might lead to a very different “tomorrow.” Scenarios expose decision-makers to these alternative futures by taking them, step by step, along a path into a world that presents an environment that is both plausible and substantially different from today. In this way the “story” embedded in a scenario enables a set of key factors to be presented in a common context, where their interrelationships are more easily understood. By presenting the information in this way, a scenario broadens a policymaker’s mental model of the world by increasing the range of factors to which that individual is exposed.

In this manner, scenarios can help policymakers broaden their perspectives regarding the challenges and opportunities they may encounter over time. In the course of seeing the world in a new way, policymakers are sometimes able to come up with a key insight with respect to the character of the competition that is essential to crafting an effective strategy. As one strategy expert puts it, when examining scenarios, “You must spend time hunting for surprises. If you have limited time it is difficult not to come up with the obvious.”⁴²

42 Van der Heijden, *Scenarios: The Art of Strategic Conversation*, p. 59.

To sum up, scenarios do not “predict” the future; rather, they help us to think about the future, in part by helping us challenge our embedded assumptions about what the world might look like tomorrow. The process of crafting scenarios itself can be a useful planning aid, as it compels those involved in the effort to think long and hard about those factors most likely to shape the future environment. During this process an effort must also be made to identify “predetermined events” as a key method for narrowing the range of uncertainty that must be considered.⁴³ By developing scenarios that include obvious as well as less obvious futures, this process also enables policymakers to hedge against uncertainty. Indeed, a crucial lesson that emerges from scenario-based planning is the need to prepare, or at least hedge, against the prospect that a future that reflects the characteristics of one or several scenarios may emerge.

When the process of scenario-based planning is completed, those engaged in the process should have:

- A better understanding of how the competitive environment might change;
- An ability—thanks to understanding the path the scenario took to arrive at a different future—to recognize when the competitive environment is changing;
- An understanding of how to respond effectively when such changes are detected; and
- An ability to craft a better strategy for addressing challenges and opportunities under conditions of uncertainty.

The Scenarios

There are five scenarios in this assessment. The number is instructive. Experience has shown that between four and six scenarios is sufficiently large so as to provide a good chance to capture the major forces shaping the future security environment, while not overwhelming policymakers with so many different possible futures that they cannot focus on the broad “strategic forest” due to the glut of “scenario trees.”

The five scenarios are apportioned among three regions where tensions among nuclear and other major regional powers are on the rise: Europe, the Middle East, and East Asia. The scenarios have a temporal aspect to them. Some are focused on the problems associated with a crisis, which typically focuses one’s attention on immediate issues such as crisis stability. One scenario concentrates on a much more extended time frame with an eye toward how best to address the challenges and opportunities in a long-term nuclear competition.

43 An example of “predetermined” events, or events that have a relatively high likelihood of occurrence, can be drawn from demographic data. Barring the unlikely event of a pandemic, the relative age distribution of a given country’s population five years hence can be estimated with a high degree of confidence. The same can be said of the size of that country’s draft cohort—the number of eighteen-year-olds that will be alive in five years and available for military service.

The “major forces” or “drivers” shaping these scenarios are those elaborated upon at the beginning of this chapter. They are the:

- Shift from a predominantly bipolar nuclear competition to a regime increasingly characterized by n-player or multipolar competitions;
- Introduction of new military capabilities, particularly advanced design nuclear weapons, increasingly sophisticated precision-guided munitions, and cyber weapons acting to erode or “blur” the distinction between nuclear and conventional warfare;
- Advent of advanced air and missile defenses;
- Influence of arms control agreements, to include whether existing agreements are sustained, eroded, or abandoned;
- Influence of geography; and
- Acquisition of nuclear weapons and/or increasingly large and sophisticated nuclear arsenals by states whose cultures are different from those of the Cold War-era nuclear powers.

For purposes of manageability, the scenarios are presented from the perspective of a U.S. policymaker. That being said, they could be readily adapted to incorporate the viewpoint of other competitors whose interests are affected by the situation depicted in the scenario.

The scenarios are generally intended to widen the aperture through which strategists, defense planners, and policymakers view the security environment within the context of nuclear weapons. They have also been crafted with an eye toward how they might aid in assessing the prospects for preserving crisis stability and the viability of extended deterrence, either through current approaches or, more likely, by adopting new, more effective strategies and force postures in response to changing circumstances.

Organization

The following four chapters comprise six scenarios. Chapters 2 and 3 focus on the Middle East and Europe, respectively. Chapters 4 and 5 present scenarios related to the Far East, one on North Korea and the other focusing on the People’s Republic of China. The China scenario differs from the others in that it presents planners with the need to address the challenges stemming from a long-term competition as opposed to a near-term crisis. Chapter 6 offers some thoughts and first-blush insights that emerge from the scenarios, along with suggestions for how the scenarios might be employed to further enhance our understanding of the challenges and opportunities that may emerge in the future security environment as they pertain to nuclear weapons.

CHAPTER 2

Iran

Andrew F. Krepinevich

*When faced with difficult decisions, democracies will dither if they possibly can.*⁴⁴

Chamberlain's Law



The Middle East and the Levant

44 Cited in Reed and Stillman, *The Nuclear Express*, p. 292. The “law” refers to Neville Chamberlain, Great Britain’s prime minister in the years leading up to World War II. During that time Great Britain failed to take action to arrest Nazi Germany’s territorial expansion and arguably facilitated it at the Munich Conference in September 1938. The result of this “dithering” found Germany in a much better position to go to war in September 1939 than it would have been if Great Britain and its allies had moved forcefully earlier to block Germany’s coercion of Austria and Czechoslovakia.

A Dinner in Georgetown

It is January 2021. On this cold winter’s night in a tony Georgetown townhouse, a small group gathers for a salon dinner. Most are well past retirement age. Although they once worked closely together, over time they have drifted apart, linked primarily through an occasional email or phone call. During the meal much of the conversation centers on updating one another on the paths their lives have taken since they worked at the highest levels of government three decades ago.

As dessert is served, talk turns to the reason some have traveled a great distance to be part of what they suspect will be the last dinner of its kind: to reminisce about their role on the George H.W. Bush administration’s National Security Council staff during the months leading up to the First Gulf War, the war itself, and its aftermath. The dinner conversation on this night, as in the previous three anniversary dinners, ends on a happy note: the U.S.-led coalition emerges victorious; Washington’s position in the Middle East has never been stronger; the world accepts the birth of a “unipolar moment” with the United States as its sole superpower;⁴⁵ and America and its allies begin drawing down their Cold War militaries to reap a “peace dividend” paid through major reductions in defense spending. From America’s perspective, notes the host, “This is as good as it gets.”

Over coffee, however, the tone turns more somber. One participant wonders aloud over how a succession of administrations now spanning three decades could have squandered the uniquely advantageous position they had bequeathed to them. Another, citing history, argues that the U.S. position was bound to erode somewhat, given that the last extended international unipolar system ended with the Roman Empire, and even that was limited to a small corner of the world. There is uniform agreement on this point. But hindsight being “20-20,” the group’s consensus is that a combination of benign neglect and unforced errors over several administrations of both parties is the principal reason why the Middle East may be on the cusp of a major war between nuclear-armed states.

The conversation travels over familiar ground covered at the group’s last (“silver anniversary”) meeting in 2016. There was the Clinton administration’s failure to appreciate the growing power of Islamic fundamentalism and Iran’s unremitting hostility toward the United States; the George W. Bush administration’s ill-fated invasion of Iraq and efforts to create a democratic state out of the wreckage of Saddam Hussein’s tribal and sectarian patchwork country; and the Obama administration’s flawed strategy of engaging America’s enemies while undertaking a major U.S. disengagement from the region, leaving Iran emboldened and Washington’s regional partners left increasingly to fend for themselves.

The dawn of the 2020s finds Iran the region’s dominant power, its influence stretching across much of Iraq, through Syria and into Lebanon. Tehran’s client, Hamas, operates on Israel’s

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45 The term “unipolar moment” was coined in Charles Krauthammer, “The Unipolar Moment,” *Foreign Affairs*, America and the World 1990, available at <https://www.foreignaffairs.com/articles/1991-02-01/unipolar-moment>.

southern flank, while a decade-old proxy war ensues in Yemen between Iranian-backed Houthis on the one hand, and a collection of Sunni tribes and so-called Popular Resistance Committees supported by Saudi Arabia, Egypt, and the UAE on the other. There are fears among the Gulf Cooperation Council (GCC) members that Iran may finally succeed in destabilizing Bahrain.

The evening culminates in a toast to the president under whom they served, and an unexpectedly long discourse on the region's gradual slide toward what they agree is the most serious nuclear crisis since the Cold War.

Iran's Expanding Influence

The agreement reached by the so-called P5+1 powers and Iran over the latter's nuclear weapons program, known as the Joint Comprehensive Plan of Action, or JCPOA, offers the hope that regional tensions might abate. It accepts Iran as a de facto nuclear threshold state (i.e., a state that has not produced nuclear weapons despite having the ability to do so in a very short period of time), and eliminates most of the economic sanctions that hobble Iran's financial standing. Yet Iran's low-level war against the United States and its partners in the region, now well into its fourth decade, only intensifies with the unfreezing of Tehran's assets and the end of most economic sanctions against the Islamic Republic.

There is an encouraging development early on where both Iran and the United States shared common interests: the suppression of Daesh, also known as the Islamic State of Iraq and al-Sham (ISIS). By mid-2017, an odd combination of Western, Kurdish, Turkish, and Russian forces, along with Iranian proxy forces operating in support of Syrian dictator Bashar al-Assad and the Iraqi government, have greatly reduced Daesh's footprint in both Syria and Iraq. American-trained and equipped Sunni Arab forces operating in western Iraq and Kurdish forces in northern Iraq combine with Iranian-trained and supported Iraqi government forces, primarily Shi'a Arabs, to win back much of the Iraqi territory seized by Daesh.⁴⁶ Following the arrival of Russian forces in Syria in 2015, Daesh's strength in that country is greatly reduced. Russia's operations complement the efforts of Iran's Quds Force advisers embedded with Hezbollah and Syrian proxy forces. These proxies, armed with some of the flood of advanced Russian weaponry that flowed into Iran following the end of sanctions, produce a major shift in the military balance against Daesh.⁴⁷

Proclaiming its objective of suppressing Daesh accomplished, in November 2017 Washington announces the drawdown of U.S. military trainers in Iraq and the end of manned combat

46 Following the complete withdrawal of U.S. combat forces from Iraq in 2011, the Iraqi government has become increasingly dependent upon Tehran for material support and the training of its armed forces. This despite the fact the Washington deployed a significant number of U.S. Special Forces to Iraq to serve as trainers and advisers.

47 Initial Russian operations focused primarily on suppressing moderate opposition groups fighting the Assad regime. Moscow's political objective was to reduce the conflict to a binary choice between Assad and the Islamic State of Iraq and al-Sham (ISIS) to induce the West to acquiesce to Assad's continuation in office, which it accomplished.

air missions over Syria and Iraq. While areas of Syria remain in the grip of groups opposed to the Assad government, his regime is more secure than at any time since the country's civil war erupted in 2011. Still, Assad remains dependent on Iran and Russia for his survival. Syrian forces loyal to Assad and supported by Iranian Revolutionary Guards (IRG) and Russian advisers continue operations aimed at suppressing a collection of weak Sunni opposition forces.

By the end of 2017, it is clear that Iraq has been de facto partitioned into three quasi states. Many of the Quds Force advisers that operated with Iraqi Shi'a forces in their fight against Daesh remain in Iraq assisting Tehran's Baghdad client in quelling remnant Sunni insurgent groups operating in the western desert. There are reports that IRG units are training Shi'a Iraqi forces with an eye toward creating a force similar in structure to Hezbollah but much larger.

Iraq's Sunni tribes continue receiving support from Saudi Arabia and several other GCC states. Much of their efforts, however, are devoted to combating the remnants of Daesh and al-Qaeda in the Arabian Peninsula (AQAP). The area's tribal culture and lack of an economic base have rendered these insurgents incapable of organizing themselves into a coherent political entity. To the north the portion of Iraq now popularly referred to as Kurdistan is surrounded by hostile neighbors in the form of Iran, Iraq, and Turkey, with the latter serving as the outlet for its gas and oil.

Hezbollah's forces, while suffering substantial casualties in their fight against Daesh, have emerged from the conflict battle-hardened and well equipped. The group has become Lebanon's de facto ruler. Hamas, another of Tehran's clients, has fared less well, as Egypt and Israel have weakened its hold over Gaza.

In private conversations with their GCC partners, senior Saudi princes talk of being surrounded and squeezed by Iran. Their greatest fear is that Iran is looking to promote an insurrection by the Shi'a Arabs that dominate in the kingdom's oil-rich northeast. Adding to the Saudis' concerns is the protracted decline in energy prices, now entering its fifth year. Iran is suffering from low energy prices as well; however, the windfall it received stemming from the ending of sanctions resulting from its nuclear agreement with the P5+1 states has given it a substantial economic buffer, and with it, the time needed to complete its efforts to redraw the region's geopolitical map.

With U.S. influence in the region waning, the Saudis, along with the Emiratis, are working to expand their relationship with Egypt, seek a stronger relationship with France, and work (covertly, of course) with the Israelis to form a coalition to oppose Iran. The Saudis also begin pressing Pakistan to provide air and ground forces to support operations against Iran's Houthi proxy forces in Yemen.

Tehran's "Slow Squeeze"

The spring of 2018 finds Iran continuing its methodical campaign of increasing the pressure along the Arabian Peninsula's periphery. In Yemen, Tehran increases its modest arms shipments to Houthi rebels, while the Saudis take the lead in countering them. The United States limits its efforts to intelligence gathering and the occasional drone strike against remnants of Daesh and AQAP, which oppose both the Houthis and the GCC-backed Sunni tribes.

On February 14, 2018, large demonstrations break out in Manama, the capital of the Persian Gulf kingdom of Bahrain, where the Shi'a are the majority (roughly 70 percent) population but are ruled by a Sunni Arab, King Hamad bin Isa Al Khalifa. The demonstrations, occurring on the anniversary of the 2011 protests, find Shi'a Bahrainis taking to the streets to demand a greater voice in the kingdom's governance, with some calling for the ouster of the king himself. Unlike in 2011, a sizable number of the protesters are armed with automatic weapons and mortars. The small Bahraini Defense Force, numbering roughly 12,000, proves unable (or, according to some, unwilling) to suppress the large-scale demonstrations and small but numerous acts of violence. Bahrain's 2,000-man National Guard, whose mission is primarily internal security, proves too small for the task. The government's efforts to suppress the hostile crowds are further compromised by persistent cyber attacks (believed to emanate from Iran and Russia) on its communications infrastructure.

When U.S. and Israeli intelligence reports showing Iranian support for the uprising are shared with Bahrain's king, he appeals to Saudi Arabia and the UAE for assistance. Although the Saudi and UAE militaries are stretched thin by their commitment to the ongoing conflict in Yemen, both respond, deploying elements of their Peninsula Shield⁴⁸ force. By May, Saudi troop strength in Bahrain stands at 3,500, with UAE forces at 2,000.⁴⁹ Unlike 2011, however, armed resistance persists for months. General order is not restored until October.

In the wake of Iran's strengthened position in Iraq and Syria, its support of Hezbollah in Lebanon, the Houthis in Yemen, and now a Shi'a resistance movement in Bahrain, the Saudi, Emirati, and Egyptian governments conclude that Tehran's objective is to encircle the GCC states with Iranian client states through a "slow squeeze" strategy designed to keep the level of violence below the threshold that might trigger a forceful response by Washington. In a

48 The Peninsula Shield Force was formed by the GCC states in 1984. Originally comprising 10,000 troops organized into a combined-arms brigade made up of units from each of the GCC states, the force has increased in size over time and now numbers roughly 40,000. Plans to expand the force to 100,000 as a Joint Military Command have not been realized. Awad Mustafa, "Saudi Minister: GCC to Set Up Force of 100,000," *Defense News*, December 26, 2013, available at <http://archive.defensenews.com/article/20131226/DEFREG04/312260016/Saudi-Minister-GCC-Set-Up-Force-100-000>; and Brahim Saïdy, *The Gulf Cooperation Council's Unified Military Command*, The Philadelphia Papers No. 6 (Philadelphia, PA: Foreign Policy Research Institute, October 2014), available at <http://www.fpri.org/articles/2014/10/gulf-cooperation-councils-unified-military-command>.

49 "GCC Troops Dispatched to Bahrain to Maintain Order," *Al Arabiya*, March 14, 2011, available at <http://www.alarabiya.net/articles/2011/03/14/141445.html>.

conversation with a senior Israeli defense official, the UAE defense minister states, “Iran is acting as though it already has a nuclear capability.”

Proliferation on the Installment Plan?

By late 2018, there is general agreement among Iran’s neighbors and the intelligence arms of the major Western powers that Tehran is violating the terms of its agreement with the P5+1 states.⁵⁰ Permission to inspect sites where violations are believed to be occurring has been refused, or subjected to delays well beyond the twenty-four-day limit called for in the agreement.⁵¹ (Of particular concern are several suspected sites that were brought to the attention of Western intelligence organizations by an inadvertent remark by an Iranian defector.) After the third such incident in four months, the United States threatens to re-impose sanctions on Iran, and asks the members of the Joint Commission to support its position. Both China and Russia refuse, arguing that negotiation is a better means for resolving the impasse. In December, the United States and France declare they are prepared to impose their own sanctions. Tehran counters by declaring that such an action will render the agreement null and void, ending any obligations by Iran to abide by its conditions. At the urging of Britain and Germany, Washington and Paris reluctantly agree to further negotiations over alleged Iranian JCPOA violations.

While Iran has not tested a weapon, the U.S., French, and Israeli intelligence agencies believe Iran has circumvented the agreement sufficiently to accumulate enough fissile material to produce several fission weapons and is capable of producing two or three bombs per year in the near term. There are also concerns that North Korea has provided Iran with weapons-grade

50 American, French, and Israeli intelligence also report that Iran may have constructed dormant fissile-production sites during the negotiations that are now active. When challenged on this matter, the Iranians have refused to grant access to inspectors, stating national-security concerns.

51 The Joint Comprehensive Plan of Action inspection regime is stated in paragraphs 74–78 of the agreement. It states that the International Atomic Energy Agency (IAEA) will only conduct the “minimum necessary” inspections. If the IAEA has concerns about a facility that has not been previously agreed upon for inspections, it must first raise its concerns with Iran. Should the IAEA do so, Iran will respond to the IAEA. If the IAEA is not satisfied with Iran’s response, it can request access to the facility in question. At this point, Iran may then propose “alternative means” to resolve the IAEA’s concerns, rather than allowing access. If the IAEA is still not satisfied with Iran’s proposed alternative means of response, within fourteen days of the original request for access, the issue can be taken to the Joint Commission. The Commission would have seven days to develop a resolution that at least a majority of members support. Iran would then be required to take any action recommended by at least five of the eight Commission members within three days. (The Commission is composed of the P5+1 members plus Iran and the European Union’s High Representative of the Union for Foreign Affairs and Security Policy.) Thus twenty-four days could pass between when the IAEA requests access to a suspect site and when it might obtain access—assuming the Commission supports the IAEA’s request. UN Security Council, “Joint Comprehensive Plan of Action, Vienna, 14 July 2015,” in *Security Council Resolution 2231 (2015) on Joint Comprehensive Plan of Action (JCPOA) on the Islamic Republic of Iran’s Nuclear Programme*, July 20, 2015, available at <http://www.state.gov/documents/organization/245317.pdf>. See also Blaise Misztal, *Iran Deal: Section-by-Section Analysis* (Washington, DC: Bipartisan Policy Center, July 14, 2015), available at <http://bipartisanpolicy.org/blog/iran-deal-analysis/>.

uranium and plutonium in exchange for badly needed oil to sustain its rickety economy.⁵² The intelligence services also find with “high confidence” that Iran has a nuclear-weapon design that will enable it to produce a weapon sufficiently small to fit on a ballistic missile.

Even if Iran possesses the handful of nuclear weapons as feared by some of the Western powers, it is unlikely to proclaim itself a nuclear-armed state. Iran’s opaque nuclear posture is believed to stem, at least in part, from Tehran’s fears that its crude early warning and command-and-control systems make its infant nuclear capability highly vulnerable to a preventive or preemptive attack.

Iranian fears are not unfounded. Israeli leaders have assumed the worst: that Iran has already fabricated several weapons and mated them to ballistic missiles. The Israelis have also strongly indicated they believe Iran hopes to buy sufficient time through the P5+1 agreement and renewed negotiations over suspected violations to build an arsenal large enough to preclude an effective disarming strike against it. Israel’s prime minister has privately expressed concern that a rogue Quds Force commander with nuclear release authority might launch a haystack salvo attack of several dozen missiles against Israel on his own, with two or three of the missiles armed with nuclear warheads, overwhelming Israel’s Arrow missile defense interceptors.⁵³ To prevent such an attack, Israel’s only option may be to launch a large preventive *nuclear* attack on Iran.⁵⁴

It is widely believed that release authority for the employment of Iran’s ballistic missiles is under the sole control of the Islamic Republic’s Supreme Leader, the eighty-year-old Ali Hosseini Khamenei. Recently, however, the policy has been changed such that during a crisis release authority can be extended to several Quds Force commanders. If so, this devolution of release authority is clearly designed to enable Iran to launch missile attacks following a “decapitation” strike that incapacitates the Supreme Leader, or that precludes him from communicating the attack order.

52 As far back as 2015, studies of North Korea’s nuclear program raised concerns over that country’s production of fissile material. See, for example, Rachel Oswald, “Images Suggest North Korea Expanding Plutonium-Production Capabilities,” *Global Security Newswire*, January 2, 2014, available at <http://www.nti.org/gsn/article/images-suggest-north-korea-expanding-fuel-production-sites-plutonium-program/>; and Daniel Wertz and Matthew McGrath, *North Korea’s Nuclear Weapons Program*, Issue Brief (Washington, DC: The National Committee on North Korea, September 2015), pp. 1–4, available at <http://www.ncnk.org/resources/publications/DPRK-Nuclear-Weapons-Issue-Brief>.

53 A haystack attack involves a relatively large number of ballistic missiles (the “haystack”), only a small percentage of which are armed with a nuclear warhead (the “needles”). Haystack attacks are attractive for those nuclear powers whose arsenals are small, but also have a large inventory of missiles to confront an enemy armed with advanced missile defenses. The objective of this form of attack is to maximize the chances of a nuclear weapon reaching its target by compelling the defender to spread his efforts out over all the incoming missiles, as he cannot distinguish between those that are armed with nuclear warheads and those that are not. See Appendix A for more details.

54 There are rumors that the Israelis are working on advanced-design nuclear weapons that have very low yields but that can be highly effective against deep underground targets such as missile-storage caves and command-and-control centers. These efforts may be enabled by (unconfirmed) reports that the Israelis have conducted a highly successful cyber data exfiltration campaign (code-named JACOB’S LADDER) against both China and Russia, both of whose militaries are working on similar weapon designs. The term “Jacob’s Ladder” refers to the name given in the Old Testament’s Book of Genesis to the ladder in Jacob’s dream connecting heaven and earth.

Drifting Toward a Confrontation

Iran Opens Israel Front

Against the backdrop of Iran's continued obstruction of its JCPOA obligations, 2019 finds Iranian-backed proxies engaged in low-level conflicts in northern and western Iraq, Syria, Bahrain, and Yemen. Adding to growing regional tensions, Iran also activates its proxies in Lebanon and Gaza against Israel. This is seen in part as retaliation for Tel Aviv's covert assistance to the UAE in support of its operations in Bahrain and Yemen. Iran also accuses Israel of continuing to work in concert with the United States to support anti-Assad resistance groups in Syria.

Ironically, Iran's opening of the "Israeli front" is enabled in part by its success (with indirect U.S. support) in breaking the back of Daesh in Syria. This enables Tehran to redeploy Hezbollah troops, which were heavily involved in propping up Tehran's Syrian proxy, to resume a low-level campaign of violence against Israel.⁵⁵

On March 18, 2019, sporadic rocket fire begins against Israel from sites in Lebanon and Gaza. Since the Second Lebanon War in 2006, Iran has greatly expanded Hezbollah's inventory of rockets, artillery, mortars, and guided missiles, or RAMM. Some estimates place the number of munitions at nearly 100,000, a roughly twenty-five-fold increase when compared to the nearly 4,000 projectiles fired into Israel during the 2006 war.⁵⁶

Bahrain Under Siege

Following the 2018 suppression of radical Shi'a groups in Bahrain, order prevails, albeit not without the continued presence of substantial Saudi and UAE forces in that country. The tranquility is deceptive, however, as Iran covertly rearms radical Bahraini Shi'a elements, several hundred of whose members were in Iran receiving military training.

The period of tranquility is broken on September 19, 2019, as Iran's Bahraini Shi'a proxies initiate a campaign of terror and sabotage. Suicide car and truck bombers attack three different government buildings, severely damaging two and destroying the third. Casualties run into the hundreds. The oil field at Jabal al-Dukhan is attacked using precision-guided mortars, as is the oil refinery on Bahrain's east coast. Fortunately, the damage is minor and there

55 Some 4,000–5,000 Hezbollah troops were deployed in Syria in support of the Assad regime in its fight against various resistance groups, including Daesh. The Israelis benefited in the short term from Hezbollah's shift to focus on events in Syria. Over the longer term, however, Hezbollah forces gained invaluable combat experience while building a large reservoir of good will with the Assad regime that stands to be repaid in the form of transfers of sophisticated weaponry to the terrorist organization. Isabel Kershner, "Israel Watches Warily as Hezbollah Gains Battle Skills in Syria," *New York Times*, March 10, 2014, available at http://www.nytimes.com/2014/03/11/world/middleeast/israel-watches-warily-as-hezbollah-gains-battle-skills-in-syria.html?_r=0.

56 Adam Entous, Charles Levinson, and Julian E. Barnes, "Hezbollah Upgrades Missile Threat to Israel," *Wall Street Journal*, January 2, 2014, available at <http://www.wsj.com/articles/SB1000142405270230436160457929061392054238>. See also "Hezbollah Armed Strength," available at http://en.wikipedia.org/wiki/Hezbollah_armed_strength.

is no significant disruption of oil production. At the king's request, the United States begins round-the-clock orbits of armed Predator and Reaper unmanned aerial vehicles (UAVs) over the oil fields and surrounding areas. The plan calls for Bahraini and Peninsula Shield forces to assume the mission by mid-2019.

Bloody Yemen

Tehran also strengthens what had been a weakening position in Yemen. American and (more recently) French naval forces have successfully intercepted several major arms shipments from Iran intended for its Houthi rebel proxies. But one shipment succeeds in making it through, and Iran has made use of its good relations with Eritrea to begin smuggling weapons and munitions from that country to Yemen in small boats at night. Although many of the boats are intercepted, some manage to make it through.⁵⁷ Supported by the arms shipments and Quds Force advisers, the Houthis are tying down significant numbers of Saudi and UAE troops, while also inflicting substantial casualties.⁵⁸ Houthi forces score major successes in November 2019 when they seize the towns of Mocha and Murad, along with substantial quantities of arms and munitions, and Perim Island near the Bab al-Mandeb Strait.

On Whose Side Is Time?

Negotiations over Iran's alleged violations of the P5+1 agreement extend into 2020. While the Western powers entered into the agreement in part to buy time with an eye toward getting Iran to abandon its nuclear-weapons program, it is not clear that time is on their side. Skeptics argue that Tehran continues pursuing the "Pyongyang Gambit" by offering to engage in negotiations to resolve all outstanding issues regarding its nuclear program while continuing to restrict efforts to inspect suspected nuclear-weapons facilities.

With the Western powers' patience reaching its limits, in April 2020 Iran offers to resolve all issues, provide "ironclad" assurances regarding its nuclear program, to include foreswearing nuclear arms—if Israel will do the same. This, Tehran declares, will create a nuclear-free zone in the Middle East and represent a major step toward a nuclear-free world. Israel rejects the proposal out of hand, noting that it has never declared itself to be a nuclear-armed state. Iran responds by stating that it, too, has not declared itself as having nuclear weapons. The Supreme Leader goes on to say that Iran is willing to submit to the same inspections

57 For an overview of Iranian influence in East Africa, see Alex McAnneny, *Iran in Africa: A Tutorial Overview of Iran's Strategic Influence in Africa* (Washington, DC: Center for Security Policy, 2014), available at <http://www.centerforsecuritypolicy.org/wp-content/uploads/2015/01/Iran-in-Africa.pdf>. Iran had already been using Eritrean ports at Assab and Masawa to dock military ships for the purpose of transshipping arms to Hamas and supporters in West Africa.

58 Fears are growing in Riyadh that these troops may be needed to maintain order in the country's oil-rich northeastern provinces near Bahrain, where with the Kingdom's Shi'a population—roughly 10–15 percent of the total—is concentrated. These Shi'a have long been treated as second-class citizens by Riyadh. See Frederic Wehrey, "Saudi Arabia Has a Shiite Problem," *Foreign Policy*, December 3, 2014, available at <http://foreignpolicy.com/2014/12/03/saudi-arabia-has-a-shiite-problem-royal-family-saud/>.

on its nuclear infrastructure that are imposed on Israel. Both China and Russia support Iran's position. While the Western powers are frustrated by Iran's latest diplomatic maneuver, they remain unwilling to threaten Tehran with force to compel its compliance with the P5+1 agreement.

In July 2020, U.S. intelligence estimates place Iran's potential nuclear stockpile at four to six weapons, with the capacity to produce two to three additional weapons annually.⁵⁹ While intelligence officials admit their confidence in this estimate is moderate at best, they cite recent actions by Iran that suggest the Islamic Republic has a nuclear capability. They note the creation of hardened ballistic missile storage sites, a major increase in the number and sophistication of missile readiness exercises, and the large-scale expense incurred to improve the country's command-and-control system.

The Third Lebanon War

In September 2020, the Third Lebanon War erupts between Iran's proxies, Hezbollah and Hamas, and Israel. Since March 2019, Israel has been subjected to sporadic rocket fire, primarily from Lebanon but also from Hamas in Gaza. In September 2020, the largest attack to date scores several "lucky" hits on the coastal town Ashqelon in the south, less than ten miles from Israel's border with Gaza. The attack kills twenty-seven civilians and severely wounds several score more. Israel retaliates, undertaking a massive operation against Gaza. Beginning on September 22, and benefiting from covert support from Egyptian intelligence, the Israeli Defense Force (IDF) strikes and collapses Hamas tunnels, destroys major caches of rockets and missiles, and, in a daring raid at the onset of operations, captures two top Hamas officials and kills three others.

On October 4, Iran responds through Hezbollah, which launches a salvo of over 300 RAMM into northern and central Israel. Property damage and casualties are minimal. Israel responds on October 6 with air strikes against Hezbollah military targets in southern Lebanon, resulting in minor damage.

The conflict soon escalates. On November 22, a Hezbollah rocket barrage scores several hits on the oil refinery facilities at Haifa, despite the presence of IDF air and missile defense forces that successfully intercept the vast majority of incoming rockets. The resulting explosions kill thirty-four Israelis and wound nearly two hundred. Due to the intensity of the fires and the presence of toxic fumes, tens of thousands of Israelis are forced to evacuate their homes. Economic damage is severe, as the refinery is one of only two in the country. Israel places

59 Extrapolating from these findings, the CIA estimates that Iran could have between twenty and twenty-five nuclear weapons by the mid-2020s. Israeli intelligence findings are, if anything, far direr than the CIA's.

the blame for the attacks on Tehran, which applauds the success of Hezbollah's "rain of fire" on Haifa.⁶⁰

Striking at the Head of the Snake

Hezbollah's attack finds the Israeli people demanding their government retaliate against Iran, which they view as the true source of the attacks. The Israeli prime minister, faced with the prospect of his ruling coalition disintegrating, resolves to "strike at the head of the snake." On December 6, 2020, Israeli submarines operating in the Arabian Sea launch conventional cruise missile strikes against Iran's Abadan oil refinery, located on an island in the Persian Gulf. The cruise missile strikes support the main effort, executed by IAF fighter-bombers, which pass over Saudi territory with Riyadh's implicit consent.⁶¹ Analysis of satellite reconnaissance photographs indicates that damage to the refinery is severe. Restoring the facility's production capacity of 400,000-barrel per day will take months, perhaps as long as a year.

The attacks against Iran's energy infrastructure produce far greater destruction and loss of life than the Hezbollah attack on the Haifa refinery inflicted on Israel. The fires triggered by the attacks prove difficult to bring under control. Oil prices surge from \$71/bbl. to \$108/bbl. Israel is spared a UN vote of condemnation only by a U.S. veto.

Simultaneous with its attack on Abadan, Israel places its nuclear forces on high alert. Nuclear-capable aircraft are placed on strip alert, while two Israeli submarines armed with nuclear-tipped cruise missiles assume station in the Arabian Sea. Israel's Jericho ballistic missile forces are also put on heightened alert, along with the country's air and missile defense forces.

In the days leading up to these strikes, the Israeli leadership engages in a tortuous debate over whether or not to strike directly at Iran. The government fears that Iran has more than a few nuclear weapons—as many as eight—and that the Supreme Leader has conferred release authority to three Quds Force commanders reporting to Maj. Gen. Qassem Soleimani.⁶² If this is the case, Israeli leaders believe that an unauthorized nuclear attack on their country is a low (but not trivial) possibility. They believe that even Quds Force radicals are highly unlikely to

60 There are, however, U.S. and Israeli intelligence reports that suggest the attack was neither directed nor sanctioned by Iran, but is in response to an Israeli Air Force (IAF) strike three days earlier employing only two aircraft that killed Hezbollah's number-two leader, as well as his wife and two of his five children. Provided with this information, Israeli leaders still place principal responsibility at Tehran's feet, noting that the only way Hezbollah could have mounted such an attack is with weapons provided by Iran.

61 The Saudis and Emiratis are anxious for Israel to open another "front" in the war against Iran so as to divert the latter's focus and resources from its campaigns in Bahrain and Yemen.

62 Soleimani is a major general in the Iranian Army of the Guardians of the Islamic Republic. He has commanded its Quds Force—a cross between the U.S. Central Intelligence Agency and Special Operations Forces—since 1998. He is considered the mastermind behind Iran's covert military campaign against U.S. forces in Iraq following the Second Gulf War and its successful campaign against Daesh. Soleimani has been listed by the United States as a known terrorist and was sanctioned by the United Nations for his actions in support of the Syrian regime. For a profile of Soleimani, see Dexter Filkins, "The Shadow Commander," *The New Yorker*, September 20, 2013, available at <http://www.newyorker.com/magazine/2013/09/30/the-shadow-commander>.

launch an attack as long as the Supreme Leader is in command. They also believe that while Soleimani may be a zealot, he also understands that an attack on Israel will mean the end of Iran as a functioning society.

In the event of an attack, Israel’s senior military commanders believe it will come in the form of a haystack attack, where dozens of Iranian ballistic missiles are fired, but with only a few armed with nuclear warheads. Unable to discriminate between nuclear and non-nuclear warheads, the IDF Arrow ballistic missile defense (BMD) interceptors will be compelled to engage all incoming missiles in attempting to intercept the nuclear “needle” in the missile haystack. This Iranian missile barrage may overwhelm the Israeli defenses, as they risk being “saturated” by the Iranian attack. Faced with this problem, the IDF leaders argue that if warning is received that Iran may be preparing its missiles for an attack, Israel needs to launch a comprehensive preemptive nuclear attack on all suspected Iranian nuclear sites and delivery systems.

Echoing the legendary commander of the U.S. Strategic Air Command, General Curtis LeMay, the Israeli defense minister supports his military chiefs, arguing that his country’s nuclear strategy must be “massive preemption, not massive retaliation.”⁶³ A minority at the cabinet meetings of January 4–5 opposes a preemptive attack, warning that Iran may also attempt to deliver nuclear weapons through “non-traditional” means, such as a cargo ship. They recall that a Hezbollah truck bomb killed over 200 United States marines in 1983. If the Iranians were willing to take on the hawkish President Ronald Reagan when the military balance was overwhelmingly in the Americans’ favor, why would they flinch in attacking Israel using novel means when they have a nuclear weapon—especially following a preemptive IDF nuclear attack on Iran?

Predelegating Nuclear Release

Tehran is alarmed by the Israeli attack, and not only because of the damage sustained to its oil and gas production infrastructure. No IAF aircraft are identified by Iran’s early warning radars or integrated air defense network, and no IAF aircraft are damaged or destroyed in the attack. Nor are any cruise missiles detected, let alone intercepted. This leads to speculation in Tehran that Israel has an effective cyber means of disabling or deceiving Iran’s missile attack warning and nuclear command-and-control systems as well.⁶⁴ In a meeting of the Iranian leadership on

63 In September 1957, General Curtis LeMay was serving as the commander, U.S. Strategic Air Command, responsible for the country’s nuclear bomber forces. LeMay was visited that month by Robert C. Sprague, an electronics manufacturer, and Jerome Weisner, who would serve as President Kennedy’s science adviser and later as president of MIT. Both men expressed concern that LeMay’s bombers might be vulnerable to a surprise attack by Soviet bombers. LeMay admitted that if he relied solely on the Distant Early Warning Line (the DEW Line) of radar stations stretching across Canada then this might be a problem. LeMay then added: “I will know from my own intelligence whether or not the Russians are massing their planes . . . for a massive attack against the United States. If I come to that conclusion, I’m going to knock the shit out of them before they get off the ground.” When Sprague noted that LeMay was not hewing to national policy, the general replied, “No, it’s not national policy, but it’s my policy.” Newhouse, *War and Peace in the Nuclear Age*, p. 280.

64 Although the Israeli government has never confirmed or denied the use of cyber weapons in the attack, some experts argue that this is the case. See Clarke and Knake, *Cyber War*, pp. 1–8.

January 7, the Supreme Leader, the Ayatollah Ali Khamenei, angrily points out to his military commanders that the “Zionist” strike aircraft and cruise missiles could have been armed with nuclear weapons, in which case Iran would have been devastated without being able to execute a nuclear counterstrike against Israel. He is greatly troubled by the apparent deficiencies in Iran’s early warning and command-and-control systems exposed by the Israeli attacks. There is speculation that Iran’s Russian-built defenses suffer from the same flaws exploited by Israel in its attack on Syria in 2007.⁶⁵

Khamenei warns his advisers that Israel’s history suggests that it will wage preventive war. The Zionists, he reminds them, have enjoyed great success with such attacks. The flawless attack on Iran’s energy infrastructure “will only encourage the Zionists to believe they can strike at us with impunity.”

At the meeting, Iranian intelligence reveals that prior to the Israeli attack the Israeli cabinet weighed the option of executing a preventive nuclear strike on Iran’s nuclear forces at the same time it attacked Iran’s energy infrastructure. Several Israeli cabinet members were said to argue that if Iran’s early warning system would not be able to detect approaching IDF cruise missiles and strike aircraft, then it is best to conduct a nuclear strike rather than give Iran the opportunity to strike a nuclear blow at Israel.⁶⁶

Facing great uncertainties and an existential threat to his regime, Ayatollah Khamenei declares that in the event command links between Iran’s nuclear forces and himself are broken, nuclear release authority is predelegated to the four Quds Force commanders (that is, Soleimani and his three subordinates) in charge of Iran’s nuclear forces. Still, the Supreme Leader fears that Iran’s small nuclear force may not survive a large-scale Israeli nuclear attack. Rather than announcing this decision publicly—and confirming the existence of Iran’s nuclear capability—he passes the information to the Israeli leadership through a covert meeting between the Iranian and Israeli ambassadors to Sweden along a remote forest clearing a few dozen miles from Stockholm.⁶⁷

The Supreme Leader defers action on two other options. One involves deploying two of Iran’s small stock of nuclear weapons to Lebanon under control of the Quds Force, to be delivered if ordered by a cargo ship off the coast of Israel, or by other covert means. At the same time, he considers the effect of (mis)informing the Israelis that he has, in fact, exercised this option.

Finally, with Iran’s prestige having suffered another blow in the wake of Israel’s attack, Khamenei holds a second meeting on the evening of January 7, to discuss options for the

65 Russian technical experts arrive two days after the Israeli attack and, after two days of inspecting Iran’s early warning and integrated air and missile defense systems (IADS), assert to Iran’s defense minister that neither was the victim of malware.

66 The account provided by Iranian intelligence is generally correct, but provided only a partial account of the Israeli cabinet’s deliberations, and thus presents Khamenei with an incomplete picture of the situation confronting him.

67 Although unstated, the purpose of providing this information to the Israelis is to enhance Iran’s deterrence against a preemptive Israeli attack on its nuclear forces.

Lebanon Front against Israel. The Supreme Leader is inclined to direct Quds Force elements in Lebanon to clamp down on Hezbollah's leaders, ordering them to scale back their attacks and restricting targets to those Israeli forces along its border with Lebanon. Several advisers challenge this thinking, arguing that the Israeli strike demands a strong counter-strike, and that Israel has far more to lose than Iran as long as the conflict does not cross the nuclear threshold. Failure to respond, they assert, will embolden the Israelis, and quite likely the Saudis and other enemies as well, putting at risk the hard-won gains of the past decade and possibly fostering widespread internal dissent at home.⁶⁸ The meeting breaks up with Khamenei undecided on whether or not to conduct another strike on Israel. In the interim, Hezbollah is instructed to refrain from any moves that might provoke further military action by Tel Aviv.

On January 9, the UN Security Council meets to explore how Iran and Israel can be induced to take their nuclear forces off high-alert status. Despite clear evidence provided by satellite imagery that both countries have placed their forces on high alert, an impasse is quickly reached when both the Iranian and Israeli ambassadors note that their countries have never declared themselves to possess nuclear weapons.

With the Council stymied, the British ambassador advances a proposal for reestablishing a UN peacekeeping force to be deployed to southern Lebanon as a means of diffusing the situation in the hope that it will induce both sides to return their forces to lower alert levels.⁶⁹ This is opposed by the Lebanese and Iranian governments, which maintain that the force should be equally split between Lebanese and Israeli territory. The Israelis, for their part, state that such a force would do little good, given Hezbollah's possession of extended-range rockets and missiles that enable them to strike Israel from almost any point in Lebanon. The Israelis go on to present what they argue is "compelling" evidence that Iran is a nuclear-armed state. The Iranian ambassador, along with his Chinese and Russian counterparts, argue that Israel has not proven its case, while the three Western permanent security council members do not take a position on the issue.⁷⁰ The Russian ambassador proceeds to note that U.S., British, and French security experts all believe Israel to be a nuclear power.

68 The Israeli strikes have cut Iran's oil and gas production by 20 percent and 15 percent, respectively. While the spike in energy prices has partially offset the lost revenue, the projected cost of infrastructure repairs is estimated to run into the tens of billions of dollars. The Iranian leadership also fears that the country's perpetual war-footing posture and growing casualties is eroding popular support to dangerously low levels.

69 The United Nations Interim Force in Lebanon (UNIFIL), which had monitored southern Lebanon beginning in 1978, was withdrawn in 2017 after both the Israeli government and Hezbollah derided its inability to preserve the peace. Suspicions are strong that both sides sought UNIFIL's withdrawal to remove an obstacle to their ability to conduct operations against each other.

70 The Western powers' silence on the issue stems, in most observers' minds, over the implications that would ensue if they concurred with the Israeli assessment. This would place Iran in clear violation of the P5+1 agreement, with all its consequences.

Eyeball to Eyeball

On January 12, as the Security Council talks enter their third day without resolution, both Iran and Israel maintain their nuclear forces on high alert. At a meeting of the National Security Council (NSC) at the White House in Washington that same day, American military leaders raise concerns over how long the two countries can maintain their forces on a hair-trigger alert without risking some unintended but fatal consequences. They also believe the Iranians cannot sustain their smaller, technically inferior force on protracted high alert. Within a week—two at the most—they will be compelled to stand down a substantial portion of their missile forces for maintenance, creating a potential window of opportunity for the Israelis if they can time their attack accordingly.

At the White House the president is informed by U.S. intelligence that it has high confidence, thanks to signals intelligence (SIGINT), that the Iranians are exploring options for transferring nuclear warheads from missiles that must stand down for maintenance to those being brought up to launch status. While such transfers take hours, the gap between high-alert conditions is less than occurs when leaving the warhead on the missile while maintenance is performed. Intelligence also believes (although with less confidence) that Iranian leaders are examining the feasibility of moving the nuclear-armed missiles to underground facilities, although fears exist that the Israelis will strike the facilities' entrances with conventional precision-guided bombs and bury the missiles.

Use It or Lose It?

Tehran's anxieties only increase when the American press reports that the United States is engaged in discussions with the Israelis over deploying land- and sea-based air and missile defense systems to the region. Among the systems being considered are the U.S. Army's Terminal High Altitude Area Defense (THAAD) missile defense system;⁷¹ the U.S. Navy's Aegis air and missile defense system;⁷² and the Patriot Advanced Capability-3 (PAC-3) system.⁷³ Khamenei and his military chiefs clearly understand that the more missile defense forces the Israelis have at their disposal, the less effective an Iranian haystack missile attack will be. They

71 The THAAD radar, the Army-Navy/transportable radar surveillance (AN/TPY-2), is already deployed in Israel at a site in the Negev desert, having been positioned there in 2009. Karl Vicke and Aaron J. Klein, "How a U.S. Radar Station in the Negev Affects a Potential Israel-Iran Clash," *Time*, May 30, 2012, available at <http://content.time.com/time/world/article/0,8599,2115955,00.html>.

72 The Aegis missile defense system is built around the Aegis Combat System and its AN/SPY-1 radar using the Standard Missile (SM-2 and SM-3) interceptor. The SM-3 is a midcourse interceptor designed to engage the attacking missile's payload while it is above the atmosphere. The SM-2 interceptor is designed to provide terminal defense, intercepting the missile warhead after it has reentered the atmosphere during the final stage of its flight. The U.S. military plans to replace the SM-2 with a longer-range interceptor missile, the SM-6. Ronald O'Rourke, *Navy Aegis Ballistic Missile Defense (BMD) Program: Background and Issues for Congress*, RL33745 (Washington, DC: Congressional Research Service, December 11, 2015), pp. 3–5.

73 Department of Defense (DoD), Missile Defense Agency, "Patriot Advanced Capability," available at http://www.mda.mil/system/pac_3.html. The PAC-3 is designed to intercept ballistic missile warheads in their terminal phase.

are also concerned that the United States may employ its conventional prompt global strike forces⁷⁴ to complement any Israeli preemptive nuclear strike and to suppress any attempts by Iran to execute even a “broken back” nuclear counterstrike against Israel.

The Israelis also have misgivings over deploying U.S. missile defenses to the region. Tel Aviv wants to know if the U.S. military can deploy these systems both quickly and covertly. If not, then Israel runs the risk of Iran undertaking a nuclear strike against Israel before its chances of success diminish significantly, or perhaps even dramatically.

The Americans have similar concerns; in a meeting of the NSC on January 13, the eighth day of the crisis, the president concludes that such a deployment would further destabilize the situation. The U.S. defense secretary reinforces the president’s views, worrying that shifting air and missile defense forces from Eastern Europe and the Far East may also undermine U.S. alliance relationships in those regions while encouraging aggressive behavior on the part of regional rivals. The U.S. secretary of state remarks, “There seems to be no way out of this fix.”

The president asks for the view of the commander, U.S. Cyber Command (CYBERCOM). She informs the NSC members and invited participants that it may be possible to execute a computer network attack (CNA) against Iran’s early warning and command-and-control architecture, rendering it difficult, if not impossible, for the Iranians to launch their nuclear missiles. When the president asks how confident Cyber Command is in its CNA campaign’s likely effectiveness, the response is “90 percent.” The president responds, “That’s not good enough.” But he also states that should he receive reliable warning that Iran is preparing for an attack, and that a preemptive strike by U.S. forces be approved, the CNA option will be executed as well.⁷⁵

The president then asks the commander, U.S. Strategic Command (STRATCOM), how U.S. nuclear forces might be useful. He is informed that the size of the Israeli arsenal is sufficiently large to render U.S. nuclear forces redundant in any conceivable attack contingency against Iran. He notes that as Israel’s nuclear forces are far closer to Iran than are U.S. forces, they can execute a prompt attack better than STRATCOM. Finally, he states the Israelis may have a

74 “Prompt global strike” refers to a set of U.S. conventional military capabilities designed to enable the United States to strike targets anywhere on Earth in as little as an hour. Among the capabilities that can (or might) comprise a U.S. prompt global strike force are advanced C4ISR (command, control, communications, computers, intelligence, surveillance, and reconnaissance) systems, long-range bombers, long-range cruise missiles, cyber munitions, (potentially) hypersonic glide delivery vehicles deployed on ballistic missiles (known as the conventional strike missile, or CSM), submarine-launched intermediate-range ballistic missiles (SLIRBMs), and an Air Force/DARPA (Defense Advanced Research Projects Agency) program known as FALCON (Force Application and Launch from Continental United States) comprising a launch vehicle and hypersonic reentry vehicle, among others. See Amy Woolf, *Conventional Prompt Global Strike and Long-Range Ballistic Missiles: Background and Issues*, R41464 (Washington, DC: Congressional Research Service, October 2, 2015).

75 The option of a CNA is discussed with the Israelis, who also intend to employ their CNA option should they decide to take out Iran’s nuclear forces. However, the president does not commit to executing such an attack should the Israelis decide to attack Iran. For their part the Israelis see the U.S. offer as a ploy to ensure Washington is informed prior to any Israeli military action. The two countries’ leaders are concerned over the possibility that should they both execute CNAs in overlapping time frames, it may degrade their effectiveness or produce unintended (and undesirable) second-order consequences. For some unknown reason, the Israeli prime minister does not inform the American president that the Iranians have predelegated nuclear release authority to Quds Force commanders.

more flexible nuclear arsenal than does the United States, the latter not having designed a new nuclear weapon since the Cold War, let alone diversified its nuclear arsenal with weapons of smaller yields and more discriminate effects. He sums up his views, saying, “Our nuclear arsenal is not a card we can play with any real hope of success, Mr. President.”

As the meeting breaks up, the president echoes his secretary of state’s thoughts, saying, “We’ve created a one-way dead-end street for mankind. The resolution of this crisis appears to be in God’s hands; it’s certainly not in ours.”

EXCURSION

The “N-Player” Problem

Scenario excursions (sometimes referred to as “branches”) involve altering one of the scenario’s “drivers”—those factors that greatly influence the storyline and the character of the problem (or opportunity) presented to policymakers. There are a number of these “drivers” in the scenario presented above. For example, the situation would be materially different if Iran’s nuclear arsenal were much larger than presented above. It would also be altered significantly if Iran’s nuclear arsenal comprised only one or two weapons and U.S. air and missile defenses were already deployed in the region prior to the crisis. From a technological perspective, if Iran had the ability to miniaturize its nuclear warheads and place them on cruise missiles—perhaps covertly on cargo ships in the Mediterranean—the crisis would have yet another dimension to it. Looking at the situation from a geostrategic perspective, one can easily imagine the crisis assuming a different character if other great powers outside the region, in addition to the United States, became involved in the crisis by providing Iran with certain military capabilities or security guarantees.

There is also the “N-Player Problem.” How would the situation be different if there were a third nuclear power in the region? This issue is explored in the following excursion. The altered “driver” involves the reaction of several Middle East states to the P5+1 agreement.

What Is Sauce for the Goose. . .

In March 2015, Saudi Arabia’s former intelligence chief and ex-ambassador to the United States, Prince Turki al-Faisal, put the Western powers on notice in declaring that whatever status is conferred on Iran, “We will want the same. . . . Whatever the Iranians have, we will have, too.”⁷⁶ Following the July 2015 agreement, Egypt, Saudi Arabia, Turkey, and the UAE declare they are entitled to the same treatment as Tehran with respect to their nuclear infrastructure. Shortly thereafter Egypt and Turkey undertake modest increases in their nuclear enterprise investments, while the UAE moves to expand significantly its nuclear program, including the purchase of several thousand centrifuges.

76 Yaroslav Trofimov, “Saudi Arabia Considers Nuclear Weapons to Offset Iran,” *Wall Street Journal*, May 7, 2015, available at <http://www.wsj.com/articles/saudi-arabia-considers-nuclear-weapons-to-offset-iran-1430999409>; and David E. Sanger, “Saudi Arabia Promises to Match Iran Nuclear Capability,” *New York Times*, May 13, 2015, available at http://www.nytimes.com/2015/05/14/world/middleeast/saudi-arabia-promises-to-match-iran-in-nuclear-capability.html?mkt_tok=3RkMMJWWfF9wsRojuaVNZKXonjHpfsX57u8uXqSg38431UFwdcjKPMjr1YcIRcVoaPyQAgobGp515FEIQ7XYTLB2t6oMWA%3D%3D&_r=0.

The Saudis, however, are the most aggressive. A small but highly talented group of foreign nuclear physicists and engineers are brought to the kingdom. Most are from Pakistan.⁷⁷ By early 2017, over the objections of Washington and the EU-3 powers, the Saudis are constructing a large-scale, distributed and hardened nuclear infrastructure.⁷⁸ As with the UAE, Riyadh imports thousands of advanced centrifuges. Riyadh has also contracted to buy large quantities of uranium ore from Jordan, which holds the region's largest reserves. According to an IAEA expert, there is a great deal the Saudis and Emiratis can do while remaining "good citizens" of the Nonproliferation Treaty. Olli Heinonen, former deputy director-general and head of the IAEA's safeguards department, states:

The first four to five years they don't need to even talk about sensitive technology, they just have to keep it in mind. Over the next few years they will just build this infrastructure. They will be really nice boys with the IAEA, and there will be no problem.⁷⁹

The cost of this enterprise is substantial, all the more so given the lag in oil and gas prices (hovering at \$70/barrel) and the financial strains imposed by Saudi and UAE operations in Bahrain and Yemen, and support for Sunni opposition forces in Iraq and Syria. Both Arab states blame Washington for their current difficulties, and relations with the United States are at their lowest point in memory.

Getting on the Fast Track

In April 2017, Israeli intelligence informs the new administration in Washington that the Saudi and UAE efforts to create a nuclear enterprise may be, at least to some extent, a cover to mask the transfer of highly enriched weapons-grade uranium (U-235) and plutonium from Pakistan to help these two Arab states close the nuclear gap with Iran. The former head of Israeli military intelligence, Amos Yadlin, states, "They [the Saudis] have already paid for the bomb. They will go to Pakistan and bring what they need to bring."⁸⁰ The Israelis also main-

77 Saudi Arabia funded much of the work of A.Q. Khan, the "father" of Pakistan's nuclear weapon, and has a strong claim on that country for support. The second-largest group of nuclear physicists arriving in the kingdom by nationality is Russian. Their interaction with the other physicists is kept to a minimum. It appears the Saudis are concerned that these scientists may be "plants" by the Russian government to provide intelligence on Saudi activities, subvert the kingdom's nuclear program, or both.

78 In 2010, Saudi Arabia established the King Abdullah City for Atomic and Renewable Energy, commonly known as K.A.CARE, to develop alternative energy sources. K.A.CARE's goal is to generate 17.6 gigawatts of electricity using nuclear power by 2032 by building up to sixteen new reactors. Toward this end, the kingdom has entered into a nuclear cooperation agreement with South Korea to explore the possibility of building two nuclear reactors in Saudi Arabia. The Saudis have also crafted nuclear agreements with Argentina, China, and France. As these states, South Korea, and Saudi Arabia itself are all signatories to the Nuclear Nonproliferation Treaty (NPT), their arrangements would theoretically be limited to civil cooperation. That being said, Iran is also an NPT signatory, as was North Korea during its march to a nuclear weapons capability. Jay Solomon and Ahmed Al Omran, "Saudi Nuclear Deal Raises Stakes for Iran Talks," *Wall Street Journal*, March 11, 2015, available at <http://www.wsj.com/articles/saudi-nuclear-deal-raises-stakes-for-iran-talks-1426117583>; and Clary and Karlin, "The Pak-Saudi Nuke, and How to Stop It."

79 Trofimov, "Saudi Arabia Considers Nuclear Weapons to Offset Iran."

80 Mark Urban, "Saudi Nuclear Weapons 'On Order' from Pakistan," *BBC News*, November 6, 2013, available at <http://www.bbc.com/news/world-middle-east-24823846>.

tain that Pakistan has already transferred components needed to build a plutonium bomb, and that Riyadh has an option to purchase more weapons-grade fission materials.

With the growing consensus in the West that Iran has been guilty of significant violations of the P5+1 agreement, Riyadh is increasingly concerned that its nascent nuclear program may not enable it to field a nuclear capability in time to match Tehran's. As a hedge, at the time of the JCPOA signing, the Saudis enter into discussions with the Pakistanis to exercise the "nuclear purchase option." Washington, benefiting from Israeli-supplied intelligence on the talks, exerts strong pressure on Islamabad to renege on its agreement with Riyadh.⁸¹ The Saudis push back, reminding the Pakistanis of their longstanding security relationship and, even more important, their generous financial assistance over many decades. For three years the bilateral negotiations continue without a resolution.

In September 2018, with Iran clearly violating its JCPOA obligations and Islamabad desperate for Riyadh's continued financial assistance, the two countries arrive at a solution. Three months later in a radio address, King Salman bin Abdulaziz reveals that Pakistan has deployed sixteen land-based nuclear-armed IRBMs on the kingdom's territory to address the threat posed by Iran's estimated nuclear force, and as a "minimum deterrent" against the Israeli nuclear arsenal. Gary Samore, who had served as the president's counter-proliferation adviser in the Obama administration, noted that Riyadh has decided to pursue the "NATO model" that finds the Saudis and Pakistanis adopting a "dual-key" posture where both countries would need to approve a nuclear weapons launch.⁸²

While Riyadh declares that it is adopting the NATO model, Iran asserts that the missile units are both manned and under the command of an elite arm of the Saudi military that has been trained in Pakistan. In negotiations over its alleged violations of the P5+1 agreement, Tehran argues that the Western powers' concerns are misplaced, and that sanctions should be imposed on Saudi Arabia for violating its commitments under the NPT. Both Iran and Israel declare that any nuclear weapon launched against them from within the Kingdom of Saudi Arabia will be considered an attack by both the kingdom *and* Pakistan. Tehran further states that such an attack will also be considered an act of war by the UAE.

The irony of the situation does not escape the attention of Egypt's president, Abdel Fattah el-Sisi, a close ally of the Saudis. He declares, "According to the Iranians and Israelis, our Saudi brothers are the only one with nuclear weapons in the region. We all know the opposite to be true. It is the Persians and Israelis with the weapons, and the Pakistanis who have come to the aid of our Arab brothers."

81 U.S. aid to Pakistan is equivalent to roughly 6.5 percent of the government's budget. Clary and Karlin, "The Pak-Saudi Nuke, and How to Stop It," p. 30.

82 The other two options reportedly considered by the Saudis were relying on the U.S. nuclear umbrella and negotiating a nuclear-free zone for the region. The former option was ruled out owing to the rapid decline of the Saudi leadership's confidence in its American partner. The latter option proved impossible to pursue in the face of Iranian and Israeli denials that they possessed a nuclear capability. Urban, "Saudi Nuclear Weapons 'On Order' from Pakistan."

The Cyber Factor

Further complicating matters, several Western intelligence agencies report the Saudis have contracted some of the world’s best-known “white hat” and “black hat” cyber hackers to assist them in protecting their early warning and command-and-control systems from cyber attacks, and in developing the means to corrupt Iranian and Israeli systems.⁸³

The news raises concerns in Washington, and for good reason. Following the signing of the P5+1 agreement, the United States made good on President Barack Obama’s offer to assist the GCC states in fielding a missile defense system, to include early warning radars and command-and-control systems.⁸⁴ At that time, the Saudi ambassador meets the president in the Oval Office and assures him that his government has no intention of giving the hackers access to sophisticated U.S. military equipment. The president requests that U.S. military advisors be stationed with the equipment to reassure the United States that no such access is being granted. The ambassador readily agrees. (Following the meeting the commander, U.S. Cyber Command, informs the president that “the horse is already out of the barn”—if the Saudis wanted the hackers to have access, it has already occurred.)

During the meeting the president presses the Saudi ambassador on the need to avoid employing cyber weapons offensively. He is deeply concerned over the possibility that cyber malware injected into Iran’s early warning system could convince the Iranians that they are under attack by Israel, when in fact no attack is occurring, triggering a nuclear exchange between those two countries. The Saudi ambassador smiles and warmly assures the president that his government has no desire to “twist the tail of the nuclear dragon.” He suggests the president devote his attention to the Israelis, “who have a tendency to attack before they are attacked.”

83 “Black hats” are cyber hackers who penetrate computer security systems for personal gain (such as for stealing credit card numbers or harvesting personal data for sale to identity thieves), or simply to engage in malicious behavior (such as defacing websites they don’t like). “White hats” are hackers that employ their expertise in the cyber domain to identify weaknesses in computer defenses. Unlike black hats, when white hats discover these weaknesses they report them to the computer system’s administrator or software developer to eliminate them.

84 The joint statement following the May 14, 2015, meeting at Camp David states:

GCC member states committed to develop a region-wide ballistic missile defense capability, including through the development of a ballistic missile early warning system. The United States will help conduct a study of GCC ballistic missile defense architecture and offered technical assistance in the development of a GCC-wide Ballistic Missile Early Warning System. All participants decided to undertake a senior leader tabletop exercise to examine improved regional ballistic missile defense cooperation.

That same day President Obama declared:

[W]e’ll help our Gulf partners improve their own capacity to defend themselves. The United States will streamline and expedite the transfer of critical defense capabilities to our GCC partners. We will work together to develop an integrated GCC defense capability against ballistic missiles, including an early warning system.

“Annex to U.S.-Gulf Cooperation Council Camp David Joint Statement,” May 14, 2015, available at <https://www.whitehouse.gov/the-press-office/2015/05/14/annex-us-gulf-cooperation-council-camp-david-joint-statement>; and “Remarks by President Obama in Press Conference after GCC Summit,” May 14, 2015, available at <https://www.whitehouse.gov/the-press-office/2015/05/14/remarks-president-obama-press-conference-after-gcc-summit>.

The Crisis Revisited

The View from Washington

After the Saudi ambassador's departure, the president and his national security team resume working to diffuse the crisis. Aside from the problem that neither Iran nor Israel will admit to having nuclear weapons, less putting them on high alert, there are grave fears that Saudi Arabia and Pakistan may be drawn into an Iranian-Israeli conflict.

The chairman of the U.S. joint chiefs of staff informs the president that Iran may have no way of knowing whether it is being attacked by nuclear missiles coming from Israel or Saudi Arabia. If an attack kills or disables the Supreme Leader, subordinate commanders may decide on their own whom to retaliate against. Steps need to be taken immediately to ensure the Pakistanis will stay out of any conflict.

While the chairman understands the destabilizing effect moving U.S. air and missile defenses into the region could have, steps also need to be taken to address how quickly they could be deployed if nuclear weapons are used, with an eye toward stopping nuclear use as quickly as possible. With this in mind, he asks the president what U.S. policy will be regarding sanctioning attacks on Iranian nuclear forces, to include the employment of American nuclear weapons. The president responds by declaring that such attacks will need to be approved personally by him, and that all efforts must be made to limit collateral damage. The commander-in-chief goes on to say that an important consideration will be to terminate the conflict in such a way as to discredit nuclear use in the eyes of the world.

There is general agreement among the president and his advisers that the Saudis will not employ nuclear weapons unless subjected to a nuclear attack by Iran. The Israelis are another matter. Would the United States attempt to block an Israeli preemptive nuclear attack on Iran?

The secretary of state notes that suspicions are already rising between the two de facto allies. The Israeli ambassador has questioned her as to whether, if U.S. intelligence discovered Iran preparing its missiles for an attack, that information would be withheld from Israel to dissuade it from striking first. This leads to a revisiting of the two countries' plans for computer network attacks against Iran, which both fear could generate unintended consequences if not carefully coordinated.

Adding to the president's concerns, both senior American commanders in Europe and the Pacific report that U.S. allies and partners in those regions have weighed in strongly against any redeployment of American air and missile defense forces from their part of the world to the Middle East. Fortunately there are some systems based in the United States that can be deployed if the president so directs. Owing to a shortage of interceptor missiles, however, substantial numbers of interceptors may need to be redeployed (covertly, of course) from Europe and the Pacific.

The View from Riyadh

The mistrust between the Americans and Israelis is trivial when compared to what the Saudis feel toward Washington and their apparent ally of convenience in Tel Aviv. They are deeply concerned that all U.S. efforts will have Israel as their first priority and that the kingdom figures into Washington's plans only with respect to preserving the country's energy infrastructure.

There are also concerns that the Pakistanis may get cold feet if and when the king decides that nuclear weapons must be used—an action to be taken only if Saudi Arabia is the victim of an Iranian nuclear strike. Should such a strike materialize, the Saudis worry that the Americans may not use their air and missile defenses to maximum effect and withhold some missiles to better protect Israel should it be attacked.

Finally, there are fears among more radical elements in the senior leadership that the Israelis may attempt to provoke a war between the kingdom and the Islamic Republic, perhaps through computer network attacks inserting false information into both countries' early warning and command systems, and that the Americans may be involved as well. Pressure is put on both the white- and black-hat hackers to see what they can find out.

The View from Tel Aviv

As they meet in what amounts to nearly round-the-clock sessions, the Israeli prime minister's national security brain trust begins to suffer from physical and mental exhaustion, leading several to wonder aloud whether their ability to make good decisions under severe time constraints isn't severely diminished.⁸⁵ They also wonder the same of their counterparts in Riyadh, Tehran, and Washington.

The prime minister is desperate to have assurances that any Iranian preparations for a missile attack will be found out and reported to him in time to order a preemptive strike, should he choose to do so. He repeatedly asks if the Americans are interfering with Israeli early warning activities.

As the crisis enters its third day, the prime minister directs that early warning efforts be expanded to include the possibility of a Saudi nuclear attack on Israel. When the Israeli intelligence chief informs him that there has been nothing to suggest the Saudis intend to do anything other than deter a nuclear attack from Iran, the prime minister angrily disputes the finding and repeats his order.

The prime minister also persistently queries his intelligence and internal security chiefs over the possibility that Iran could deliver a nuclear weapon through non-traditional means. There is a heated debate over whether to begin detailed inspections of all cargo ships approaching

85 For an assessment of the effects of stress on Israeli leaders' decision-making processes, see Uri Bar Joseph and Rose McDermott, "Personal Functioning under Stress: The Role of Accountability and Social Support in Israeli Leaders in the Yom Kippur War," *The Journal of Conflict Resolution*, February 2008, pp. 144–170.

Israeli ports. It is decided to inspect only those that have embarked from ports designated to have lax security or are in countries viewed as potentially hostile to Israel.

The View from Tehran

As the crisis between Iran and Israel reaches its climax in January 2021, Tehran has two local nuclear rivals to consider. While the Saudis filed a strong protest with the Israelis over their violation of its airspace in the IAF's attack on Iran's energy infrastructure, Tehran (rightly) believes Riyadh had granted Tel Aviv permission in advance. In the Supreme Leader's eyes, the Sunnis have made a devil's pact with the Zionists.

During Khomeini's meeting with senior military leaders on January 7, the discussion extends into the problem of "Pakistani" nuclear weapons deployed on Saudi soil. The Supreme Leader is told that the only Saudi targets for Iran's small nuclear arsenal are the kingdom's cities, excluding the holy cities of Mecca and Medina, and the country's energy infrastructure. But there are concerns that if Iran attacks the kingdom that it may bring Pakistan into the conflict, along with its nuclear arsenal. The Supreme Leader's military advisers argue that all the country's weapons should be reserved for use against Israel unless the Saudis execute a nuclear attack against Iran.

Khomeini believes that the Saudis will take no action that threatens their energy infrastructure. He dismisses out of hand any possibility of the Saudis making war on Iran. He is, however, concerned that the Saudis might conduct cyber attacks to degrade Iran's nuclear early warning and command-and-control systems. As the source of such attacks could be difficult to identify, the Saudis might hope that Tehran would view the attack as coming from Israel, triggering a war between Iran and Israel. Khomeini concludes, "The Sunnis would like nothing better than for us and the Zionists to destroy one another. We must not be led into the trap." He asks if the Islamic Revolutionary Guard Corps (IRGC) can conduct some exercises where nuclear strike commands are issued resulting in conventional-armed missiles being launched into the Arabian Sea to ensure the system has not been compromised. Preparations are made to conduct two tests, one on January 13, the other two days later. (No one points out that the Israelis could interpret test preparations as evidence that an attack on their country is imminent.)

The Supreme Leader's senior military adviser informs him that the Americans may employ air and missile defenses in the kingdom that could be used to degrade or defeat any Iranian missile attack on Israel. "The Great Satan will tell the Sunnis they are being protected, but his goal is to protect the Zionists. They [the Americans] may even be able to use the GCC defenses to protect them [the Israelis]. What then?"

Khomeini remains silent for several moments. Then pronounces to his advisers, "The glory of Allah is to be revealed through chaos."⁸⁶

86 Twelver Shi'ites believe that Allah's kingdom will be established on earth by the Twelfth or Hidden Imam, also known as the Mahdi, whose advent can be hastened by creating the right set of circumstances: friction and misunderstanding among the nations and violent upheavals.

CHAPTER 3

Russia

Jacob Cohn

*Wars are not caused by the buildup of weapons. They are caused when an aggressor believes he can achieve objectives at an acceptable price...Our task is to see that potential aggressors, from whatever quarter, understand plainly that the capacity and resolve of the West would deny them victory and that the price they would pay would be intolerable.*⁸⁷

Margaret Thatcher

*If you are scared to go to the brink, you are lost.*⁸⁸

John Foster Dulles

Freeing Moscow's Hand and Placing the Baltics at Risk

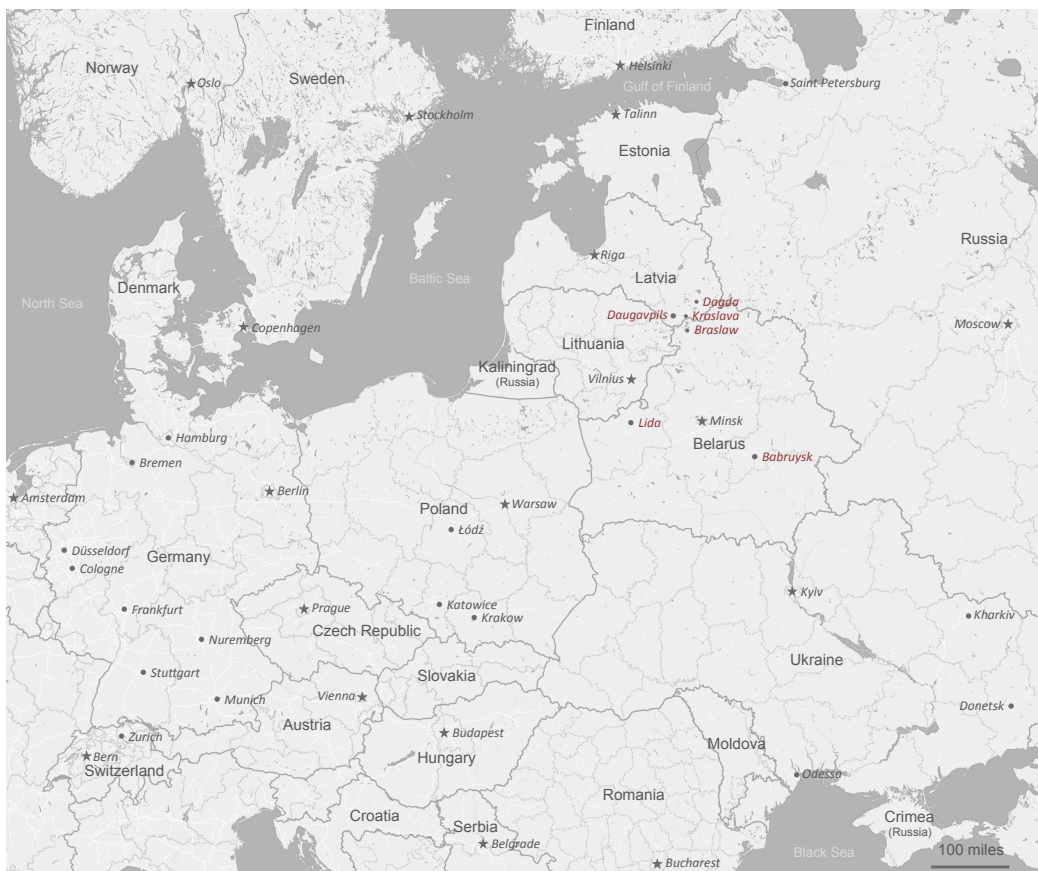
On the heels of NATO's expansion to the Baltics in 2004 and the Ukrainian Orange Revolution in late 2004 to early 2005, Russian President Vladimir Putin felt threatened by the West's growing influence in the former Soviet Union. In April 2005, he stated:

Above all, we should acknowledge that the collapse of the Soviet Union was a major geopolitical disaster of the century. As for the Russian nation, it became a genuine drama. Tens of millions of our co-citizens and compatriots found themselves outside Russian territory. Moreover, the epidemic of disintegration infected Russia itself.⁸⁹

87 Cited in Keith Payne, *The Great American Gamble: Deterrence Theory and Practice from the Cold War to the Twenty-First Century* (Fairfax, VA: National Institute Press, 2008), p. 149.

88 Cited in Lawrence Freedman, *The Evolution of Nuclear Strategy* (New York; St Martin's Press, 1983), p. 220.

89 Vladimir Putin, "Annual Address to the Federal Assembly of the Russian Federation," Addresses to the Federal Assembly, April 25, 2005, available at http://archive.kremlin.ru/eng/speeches/2005/04/25/2031_type70029type82912_87086.shtml.



Baltic States and Western Russia

Under Putin, Russia also began pushing back against Western encroachment through tools of both hard and soft power, including supporting ethnic Russians in breakaway regions such as the Republic of Georgia’s South Ossetia and Abkhazia, as well as Ukraine’s Crimea and eastern provinces. While Moscow does not want direct control over most of the former Soviet republics, its actions are designed to broaden its sphere of influence within those republics, weaken NATO—reducing the threat along Russia’s western border—and leverage foreign policy victories to shore up its domestic support.⁹⁰

Moscow’s military interventions are broadly premised on three criteria: local military superiority; a greater interest in the outcome and willingness to escalate than the West; and a

90 For instance, in February 2014, President Putin’s domestic approval rating was 65 percent. Within days of the Crimean referendum for unity with Russia, Putin’s approval rating spiked to 80 percent. Additionally, President Putin’s popularity jumped to 89.9 percent with Russia’s deployment of combat forces to Syria in October 2015. See Ian Bremmer, “Putin Scores Another Much-Needed Win in Syria,” *The World Post*, October 2, 2015, available at http://www.huffingtonpost.com/ian-bremmer/putin-win-syria_b_8229320.html?ncid=edlinkushpmg0000090; and Alexei Anishchuk, “Putin Gains Record Support Among Russians Over Syria, Poll Shows,” *Bloomberg Business*, October 22, 2015, available at <http://www.bloomberg.com/news/articles/2015-10-22/putin-gains-record-support-among-russians-over-syria-poll-shows>.

domestic narrative to justify the intervention. Russia's invasion of Georgia in 2008 and support of Ukrainian separatists in 2014 satisfy all three criteria and highlight the means with which Moscow aims to achieve its broader geopolitical objectives. Moscow will identify areas that satisfy these three criteria and then leverage low-level subversion, sub-conventional tactics (unconventional, low-intensity conflict, including insurgencies, militancy, cyber warfare, and proxy wars), and both domestic and international propaganda to advance Russia's interests in the former Soviet Union.

The Russian military's poor performance in the 2008 war against Georgia spurred a sustained increase in defense spending and a long-term rebuilding effort to recover from the disastrous 1990s.⁹¹ While the Russian military has strengthened significantly since then, its conventional forces are still less capable than American conventional forces. Putin has leveraged Russia's ongoing mission in Syria to experiment with and test out new systems, such as the Kalibr-NK land attack cruise missile, but he has chosen to husband most of the Russian military's limited supply of advanced weapons for a future crisis.⁹²

Setting the Stage in Eastern Europe

While not completely peaceful, the situation in Ukraine stabilizes by mid-2016 with the Donetsk and Lugansk People's Republics of Novorossiia having de facto, but not de jure, independence. The constitutional amendment necessary for increased autonomy in rebel-held eastern Ukraine, which could have led to a peaceful resolution of the conflict, failed when the Radical Party (fifth in the 2014 election) left the majority coalition in Kiev.⁹³ With the collapse of the constitutional amendment process, and thus of a political solution to the conflict, pro-Russian rebels consolidate their influence in eastern Ukraine, despite the Ukrainian government's continued insistence that it will not recognize a devolution of authority to, or independence of, the breakaway provinces. Moscow continues to assist both new republics, although the majority of previously committed forces have returned to Russia to rest and refit for future operations. Western sanctions are still in force and the United States continues to provide nonlethal assistance. No Western country has provided lethal aid to Ukraine.

As Russia's presence in eastern Ukraine decreases, Moscow moves forward with plans to develop military infrastructure in Belarus to support future operations in Eastern Europe and

91 Ronald Asmus, *A Little War That Shook the World* (New York: St. Martins Press, 2010); Svante Cornell and S. Frederick Starr, eds., *The Guns of August 2008: Russia's War in Georgia* (London: Routledge, 2009); and Ariel Cohen and Robert Hamilton, *The Russian Military and the Georgia War: Lessons and Implications* (Carlisle, PA: Strategic Studies Institute, U.S. Army War College Press, June 2011).

92 Michael Kofman, "Russia's Arsenal in Syria: What Do We Know?" *War on the Rocks*, October 18, 2015, available at <http://warontherocks.com/2015/10/russias-arsenal-in-syria-what-do-we-know/>.

93 "Ukraine's Far-Right Radical Party Leader Leaves Coalition, Switches to Opposition," *RT*, September 1, 2015, available at <https://www.rt.com/news/314038-ukraine-lyashko-leaves-coalition/>.

better defend its western frontier. After Alexander Lukashenko's reelection in October 2015,⁹⁴ he drops his opposition to Moscow's planned infrastructure development, which is completed at the end of 2016.⁹⁵ A new air base is built at Babruysk,⁹⁶ facilities near Lida are expanded to improve its capacity as a forward staging base, and a logistics hub is built near Braslaw to provide additional support for forward operating forces. Moscow justifies these expansions as a reasonable, and defensive, reaction to NATO's expanded presence in Poland and the Baltic States.

As the facilities in Belarus near completion, Moscow announces a new annual exercise, Avanhard (Advance Guard), to be conducted in Belarus. It occurs in October 2016 with subsequent annual exercises set to occur during the same time period in future years. Avanhard 2016 concludes with the simulated use of tactical nuclear weapons to protect overmatched Russian forces against a large combined arms attack.⁹⁷

The Growing Quagmire in Syria

Putin's September 2015 decision to conduct air strikes in Syria helps sustain the Bashar al-Assad regime. The air strikes target all forces fighting against the Assad regime, weakening Islamic State-aligned fighters as well as U.S.-supported rebels. The United States has not offset Putin's actions in Syria. Unwilling to give MANPADS⁹⁸ to the rebels it supports and unwilling to risk conflict with Russian air power, the United States watches as the handful of fighters it has spent hundreds of millions of dollars to train are driven back by Syrian forces operating with Russian "volunteers" in their ranks and with Russian air support. Russian air strikes began targeting Islamic State-aligned fighters near Palmyra and Aleppo in late 2015.⁹⁹

94 James Marson, "Belarus President Alexander Lukashenko Wins Re-Election," *Wall Street Journal*, October 11, 2015, available at <http://www.wsj.com/articles/belarus-president-wins-re-election-exit-poll-says-1444589421>.

95 "Belarus Says Does Not Need a Russian Military Base: Report," *Reuters*, October 6, 2015, available at <http://www.reuters.com/article/2015/10/06/us-russia-belarus-airbase-idUSKCN0So20J20151006>.

96 Zachary Keck, "Russia's Massive Military Buildup Abroad: Should NATO Worry?" *The National Interest*, June 17, 2015, available at <http://nationalinterest.org/blog/the-buzz/russias-massive-military-buildup-abroad-should-nato-worry-13132>.

97 For more on Russian nuclear forces and doctrine, see Watts, *Nuclear-Conventional Firebreaks and the Nuclear Taboo*; and Stephen Blank, "What Do the Zapad 2013 Exercises Reveal," *Eurasia Daily Monitor*, 10, No. 177, The Jamestown Foundation, October 4, 2013, available at http://www.jamestown.org/programs/edm/single/?tx_ttnews%5Btt_news%5D=41449&tx_ttnews%5BbackPid%5D=685&no_cache=1#.Vi-6OvmrS70.

98 MANPADS, or man-portable air defense systems, are shoulder-held surface-to-air missiles that provide light forces the capability to target enemy fixed- and rotary-wing aircraft and would help rebel fighters in Syria defend themselves against Russian air strikes. The United States has not supplied moderate forces with these weapons, however, fearing the possibility of capture by Islamist forces in Syria and use in attacks against American interests.

99 Karen Leigh and Thomas Grove, "Russia Denies Carrying Out Airstrikes against Syrian City," *Wall Street Journal*, October 6, 2015, available at <http://www.wsj.com/articles/russian-warplanes-strike-islamic-state-targets-in-palmyra-1444135287>; and Genevieve Casagrande, *Russian Airstrikes in Syria: September 30–October 28, 2015* (Washington, DC: Institute for the Study of War, October 28, 2015), available at <http://www.understandingwar.org/backgrounder/russian-airstrikes-syria-september-30-october-28-2015>.

Moscow's expanded military intervention in Syria, though not pain free, has been less deadly to its own forces than the conflict in Ukraine.¹⁰⁰

Daugavpils, Latvia, April 17, 2017

April 17, 2017, is the moment the largely peaceful protest movement for greater political representation and economic opportunity for ethnic Russians in southeastern Latvia turns into a movement that ultimately will lead the United States and Russia to the nuclear brink. At that time, however, many within the Latvian government are unconcerned by the protests and hope that by engaging the protest movement, they can use the movement to encourage the greater integration of ethnic Russians into Latvian society. Believed to have a strong rapport with the protest movement, the Daugavpils City Council chairman spearheads the engagement effort.

By the afternoon of April 17, 2017, the streets of Daugavpils, between the university and city council building, are teeming with protestors as more and more Latvians join the protest movement that started late in the previous year. Led by local leaders from the Latvian Russian Union party (LRU), protestors surround the city council building and refuse to leave, demanding greater economic opportunities and political representation for ethnic Russians, as well as closer relations with Russia. The City Council chairman addresses the crowd that night, stating:

We all share the same heritage. We have Russian parents and grandparents. We share a love of Russian culture and tradition. But today, we are also Latvians. The only way to have a greater influence on the Latvian government is to work within it. Become citizens and vote. Elect those from the east that will represent your best interests to those in Riga. Together we can make a difference. Together we can bring prosperity and respect to our brothers and sisters. However, as long as we are fighting amongst ourselves and as long as we refuse to embrace Latvia, then our situation will never change. Go home. Spend the night with your families and tomorrow join with us and strengthen our voice in Riga. Join us as citizens and add your voice to ours in Riga.

While a few protestors trickle away, most rally around the protest organizers and remain encamped outside the city council building. Hearing the words of the council chairman, many protestors realize how divorced the local government is from the plight of ethnic Russians in and around Daugavpils. No longer do the protestors feel that they can achieve their aims within the existing political structures. Now, the protestors want more. They want freedom from Riga's oversight and the freedom to set many of their own policies, including setting policies to bring southeastern Latvia closer to Russia. And they will not leave the streets until their demands are met.

100 Tyler Rogoway and Michael Ballaban, "Russia Loses Attack Jet and Helicopter in Syria in One Day: Here's What We Know," *Foxtrot Alpha*, November 24, 2015, available at <http://foxtrotalpha.jalopnik.com/russia-loses-fighter-jet-and-helicopter-in-syria-in-one-1744492917>.

Origins of the Protest Movement

When Latvia voted to join the European Union on May 20, 2003, with a 67 percent endorsement, citizens throughout the country rejoiced and President Vaira Vīķe-Freiberga declared that joining the European Union will forever wipe out “the divisions on the map of Europe that the odious Molotov-Ribbentrop Pact of 1939 placed here.”¹⁰¹ Joining the European Union meant visa-free travel throughout the Schengen Zone and more importantly, significant prospects for economic growth due to both the reduction of trade barriers with other countries and the financial assistance the European Union provides to some members.

Yet not everyone in Latvia was happy with the country’s shift to the West. Much of southeastern Latvia has stronger loyalties to Russia than to Latvia. Many ethnic Russians in Latvia are not Latvian citizens, but non-citizen residents who, in many cases, carry Russian passports.¹⁰² Opposition to EU membership was strongest in Krāslava (50.4 percent against), Rezekne (55.7 percent against), and Daugavpils district (50.3 percent against). In Daugavpils City, where more than half of its residents are ethnically Russian,¹⁰³ 67 percent of the votes cast opposed joining the European Union.¹⁰⁴ Many feared that they would be left further and further behind as any economic benefits of EU membership would likely accrue to Latvian citizens and not ethnic Russians.

Latvia’s ethnic-Russian community was initially represented by an electoral alliance formed in 1998, For Human Rights in United Latvia. This alliance grew into the LRU in 2007, which currently represents Latvia’s ethnic Russian community and leads the pro-Russia movement within Latvia.

The global financial crisis hit Latvia hard, with GDP growth rates bottoming out at -18 percent in 2008.¹⁰⁵ The consequences of Latvia’s shrinking economy fell disproportionately on non-citizen ethnic Russians.

The LRU has always supported closer ties with Russia as well as greater economic opportunities and political representation for ethnic Russians. Its predecessor opposed Latvia joining NATO in March 2004 and more recently, the LRU supported Russia’s annexation of Crimea in 2014 and its subsequent support of separatists in eastern Ukraine. The LRU also signed

101 “Latvian Yes Completes EU Sweep,” *The Guardian*, September 21, 2003, available at <http://www.theguardian.com/world/2003/sep/22/eu.politics1>.

102 Tim Krohn, “Russian Latvians: Target of Discrimination?” *Deutsche Welle*, May 1, 2014, available at <http://dw.com/p/1Bs6l>.

103 “Resident Population in Statistical Regions, Cities under State Jurisdiction and Counties by Ethnicity, on 1 March 2011,” TSG11-060, *Central Statistical Bureau Database*, available at http://data.csb.gov.lv/pxweb/en/tautassk_11/tautassk_11__tsk2011/TSG11-060.px/?rxid=27b555e4-367a-4f5f-b059-1e03ba1b3bdf.

104 Geoffrey Pridham, “Referendum Briefing No 10: Latvia’s EU Accession Referendum, 20 September 2003,” *European Parties Elections and Referendums Network*, available at <https://www.sussex.ac.uk/webteam/gateway/file.php?name=epern-ref-no-10.pdf&site=266>.

105 “Latvia,” The World Bank Group, 2015, available at <http://data.worldbank.org/country/latvia>.

a cooperation agreement with the political party that has led Crimea since its annexation by Russia in 2014.¹⁰⁶

Ethnic Russian resentment of, and isolation from, the Latvian government deepens throughout 2016 after the Latvian government announces in May that it will accept 500 Syrian refugees. Unlike the ethnic Russians in Latvia, the Syrian migrants work hard to integrate into their adoptive homeland and, in part due to their competitive skills and education, are relatively successful. The relative success of Syrian refugees compared to non-citizen ethnic Russians compounds their sense of resentment and isolation from Latvia and strengthens calls within the LRU for closer ties with Russia.

In late 2016, Russian sources in Latvia report that there is increasing discontent among ethnic Russians in southeastern Latvia, particularly in Daugavpils. Small, LRU-led protests break out in Daugavpils and Krāslava in December 2016. The protests are ineffective, but highlight the growing regional unrest. Sensing a potential opportunity, Moscow infiltrates a small team with orders to identify and build relationships with the most radical pro-Russian elements within southeastern Latvia. As reports from the infiltrated team filter back, Moscow determines that the unrest in southeastern Latvia would provide fertile ground for future agitation in Russia's "near abroad" when Russia's geopolitical and domestic situation next require it.

Moreover, Moscow is beginning to believe that it can support protest movements and conduct further sub-conventional aggression in Eastern Europe, even if Russia's target is one of the post-Cold War additions to NATO, without fear of a strong NATO response. Encouraged by the West's limited reaction to Russia's actions in Crimea and eastern Ukraine as well as the limited U.S. response to Russian air strikes targeting American-trained Syrian rebels, Moscow believes that the United States and Western European nations are more concerned about their economic fortunes and avoiding conflict with Russia than in protecting the interests of their partners and allies.¹⁰⁷

Economic and Geopolitical Setbacks Force Putin to the Edge

Falling commodity prices and Western-imposed sanctions have been weakening Russia's economy since 2014. With Iranian oil entering the market in 2016, further depressing oil and gas prices, Russia's economic situation continues to deteriorate. The average Russian's standard of living has been stagnant for years.

106 "Pro Russia Party Signs Major Deal with Crimea Group," *The Baltic Times*, August 13, 2014, available at <http://www.baltictimes.com/news/articles/35355/#.VA97mRbgJHU>.

107 "NATO Publics Blame Russia for Ukrainian Crisis, but Reluctant to Provide Military Aid," *Pew Research Center*, June 10, 2015, available at <http://www.pewglobal.org/2015/06/10/1-nato-public-opinion-wary-of-russia-leary-of-action-on-ukraine/>.

Moreover, many Russian citizens no longer feel safe at home—a consequence of several terrorist attacks on civilians, first through bombing Russian airlines¹⁰⁸ and later through attacks on civilians in Moscow and Saint Petersburg. These attacks are widely believed to be a direct consequence of Putin’s extensive support of Assad.¹⁰⁹

Battered by a faltering economy and terrorist attacks at home and abroad, Putin’s domestic approval rating hits a ten-year low of 33 percent in a poll conducted in January 2017. Putin’s ironclad grip on the domestic media is fraying as independent journalists published articles critical of “Putin’s bungle in Syria” and seem less concerned about the potential backlash. Moreover, Putin feels particularly squeezed since he is up for reelection in March 2018. Desperate to turn the domestic situation around, Putin looks for another foreign policy success in Russia’s near abroad, such as supporting the growing protest movement in southeastern Latvia.

Putin’s goal is not to annex additional territory, but to demonstrate Russia’s role as the protector of ethnic Russians throughout the former Soviet Union and rally the Russian populace behind his government. Putin would not instigate a crisis in Latvia, but he would support the LRU in mobilizing a larger segment of southeastern Latvia to support the growing protest movement.

Daugavpils, Latvia, April 18, 2017

The previous night’s speech by the Daugavpils council chairman exhorting protestors to integrate further into Latvian society and gain citizenship has the opposite effect. Now, the LRU-led protestors have more extensive demands. Beyond greater economic freedom and political representation, the protestors are calling for devolution of authority from the government in Riga and the establishment of an autonomous region in southeastern Latvia.

Sensing an opportunity, Putin tasks Russia’s information and cyber warfare capabilities with supporting the protestors and escalating tensions between the protest movement and the Latvian state. Leveraging the viral potential of social media, Russia plants fake stories and videos alleging violence by the Latvian state against protestors. “Survivors” grant interviews and exhort their fellow ethnic Russians to stand strong against the oppressive Latvian government. Despite the “violence,” protests remain primarily peaceful although they disrupt the Latvian government’s functionality throughout southeastern Latvia.

Seeing similarities between Latvia in 2017 and Ukraine in 2014, Washington fears that Russia is supporting protestors in Latvia and searching for an opportunity to weaken NATO. In May

108 Thomas Grove, Tamer El-Ghobashy, and Jenny Gross, “Russia Says Bomb May Have Caused Plane Crash in Egypt,” *Wall Street Journal*, November 9, 2015, available at <http://www.wsj.com/articles/u-k-to-substantially-increase-intelligence-staff-1447085328>.

109 “Russia Says It Broke Up ISIS Cell in Moscow,” *CBS News*, October 12, 2015, available at <http://www.cbsnews.com/news/russia-broke-up-isis-cell-moscow/>.

2017, attempting to deter Putin from conducting a sub-conventional campaign to destabilize and divide Latvia, as he did in Ukraine, NATO and Washington provide assurances, publicly and to the Latvian government, that any Russian aggression will trigger Article V, stating that an attack on one alliance member is an attack on all. The limited reaction of the United States and Europe to Russia's actions in Ukraine and Syria, however, have eroded their credibility, and the Latvian president wants concrete actions to deter Putin. He requests the temporary deployment of NATO ground forces in Latvia as well as support countering the Russian-sponsored misinformation campaign.

Putin is Dragged into a Crisis and Can't Escape

Throughout most of the year, the protests in support of regional autonomy remain peaceful, but they don't seem to be swaying the government in Riga. And the protestors are becoming increasingly dissatisfied with the mainstream leadership of the LRU. A well-organized militant wing of the LRU emerges in July to reinvigorate the protests. It proves more capable than the mainstream LRU leadership, organizing larger and more confrontational protests. More protestors are arrested as they act with increasing hostility toward Latvian security forces. The more aggressive posture of the protests gains traction with the ethnic Russian population of southeastern Latvia and the more militant wing grows in popularity and power.

In Daugavpils, on August 7, 2017, protests turn violent. It is unclear who fires the first shot, but when the dust settles, a dozen police officers and tens of pro-autonomy protesters are dead, including several Russian nationals. Outraged by the deaths of Russian nationals and sensing an opportunity to solidify his domestic position, Putin declares that he will protect the lives of ethnic Russians left without a country when the Soviet Union dissolved. Putin encourages "volunteers" to cross the border and support their brethren against the Latvian government. Furthermore, he encourages patriotic hackers to counter any efforts to spread "misinformation" about the nature of the protests and the Latvian government's oppression of ethnic Russians.

Over the next few weeks, sympathy protests erupt in towns closer to the Russian border (Ezernieki, Dagda, Piedruga, and Krāslava). The Latvian government's attempts to coordinate its response to increasingly violent protests and maintain order are hampered by cyber and misinformation campaigns disrupting critical infrastructure, communication links, and the Latvian government's overall understanding of what is actually occurring in southeastern Latvia. The government quickly finds itself unable to count on the accuracy of digital information as reports, images, videos, and messages are corrupted and distorted by Russian hackers enthusiastically supporting their kinsmen in Latvia.

Fearing that Moscow is attempting to repeat its success in eastern Ukraine and divide his country, the president of Latvia calls for a meeting of NATO's decision-making North Atlantic Council hoping to create a united front and deter further Russian efforts to destabilize his country. NATO leaders meet on September 1, 2017, to discuss the unrest in Latvia

and determine what, if any, alliance response is appropriate. The discussions are inconclusive as some members, such as Germany, Spain, Turkey, Greece, and Hungary, argue that NATO should not pick sides in the internal affairs of member countries and should support a peaceful resolution of the crisis; others, such as the United States and Poland, argue for directly supporting the Latvian government and its attempts to reestablish control in its southeastern districts. Unable to achieve consensus, the United States and Poland commit advisers to assist the Latvian security forces and the United States commits to combating Putin’s “misinformation” campaign.¹¹⁰

In mid-September, partisans affiliated with the LRU, clandestinely supported with arms, equipment, and information through linkages with Russia, seize government offices in four border towns (Ezernieki, Dagda, Piedruga, and Krāslava). After seizing control of government facilities in those four towns, the LRU, on September 15, 2017, surprises Moscow and goes beyond merely protesting for regional autonomy and declares itself the legitimate government of the newest republic of Novorossiia, the Daugavpils People’s Republic. Party leaders ask for Russian assistance in protecting the freedoms of ethnic Russians throughout Novorossiia.

Putin’s hand is forced by the unexpected declaration of independence by the LRU partisans in control of government offices in the border towns. He cannot claim to protect ethnic Russians throughout the former Soviet Union and then ignore a declaration of independence. To retain that mantle, Putin signals his support for the new republic by announcing, on national TV, that Russia will support the new government in Daugavpils as it consolidates control over its territory and continues its development as a new country.

The Latvian president, determined to avoid Ukraine’s fate, orders the National Guard to join the Latvian security forces and regain control of the contested border towns. While the initial efforts to drive off the separatists are unsuccessful, a renewed push in mid-October 2017 drives the separatists out of the cities and into the hinterland of southeastern Latvia.

Surprised by Riga’s success, Moscow decides to take a more active role in southeastern Latvia. Forced to either abandon the separatists he encouraged, and accept an embarrassing setback, or commit Russian forces to their defense, Putin chooses to expand Russia’s involvement. To minimize the likelihood of NATO intervention, Putin realizes that he has to drive out Latvian security forces and secure the independence of the breakaway districts in Latvia quickly, presenting NATO with a *fait accompli* that they would have to fight to undo—a much more difficult task than preventing the consolidation in the first place.

On October 21, 2017, Putin announces that Russian forces will provide humanitarian assistance to civilians “displaced from their homes by Latvia’s aggressive and violent efforts to

110 Peter Pomerantsev and Michael Weiss, *The Menace of Unreality: How the Kremlin Weaponizes Information, Culture and Money* (New York: The Institute of Modern Russia, 2014); James Miller, Pierre Vaux, Catherine Fitzpatrick, and Michael Weiss, *An Invasion by Any Other Name: The Kremlin’s Dirty War in Ukraine* (New York: The Institute of Modern Russia, 2015); and Maria Snegovaya, *Putin’s Information Warfare in Ukraine: Soviet Origins of Russia’s Hybrid Warfare*, Russia Report 1 (Washington, DC: Institute for the Study of War, September 2015).

suppress the rights of ethnic Russians” in Latvia. All forces committed to the relief efforts will return to Russia once order is restored and the safety of ethnic Russians are guaranteed. Putin claims that Russia has no territorial interests in Latvia and is merely looking out for the safety of ethnic Russians in the former Soviet Union when local governments are unable to ensure their security.

Utilizing forces still in Belarus after the recently completed Avanhard 2017 exercise, an air-mobile brigade seizes the abandoned former Soviet air base 12 km northeast of Daugavpils to serve as the hub for Putin’s “humanitarian assistance” mission.¹¹¹ Leveraging lessons learned from its rapid and surprising deployment into Syria in late 2015, the Russian military opens the captured airfield within 24 hours and begins flying in additional forces and supplies.

The Invocation of Article V

On October 22, 2017, the Latvian president calls an emergency meeting of NATO’s North Atlantic Council and requests support in defending Latvia’s territorial integrity arguing that, just as in Ukraine, Russia’s humanitarian mission is a guise to provide military support—soldiers and materiel—to Latvian separatists.¹¹² Believing that, without NATO support, Latvia cannot defeat the Russian-backed separatists, the Latvian president requests the invocation of Article V and assistance in defending Latvia’s territorial integrity. At a press conference after the meeting, the NATO secretary general announces the invocation of Article V of the Washington Treaty and that NATO will come to Latvia’s defense.

The NATO Very High Readiness Joint Task Force (VJTF) is quickly mobilized and deploys to Latvia by 25 October 2017. The VJTF has two missions: advise and assist Latvian forces; and prepare for follow-on reinforcements. Deploying the VJTF starts a mobilization race between NATO and Russia. Can Russia consolidate its position and negotiate a peaceful resolution to the crisis from a position of strength, or will NATO forces be able to push back the Russian-assisted separatists and maintain Latvia’s territorial integrity?

With U.S., British, and Polish support, Latvian security forces are able to prevent Putin from consolidating his gains. They are, however, unable to regain control of the captured border towns. NATO leadership is convinced that an extended, conventional campaign plays to NATO’s strengths. If NATO can prevent Putin from consolidating his position in Latvia and interdict continued reinforcements from Russia long enough for heavier forces to arrive in theater, NATO can defend Latvia.

111 The runway is just long enough to accommodate aircraft as large as the An-124 strategic airlifter if it is loaded slightly below capacity. At its maximum takeoff weight of 893,000 pounds, an An-124 airlifter requires an 8,270-foot runway; the runway at the airbase northeast of Daugavpils is 8,202 feet.

112 “Russia sends 32nd ‘humanitarian convoy’ to Ukraine,” *Ukraine Today*, July 15, 2015, available at <http://uatoday.tv/politics/russia-sends-32nd-humanitarian-convoy-to-ukraine-456531.html>.

Early in November, concerned that he is running out of time and that NATO reinforcements are at most a week away, Putin decides to up the ante. Citing a “massacre” of Russians in southeastern Latvia and the need to protect ethnic Russians from an oppressive Latvian government, Putin orders two armored columns, supported by additional combat aircraft, to advance and secure the Daugavpils and Krāslava municipalities. Putin hopes to secure his gains and place the responsibility for further escalation on NATO. Latvian and NATO security forces quickly find themselves on the defensive. Tens of U.S. and Polish advisers are killed and many more are wounded when the advancing forces overrun their positions.

NATO responds by dispatching three brigades (one American, one British, and one Polish), as well as a Marine Expeditionary Brigade (MEB) that, upon the invocation of Article V, mobilized and deployed to Poland and Norway, respectively.¹¹³ In mid-November 2017, the NATO brigades transit into Latvia through Lithuania and the MEB deploys through Riga. U.S. and British combat aircraft are dispatched to airfields in the Baltic States and Poland. NATO’s objective is to restore the status quo ante while limiting combat operations to Latvia.

The arrival of substantial NATO conventional reinforcements creates an untenable situation for Moscow. The commitment of significant ground forces indicates that NATO will not be deterred from directly confronting Russia. Moreover, Putin fears that the Russian military cannot defeat such a large NATO force if his commanders are limited to using only conventional weapons. Moscow believes it has an advantage at the sub-conventional level of war, but not at the conventional level. Knowing that he cannot afford a foreign policy failure with such a low domestic approval rating and growing public dissent at home, Putin is increasingly desperate for a way out of Latvia that allows him to claim at least a modest victory.

As the situation spirals out of control, and far from the path Putin charted when he began assisting the LRU, Putin tasks the Russian general staff with developing options to end hostilities with NATO without accepting complete defeat in Latvia. The general staff develops two options.

Option 1: Outlast NATO’s will to fight. Assuming NATO intends to keep combat operations limited to Latvia, Russia could utilize long-range cross-domain precision weapons¹¹⁴ positioned in both Kaliningrad and Russia proper to target NATO forces throughout Latvia. If the Russian military can prevent NATO from massing sufficient force to drive the separatists out of the contested cities, it can prevent Latvia from reasserting its authority and deny

113 The U.S. Marine Corps has prepositioned heavy equipment and supplies in Norway that could be transported to Latvia quicker than from the United States. For more on the USMC prepositioned equipment program, see United States Marine Corps, *Prepositioning Programs Handbook* (Washington, DC: DoD, January 2009), available at [http://www.marines.mil/Portals/59/Publications/Prepositioning Programs Handbook 2d Edition.pdf](http://www.marines.mil/Portals/59/Publications/Prepositioning%20Programs%20Handbook%202d%20Edition.pdf); and DoD, *Military Prepositioning: Observations on Army and Marine Corps Programs During Operation Iraqi Freedom and Beyond* (Washington, DC: Government Accountability Office, March 24, 2004), available at <http://www.gao.gov/cgi-bin/getrpt?GAO-04-562T>.

114 Examples of cross-domain weapons are land-based missiles (one domain) targeting aircraft (another domain) or land-based missiles targeting ships. In this context, Russia’s ground-, air-, and sea-launched weapons can target NATO platforms across all domains.

NATO its objectives. By preventing NATO from achieving its objectives and inflicting casualties, Russia might be able to outlast NATO's willingness to fight. If Russia can outlast NATO, Putin wins.

Option 2: Escalate to deescalate. If NATO escalates horizontally or denies Russian forces sanctuary on Russian territory, then Putin will be faced with a challenge he cannot defeat conventionally. The long-range missile forces that Russia relies on in the previous option would be disrupted or destroyed by NATO precision strikes and Putin would need to find an alternative path toward victory. In this case, Moscow must compel NATO to back down absent Russian success on the battlefield. The general staff believes that while the conventional balance of power favors NATO, Russia has the advantage in a limited nuclear war in part due to its numerical advantage in warheads and its diversity of delivery systems,¹¹⁵ but also due to internal divisions within NATO. NATO's nuclear force posture in Europe has been decreasing since the end of the Cold War and there is a movement within NATO to rely on U.S. strategic weapons for extended deterrence and not tactical nuclear weapons based in Europe.¹¹⁶ As NATO's force posture and internal deliberations shift further and further from retaining the capability for nuclear warfighting, the Russian general staff believes that when confronted with a limited nuclear threat toward one of NATO's new members, the alliance would back down rather than risk nuclear use. The general staff recommends threatening the use of tactical nuclear weapons to "escalate to deescalate" the conflict as a means of compelling NATO to back down in Latvia.

The concept of using limited nuclear strikes to "escalate to deescalate" a conflict grew out of Russia's conventional weakness created by its post-Cold War military drawdown. It provides Moscow an option through which to overcome its conventional weakness in a conflict with a superior adversary. The "escalate to deescalate" threat developed from Russia's nuclear doctrine in phases. First, Russian doctrine moved away from a no-first-use pledge in 1993.¹¹⁷ It then shifted, in 1997, to authorize nuclear weapons "in case of a threat to the existence of the Russian Federation."¹¹⁸ The doctrine was broadened in 2000 to include responding to

115 Public estimates state that Russia has roughly 2,000 tactical nuclear warheads that can be delivered from air, sea, or ground units, whereas NATO has only a little over 180 air-delivered tactical nuclear weapons in Europe. See Hans M. Kristensen and Robert S. Norris, "Russian Nuclear Forces, 2015," *The Bulletin of the Atomic Scientists*, 71, No. 3, May/June 2015, pp. 84–97, available at <http://bos.sagepub.com/content/71/3/84.full>; and Hans M. Kristensen and Robert S. Norris, "U.S. Nuclear Forces, 2015," *The Bulletin of the Atomic Scientists*, 71, No. 2, March/April 2015, pp. 107–119, available at <http://bos.sagepub.com/content/71/2/107.full>.

116 Karl-Heinz Kamp and Robertus C. N. Remkes, "Options for NATO Nuclear Sharing Arrangements," *The Nuclear Threat Initiative*, November 17, 2011, available at <http://www.nti.org/analysis/articles/options-nato-nuclear-sharing-arrangements/>.

117 Serge Schmemmann, "Russia Drops Pledge of No First Use of Atom Arms," *New York Times*, November 4, 1993, available at <http://www.nytimes.com/1993/11/04/world/russia-drops-pledge-of-no-first-use-of-atom-arms.html>.

118 Arms Control Association, *Russia's Military Doctrine* (Washington, DC: Arms Control Association, May 1, 2000), available at http://www.armscontrol.org/act/2000_05/dc3ma00.

large-scale conventional aggression that threatened national security.¹¹⁹ Later, in 2010, it was refined such that nuclear use was justified only in retaliation for the use of weapons of mass destruction or in response to “aggression against the Russian Federation involving the use of conventional weapons when the very existence of the state is under threat.”¹²⁰ The current doctrine affirms the 2010 criteria guiding nuclear use.¹²¹ It also maintains that nuclear weapons could be used either in regional wars or in large-scale wars.¹²²

Throughout this doctrinal evolution, nuclear use remains justifiable in response to conventional aggression that poses a significant threat to the state. The doctrine, however, avoids defining what constitutes a significant threat to the state. It leaves just enough to chance that adversaries will likely not feel confident in predicting when Moscow will authorize nuclear use. Moreover, the degree to which an action is perceived as posing a grave threat to the state could be a function of other factors such as Moscow’s sense of its own stability and the degree to which a given setback would threaten its position. Factors such as these can only be assessed at the time of crisis and are not under the complete control of any of the involved states, thus creating a degree of uncertainty surrounding the potential for nuclear escalation. Following Thomas Schelling’s logic, the uncertainty inherent in Russia’s current nuclear doctrine, in which any limited conflict has the potential to escalate to a nuclear conflict, enhances its ability to use nuclear threats to coerce and deter adversaries as the “escalate to deescalate” threat is a “threat that leaves something to chance.”¹²³

The difficulty in understanding Russia’s evolving nuclear doctrine and assessing the likelihood that Moscow would order nuclear strikes to deescalate a conventional conflict is compounded by the uncertainty as to what forces would conduct limited nuclear strikes and how those strikes would be ordered and targeted. Moreover, in the late 1990s, Russian nuclear scientists began investigating a potential new generation of “low-yield, precision-guided weapons with tailored nuclear effects” that, by limiting collateral and environmental damage, would create a more usable class of nuclear weapons. In the mid-2000s, Russian scientists announced “a qualitative leap forward in the research of a new generation of weapons, and claimed that in some fields they had surpassed the United States.” Russia’s ambiguous force posture and “nuclear incoherence” may play a destabilizing role as neither NATO nor Russian leaders can

119 Amy Woolf, *Nonstrategic Nuclear Weapons*, RL32572 (Washington, DC: Congressional Research Service, February 23, 2015), available at <https://www.fas.org/sgp/crs/nuke/RL32572.pdf>.

120 “The Military Doctrine of the Russian Federation,” February 5, 2010, available at http://carnegieendowment.org/files/2010russia_military_doctrine.pdf.

121 “Military Doctrine of the Russian Federation,” December 26, 2014, available at <http://static.kremlin.ru/media/events/files/41d527556bec8deb3530.pdf>.

122 Regional wars involve multiple states within a region and are conducted by national or coalition forces. Large-scale wars involve many states from many regions and require the mobilization of all available resources.

123 Thomas C. Schelling, *The Strategy of Conflict* (Cambridge, MA: Harvard University Press, 1997).

be confident, in advance, over what circumstances may push Moscow to deploy nuclear weapons in a conventional conflict until after the decision to escalate has been made.¹²⁴

Putin does not like either option generated by the general staff, but he is unwilling to back down, particularly as the presidential election is only four months away. His domestic popularity is suffering and his control over the country appears to be weakening. His political opponents are challenging him publicly and are receiving favorable coverage by independent journalists. Moreover, opposition rallies are consistently attracting large, diverse, and angry audiences. Following the general staff's recommendation, Putin orders the implementation of option 1, hoping that Russia will be able to outlast NATO's willingness to fight. Despite NATO's commitment of significant ground forces to Latvia's defense, Putin still believes that NATO wants to keep the conflict limited and that the Western public does not have the appetite for another long war with significant casualties, or one that risks nuclear use. He remains confident that NATO will treat Kaliningrad and Russia proper as a sanctuary for Russian forces in an effort to limit the scale and intensity of the fighting.

Putin is initially correct and NATO forces only engage Russian forces in Latvia, providing Moscow an opportunity to extend the conflict, inflict casualties, and prevent NATO from restoring the prewar status quo. Putin attempts to reinforce the prohibition on striking Russian territory through repeated public statements declaring that attacks on Russian territory would constitute "large-scale aggression" and a critical threat to national security that would justify all possible defensive measures.¹²⁵ Moreover, Russian forces refrain from attacking NATO forces outside of Latvia to avoid presenting NATO with the justification to escalate the conflict horizontally and begin striking targets on Russian territory.

Russia's use of long-range weapon systems based primarily in Russian territory prevents NATO from massing its forces to drive out Latvian separatists and restore order to the contested towns. Instead, NATO is forced to disaggregate its ground forces and use them primarily to find and fix separatist and Russian forces in Latvia to facilitate the employment of long-range precision weapons. These tactics, however, are insufficient to achieve its prewar objectives.

In mid-December, NATO leadership realizes that its attempt to keep the conflict limited, by affording Russian forces sanctuary while on Russian territory, is also preventing allied forces from restoring Riga's control over southeastern Latvia. NATO leadership modifies its restrictive rules of engagement and will now allow NATO forces to engage Russian forces participating in, or supporting, operations in Latvia, even if those troops are in Russian territory. After the expansion of NATO's rules of engagement, allied forces gain the upper hand and begin pushing separatist forces back from their positions in the border cities.

124 Adamsky, "Nuclear Incoherence: Deterrence Theory and Non-Strategic Nuclear Weapons in Russia."

125 For a broader discussion of Russia's "escalate to deescalate" nuclear doctrine, see Arms Control Association, *Russia's Military Doctrine*.

The separatist stronghold of Daugavpils is retaken in late December, placing Putin in a precarious position as his search for a foreign policy success to rescue his popularity at home is collapsing around him. He began operations in Latvia seeking an easy victory to regain domestic support and has been rewarded with a drawn-out and bloody fight with NATO.

Putin is stuck in a situation where he can either back down and risk his position at home or try and force a NATO retreat through radical escalation. As the military situation in Latvia deteriorates, strikes on Russian territory continue, and Putin's domestic position becomes increasingly untenable, he is forced to consider using tactical nuclear weapons.

Putin's Nuclear Threat, January 2, 2018

In a major address on January 2, 2018, Putin argues:

The unwarranted escalation by NATO poses an unacceptable threat to the Russian Federation. Russia's stability and security will be protected by any means necessary. There will be a sharp and sudden escalation to deescalate the overall crisis unless ethnic Russians in Latvia are given the right of self-determination to form an independent state. Western militaries must cease supporting Latvian forces by January 5th and refrain from any further strikes on Russian territory or against ethnic Russians.

To telegraph the seriousness of this threat, Russia raises the alert level of dual-capable missile forces in Kaliningrad and near the Latvia–Russia border. Overnight activity at forward war-head-storage facilities suggests that nuclear warheads are being mated to dual-capable delivery systems.¹²⁶

JANUARY 3, 2018, 05:00 UTC, Casteau, Belgium

Signals and imagery intelligence have been filtering in to the NATO headquarters in Casteau, Belgium, since Putin's speech on January 2. The intelligence reveals with high confidence that dual-capable Iskander-M missile systems have been mated with nuclear warheads.¹²⁷ Seeing the movements of dual-capable missile forces, NATO leaders are confronted by the decision to back down or dare Putin to break the nuclear taboo. Moreover, if Putin breaks the nuclear taboo, does that demand a nuclear response or can NATO retaliate effectively and exclusively with conventional means?

126 In the 1991 Presidential Nuclear Initiatives, both the United States and the USSR committed to moving tactical nuclear warheads to central storage. In 1991, Moscow announced that all tactical nuclear weapons "are concentrated at central storage facilities of the Ministry of Defense." Central storage, however, refers to "organizational responsibility and not geographical position." In other words, tactical nuclear weapons could be in a central storage facility that also happens to be geographically close to a crisis in the Baltics. See Arms Control Association, *The Presidential Nuclear Initiatives (PNIs) on Tactical Nuclear Weapons at a Glance* (Washington, DC: Arms Control Association, August 2012), available at <https://www.armscontrol.org/factsheets/pniglance>; and Adamsky, "Nuclear Incoherence: Deterrence Theory and Non-Strategic Nuclear Weapons in Russia."

127 The Iskander-M is a mobile ballistic missile system with a 500-km range.

Facing the specter of nuclear use, NATO's leadership convenes to discuss the range of potential responses to Moscow's nuclear threat. NATO's leadership is split between ceding to Putin's demands in southeastern Latvia and continuing to support Latvia. Is protecting Latvia's territorial integrity and the continued reliability of NATO's collective self-defense guarantee worth risking nuclear war?

In addition to the willingness of the other NATO members to fight, is the Latvian government willing to risk Putin following through on his nuclear threat? As a substantially larger nation, Russia is more capable than Latvia of absorbing several strikes by tactical nuclear weapons. While Latvia is not a "one-bomb state" like Israel, it is small enough that it would be devastated by relatively few nuclear strikes. Latvia might sue for peace when confronted by Moscow's nuclear threat and ask NATO to do the same regardless of the rest of NATO's willingness to continue fighting.

The commander of STRATCOM and the Supreme Allied Commander Europe (SACEUR) provide the assembled leaders with an overview of Russia's tactical nuclear weapons and NATO's nuclear and conventional retaliatory options compared to each country's defenses. Bottom line: while NATO has more capable high-end conventional capabilities, Russia has a substantially larger and more flexible tactical nuclear arsenal.¹²⁸ Beyond the capacity for nuclear or conventional weapons to achieve a given military end, the commanders argue that NATO's response should also be designed to deter future adversaries from attempting to coerce NATO through the threat of limited nuclear war.

NATO's Nuclear and Conventional Retaliatory Options

NATO has one tactical nuclear weapon with which to counter Russia's nuclear threat—the B-61 gravity bomb delivered by a nuclear capable non-stealthy fighter, such as the F-15, F-16, or Tornado.¹²⁹ The F-35A will not be nuclear capable until 2024.¹³⁰ Alternatively, NATO could use a strategic asset, such as a B-52H or B-2, to deliver a low-yield weapon such as the B-61 or AGM-86 air-launched cruise missile to create a similar operational effect. The Long-Range

128 Kristensen and Norris, "Russian Nuclear Forces, 2015;" and Kristensen and Norris, "U.S. Nuclear Forces, 2015."

129 Rachel Oswald, "U.S. Tactical Nuclear Arms Mission Could Shift Among NATO Jets," *Global Security Newswire*, March 26, 2014, available at <http://www.nti.org/gsn/article/aircraft-could-be-given-nato-tactical-nuclear-arms-mission/>.

130 James Drew, "US Report Calls for Dual-Capable F-35C and Tactical Nukes," *Flight Global*, June 22, 2015, available at <https://www.flightglobal.com/news/articles/us-report-calls-for-dual-capable-f-35c-and-tactical-413936/>.

Standoff weapon, a stealthy replacement for the AGM-86, will not be available until at least the late 2020s or early 2030s,¹³¹ if it is ever fielded.¹³²

NATO could also decide to counter Moscow's nuclear threat with a conventional response. For instance, the F-22, F-35, and B-2 could all participate in conventional penetrating strike missions. Moreover, NATO has a conventional survivable standoff cruise missile, the Joint Air-to-Surface Standoff missile, usable by a range of stealthy and non-stealthy aircraft. Finally, allied naval platforms could retaliate with land attack missiles, further expanding Russia's defensive requirements. This array of conventional capabilities could be employed to retaliate against military targets or in support of a broader horizontal escalation of the conflict.

Both paths require NATO to overcome Russia's integrated air and missile defenses. Electronic warfare and cyber warfare can likely be effective in jamming, spoofing, or disrupting these battle networks. At the tactical or operational levels of warfare, these capabilities would likely function as highly effective force multipliers for kinetic capabilities, but are not useful at these levels of warfare in isolation, nor are they a sufficient retaliatory response to restore nuclear deterrence if Putin breaks the nuclear taboo.

Russian Defenses and Tactical Nuclear Strike Capabilities

Since America's demonstration of stealth technology and precision-guided weapons in the 1991 Persian Gulf War, Russia has invested in developing advanced defenses and counter-stealth technologies.¹³³ The integrated air and missile defense systems Russia has developed over the past few decades might be able to detect the B-2 and cue either fighters or missiles to intercept the bomber well before it is in range to deliver a nuclear gravity bomb. This threat is particularly severe in densely defended areas such as Western Russia and Kaliningrad. Moreover, the same defense systems can most likely defeat non-stealthy tactical aircraft or cruise missiles with nuclear payloads absent extensive suppression/destruction of enemy air defense missions.¹³⁴ In sum, while the B-2 might be able to deliver a limited nuclear response to a Russian attack, the STRATCOM commander is not confident that he could guarantee a nuclear response without either using a limited number of land- or submarine-launched ballistic missiles that Russia's integrated air and missile defenses would have difficulty intercept-

131 Jon Hemmerdinger, "USAF Delays LRSO Again, This Time by Three Years," *Flight Global*, March 13, 2014, available at <https://www.flightglobal.com/news/articles/usaf-delays-lrso-again-this-time-by-three-years-396997/>.

132 William J. Perry and Andy Weber, "Mr. President, Kill the New Cruise Missile," *Washington Post*, October 15, 2015, available at https://www.washingtonpost.com/opinions/mr-president-kill-the-new-cruise-missile/2015/10/15/e3e2807c-6ecd-11e5-9bfe-e59f5e244f92_story.html; and "Sen. Markey Leads Call to Cancel New U.S. Nuclear Air-Launched Missile," *Parliamentarians for Nuclear Non-Proliferation and Disarmament*, December 16, 2015, available at <http://www.pnnd.org/article/sen-markey-leads-call-cancel-new-us-nuclear-air-launched-missile>.

133 Carlo Kopp, "Russian/PLA Low Band Surveillance Radars," *Air Power Australia*, January 17, 2014, available at <http://www.ausairpower.net/APA-Rus-Low-Band-Radars.html>.

134 Rick Gladstone, "Air Force General Says Russia Missile Defense 'Very Serious'," *New York Times*, January 12, 2016, available at <http://www.nytimes.com/2016/01/12/world/europe/air-force-general-says-russia-missile-defense-very-serious.html>.

ing or conducting a large-scale conventional attack to overcome Russian defenses and pave the way for less survivable platforms to conduct nuclear strikes.

In contrast, Russia has three means of utilizing its tactical nuclear arsenal. Russia could use non-stealthy bombers and fighters to employ gravity bombs or missiles, submarines to launch cruise missiles, or ground-launched cruise or ballistic missiles.¹³⁵ NATO integrated air and missile defenses would pose a significant threat to Russian non-stealthy aviation and cruise missiles; however, any defensive action by NATO aviation would also have to contend with the threat posed by long-range surface-to-air-missiles. These systems could be based in either in Kaliningrad or western Russia and threaten anything flying in or near Latvian airspace. Additionally, the speed, maneuverability, and decoys of the Iskander-M ballistic missile could potentially overcome NATO defenses.¹³⁶ Finally, while NATO defenses could probably intercept all the warheads in relatively small salvos of air- and ground-launched weapons, NATO's reliance on an insufficient inventory of kinetic interceptors for missile defense means that a sufficiently large salvo could overwhelm interceptor inventories and the potential for defenders to defeat all of the incoming warheads.¹³⁷ Even if interceptor inventories were expanded or NATO fielded large capacity defensive weapons such as lasers and electromagnetic rail-guns, sufficiently large salvos concentrated in both time and space can overcome advanced defenses. The "salvo competition" between offensive and defensive systems hinges on whether or not the attacker can create a greater density in time and space of attacking weapons than the defender can track and intercept. Due to the Iskander-M's decoys and penetration aids, the salvo density Russia could create, and the capabilities of its IADS, Moscow might believe it could conduct tactical nuclear strikes against NATO while limiting the retaliatory risk to an acceptable level.

The U.S. State Department, in its 2014 report on compliance with arms control, nonproliferation, and disarmament agreements, determined that Russia has violated its obligations under the INF treaty. Russian deployment of systems violating the INF treaty, however, would not materially change the situation presented in this scenario. While systems that violate the INF would provide Russia with another means to strike European countries with little warning, it would be unlikely to change the behavior of the NATO belligerents. The United States and United Kingdom have a survivable second strike through their submarine-launched

135 Kristensen and Norris, "Russian Nuclear Forces, 2015."

136 "Iskander 9M720/9M723 Tender," *Jane's Strategic Weapon Systems*, IHS Jane's, August 18, 2015.

137 Current missile defense doctrine dictates a "shoot, shoot, look, shoot" utilization of interceptors. Independent of the probability that an individual interceptor will destroy an incoming missile, intercepting a salvo of fifty missiles using current doctrine will consume at least a hundred defensive weapons. The size of a Russian salvo necessary to overwhelm NATO defenses is, in part, a function of NATO's interceptor inventory. For reference, a Patriot battery of six MIM-104 missile launchers, of which four are armed with four PAC-2 interceptors and two with sixteen PAC-3 interceptors, contains forty-eight total interceptors. For further information on missile defense capacity, see Appendix A in this report and Bryan Clark, *Commanding the Seas: A Plan to Reinvigorate U.S. Navy Surface Warfare* (Washington, DC: Center for Strategic and Budgetary Assessments, 2014). For further information on the Patriot missile system, see "Patriot (PAC-1, PAC-2, PAC-3)," *MissileThreat.com*, updated December 22, 2013, available at <http://missilethreat.com/defense-systems/patriot-pac-1-pac-2-pac-3/>.

ballistic missiles (SLBMs). The political leadership of both countries would likely believe that their SLBMs would deter Russia from launching a nuclear strike with INF-violating systems. Poland, while it does not have a secure second-strike capability, is already threatened by non-INF-violating systems like the Iskander-M, so the presence of INF-violating systems would not materially alter the threat facing Poland. Systems that violate the INF treaty might change the calculus of non-nuclear powers in NATO, such as Germany, Spain, or Italy, but the scenario already postulates that those countries are not active belligerents supporting Latvia. The deployment of systems in violation of the INF Treaty could undermine the deterrent value of U.S. tactical nuclear weapons. If the presence of Russian INF-violating systems results in Belgium, the Netherlands, Italy, Germany, and Turkey denying U.S. aircraft the use of airbases within those countries, then the United States would be unable to use tactical nuclear weapons currently based in Europe. Instead, the United States would either have to launch nuclear retaliatory strikes from a much greater distance from Russia or transport tactical nuclear weapons to air bases in a co-belligerent country such as Great Britain. While making retaliatory nuclear strikes more difficult, this would not preclude their occurrence.¹³⁸

NATO's Next Steps

The commanders conclude their briefing reiterating their concern over NATO's ability to deter Putin from ordering the use of tactical nuclear weapons. At this point, they outline potential conventional and nuclear retaliatory options if Russia breaks the nuclear taboo. The four nuclear retaliatory options briefed by the STRATCOM commander are discussed below. None of the individual options are mutually exclusive and NATO may choose to implement none, some, or all of the options. They are all short of escalating to global nuclear warfare. Each is punitive and designed to deter further nuclear use. Finally, none of these options are designed to induce an unconditional Russian retreat. Just as President John Kennedy, at least implicitly, gave something to Nikita Khrushchev to secure the removal of Soviet missiles during the Cuban Missile Crisis, NATO may need to create a similar face-saving measure before Putin will consider backing down from his position in Latvia. For instance, in exchange for Moscow ending its support for Latvian separatists, NATO members could support a Latvian commission to review, with NATO and Russian observers, the rights and status of its minority groups, but not its borders. Such a commission would provide demonstrable proof that Putin is defending the rights of ethnic Russians in the former Soviet Union while also advancing NATO's aim of protecting Latvian territorial integrity.

Option 1: Heighten readiness of nuclear forces, signaling preparation to escalate vertically. NATO could raise the alert for its strategic and tactical nuclear forces. Deploying additional ballistic missile submarines, flying additional nuclear-capable forces to

138 U.S. Department of State, *Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments* (Washington, DC: U.S. Department of State, July 2014), available at <http://www.state.gov/documents/organization/230108.pdf>.

Europe, and preparing strategic and tactical aircraft to receive nuclear weapons would signal NATO's readiness to retaliate with nuclear force if Putin uses additional nuclear weapons.¹³⁹

Option 2: Conduct a nuclear demonstration shot. Demonstrate that NATO is willing to cross the nuclear threshold and will retaliate with nuclear force if Putin orders further nuclear strikes through a NATO nuclear test in open ocean far away from civilian or military personnel. The bloodless test would convey NATO's resolve without directly heightening the threat to Putin's stability or to Russian forces.

Option 3: Conduct conventional strikes to provide an opening for limited nuclear retaliation. NATO could conduct a large-scale series of conventional strikes to dismantle Russian integrated air and missile defenses sufficiently that nuclear weapons deployed by non-stealthy aircraft would survive Russian defenses.

Option 4: Employ limited use of strategic weapons. Respond with the limited use of strategic assets either as a direct attack against Russian forces or as a high-altitude electromagnetic pulse (HEMP) strike.¹⁴⁰ While this could be viewed as part of a massive retaliatory attack, the small number of weapons employed would be designed to indicate, to Putin, the limited scale of the retaliation.

After outlining four nuclear retaliatory options, the STRATCOM commander emphasizes that these options are not the limit of potential responses, but that they convey a spectrum of potential responses of increasing degrees of escalation. Additionally, with each response, NATO belligerents should consider not only the operational effectiveness of each choice, but also the symbolic value of the response and how Moscow is likely to interpret the response. A more muscular response might be viewed more favorably by some NATO members and might be more effective in demonstrating that an "escalate to deescalate" threat is not an effective response by Russia to an unfavorable conventional situation; however, a more muscular response might also be viewed as such a threat to Moscow that Russia must also respond with additional nuclear strikes.

The thematic element while assessing retaliatory options is balancing a sufficiently punitive response to deter further use of tactical nuclear weapons without escalating to a massive strategic exchange. This is compounded by the difficulties of alliance management and that, as

139 There are normally four ballistic missile submarines (SSBNs) at sea, four in transit or training, and the rest in port. Those in training or port could be temporarily deployed to surge NATO's nuclear readiness. See Elaine Grossman, "U.S. Navy to Grapple with Dip in Deployed Subs for More Than a Decade," *Nuclear Threat Initiative*, March 30, 2012, available at <http://www.nti.org/gsn/article/us-navy-grapple-dip-deployed-subs-more-decade/>.

140 A nuclear weapon detonated at high altitude generates a powerful electrical effect that destroys unshielded electronics over a broad area. High altitude electromagnetic pulse (HEMP) strikes are most effective at altitudes greater than 30 km. The radiation affects electronics within the field of view of the weapon, which expands as the detonation altitude increases. For instance, a weapon detonated almost 500 km above the Earth's surface could affect the entire continental United States. For a primer on electromagnetic pulse (EMP) effects, see Clay Wilson, *High Altitude Electromagnetic Pulse (HEMP) and High Power Microwave (HPM) Devices: Threat Assessments*, RL32544 (Washington, DC: Congressional Research Service, July 21, 2008), available at <https://www.fas.org/sgp/crs/natsec/RL32544.pdf/>.

the conflict escalates, more NATO members, including Latvia, may be increasingly tempted to acquiesce to Putin's demands and avoid continued nuclear warfare in Europe. Finally, Russia's comparatively greater ability to survive limited nuclear warfare on or near its territory provides an additional advantage to Putin as long as he believes that the conflict will not escalate to a massive intercontinental exchange.

After the sobering briefing from the STRATCOM commander, the tense discussion among NATO leaders continues, revolving around several additional key points:

Can NATO deter Russia from implementing its "escalate to deescalate" threat? If so, can that be done exclusively with conventional means or does NATO have to threaten nuclear use as well?

If NATO believes it cannot deter nuclear use, does it have sufficient survivable surveillance and strike capability to preemptively disarm Putin's "escalate to deescalate" threat?

If Russia breaks the nuclear taboo, does NATO's response have to include the use of nuclear weapons or can it remain limited to conventional forces? If NATO does not respond with nuclear weapons, does that weaken its deterrent threat and increase the likelihood that an adversary would consider limited nuclear use in a future crisis? How do the means with which Putin breaks the nuclear taboo affect the answer to all of these questions?

Underlying the entire discussion is the fear—if Putin breaks the nuclear taboo, when, where, and how does it stop?

CHAPTER 4

North Korea

Andrew F. Krepinevich

*[T]he deterrent does not cover the case of lunatics or dictators in the mood of Hitler when he found himself in his final dug-out.*¹⁴¹

Winston Churchill

*If I lose, I will destroy the world.*¹⁴²

Kim Jong-il

*Many of those who initiate wars either do not understand what they are doing or fail to realize the size of the gamble they are taking.*¹⁴³

Robert O'Neill, Oxford University

Breaking the Taboo

On April 17, 2021, at 8:15 a.m. local time in Japan, infrared sensors on several American reconnaissance satellites comprising the U.S. Defense Support Program report what appears to be the unmistakable signature of an above-ground nuclear detonation. The location of the blast is the city of Kitakyushu, on Japan's southernmost main island, Kyushu. The weapon is delivered by a North Korean Nodong missile, one of five missiles armed with a nuclear war-head out of fifty-four comprising the haystack salvo strike.¹⁴⁴

141 Quoted in Thérèse Delpech, *Nuclear Deterrence in the 21st Century: Lessons from the Cold War for a New Era of Strategic Piracy* (Santa Monica, CA: RAND, 2012), p. 17.

142 Gordon G. Chang, *Nuclear Showdown: North Korea Takes on the World* (New York: Random House, 2006), p. xix.

143 Payne, *The Fallacies of Cold War Deterrence*, p. 39.

144 See Appendix A for more details on haystack attacks.



The Korean Peninsula and Japan

Although surprised at the attack's timing, Japanese Self-Defense Forces (JSDF) aboard a *Kongo*-class Aegis destroyers and manning a land-based PAC-3 missile defense system successfully intercept forty-six of the missiles.¹⁴⁵ Characteristic of non-nuclear missiles in a hay-stack attack, the other seven missiles that survived to impact were armed with conventional or “dummy” warheads, and caused little damage. In Kitakyushu, however, it's a different story. The city, with a population of roughly 200,000, suffers casualties in the tens of thousands from the blast, which is estimated at 9,000 tons, or 9 kilotons (KT) of TNT.¹⁴⁶

145 Both the Aegis and the PAC-3 systems were purchased from the United States. Japan participates in research and development with the United States to improve both systems.

146 The bomb appears to have suffered from pre-initiation, which has a significant risk of occurring if the plutonium used in the weapon contains higher isotopes of the material, referred to as “reactor-grade” plutonium. In plutonium bombs, the plutonium core (or “pit”) is initially “subcritical,” and cannot sustain a chain reaction. High explosives surrounding the core are used to compress the core to the higher density necessary to trigger a chain reaction in an optimum way, so that the neutrons released from each fission event have the highest probability of striking other atoms and sustaining the reaction. The problem with reactor-grade plutonium is that it has a relatively high rate of spontaneous fission, presenting a risk that the “background” neutrons produced will initiate a chain reaction prematurely—pre-initiation. Should pre-initiation occur, the weapon will blow itself apart, cutting off the chain reaction before it is completed. This is what appears to have happened with the North Korean nuclear weapon. See “Engineering and Design of Nuclear Weapons,” *Nuclear Weapon Archive*, February 20, 1999, section 4.1, “Elements of Fission Weapon Design,” and especially section 4.1.5.3, “Predetonation,” available at <http://nuclearweaponarchive.org/Nwfaq/Nfaqo.html>.

In an age of cellphone video, news of the attack flashes around the world in minutes. The U.S. president receives the news from an aide who was informed of the catastrophe by a White House intern who received a “push notification” on her cell phone.

Simultaneous with the attack, North Korea’s dictator, Kim Jong-un, broadcasts from an underground bunker, declaring that he will continue “defending” his country against its enemies “by any and all means necessary, to include the use of weapons of mass destruction.”

Kim states:

We have justly repaid Japan for its many crimes against the Korean people, not just in recent times but stretching back over a century and more. Let this stand as a warning to America’s lackeys in Seoul that it will be the next city to be turned into a sea of fire if they will not extend the hand of peace to our people. The DPRK [Democratic People’s Republic of Korea] is the invincible power equipped with both the latest offensive and defensive capabilities known to the world, including nuclear deterrence. No enemy can escape the reach of the KPA [Korean People’s Army]. We possess the means to wipe America’s pawns off the face of the earth, and will not hesitate to do so if the aggression against the Korean people does not cease immediately and restitution made.

As for the Americans, gone forever is the era when the United States blackmailed us with nuclear weapons; now the United States is no longer a source of threat and fear for us and we are the very source of fear for it. The past Korean War brought about the beginning of the downhill turn for the U.S., but the second Korean War will bring the final ruin of U.S. imperialism.

Any attempt to strike at the KPA’s arsenal of advanced weapons will be set aside by massive strikes against the aggressors. Failure to respond within two days to the Korean people’s extending the hand of peace will only bring further suffering to those who live under the boot of the criminal U.S. government.¹⁴⁷

The “hand of peace” that Kim seeks involves his demands for massive food and oil shipments to North Korea from Japan, South Korea, and the United States to prop up his tottering regime.

Around the globe there is a scramble to find some way of unwinding what has become the most dangerous world crisis since the two Cold War-era nuclear-armed superpowers faced off in the Cuban Missile Crisis nearly sixty years ago. The American, Japanese, and South Korean governments reach out to the leaders of China and Russia in the hope that they may be able to deflect Kim from his reckless course. In a three-way video conference with his Japanese and South Korean counterparts, the U.S. president discusses the merits of engaging China and Russia to put pressure on Kim to back off; submitting to Kim’s attempt at nuclear blackmail; or taking military action against North Korea to forestall further attacks. These efforts at crisis

147 Kim’s threatening remarks echo similar warnings given on other occasions. See Doug Bolton, “North Korea Threatens to ‘Leave No Americans Alive’ as Kim Jong-un Boasts of Nuclear Arsenal, on Korean War Armistice Day,” *Independent*, July 27, 2015, available at <http://www.independent.co.uk/news/world/asia/north-korea-threatens-to-leave-no-americans-alive-as-kim-jong-un-boasts-of-nuclear-arsenal-on-korean-10419951.html>; and “Kim Jong-un Threatens to Wipe Out America,” *Citifmonline*, August 1, 2015, available at <http://citifmonline.com/2015/08/01/kim-jong-un-threatens-to-wipe-out-america/>.

management, however, do little to temper the rising chorus of anger, fear, and recrimination swelling in South Korea, the United States, and, especially, Japan. The question being asked repeatedly on both sides of the Pacific is this: How could the three allies have allowed this to happen? Any attempt at an answer must take into account actions stretching back decades.

Pyongyang's Path to Nuclear Weapons

North Korea's path to a nuclear capability has been neither easy nor fast. Roughly a quarter century in the making, the country's nuclear arsenal, which some believe may number as high as thirty nuclear weapons, was given a major boost during the last phase of the Cold War. North Korea built a nuclear reactor with Soviet help in the 1960s, at Yongbyon. Pyongyang then began building a second reactor at the same location. In the early 1980s China, now tilting very much toward the United States in its standoff with the Soviet Union, transferred to Islamabad plans for a nuclear warhead and perhaps enough enriched uranium for two weapons.¹⁴⁸ Beijing's objective was to use Pakistan's weapons program as a means of deflecting the attention of its rival, India, away from China. Similarly, Chinese leaders looked to exploit North Korea's desire to develop a nuclear weapons capability to preoccupy their East Asian adversary, Japan. Chinese aid to Pyongyang was not extended directly, but funneled through Pakistan.¹⁴⁹ At roughly the same time, in 1985, North Korea ratified the NPT, but failed to conclude the necessary safeguards agreement with the IAEA.

The "father" of Pakistan's nuclear bomb, Dr. Abdul Qadeer (A. Q.) Khan, began assisting North Korea in the early 1990s. In the later stages of their cooperation, the Pakistanis traded their uranium-enrichment expertise, in the form of centrifuges, for North Korean ballistic missiles.

North Korea, stunned by the Soviet Union's rapid collapse, sought to buy time. On December 31, 1991, Pyongyang committed to an agreement with Seoul that neither would develop nuclear weapons, which included inspections. A little over a year later, in the wake of the overwhelming demonstration of U.S. military power in the First Gulf War, the North Koreans signed the IAEA safeguards agreement.¹⁵⁰ The IAEA soon discovered strong evidence that Pyongyang's declaration to the IAEA on its nuclear activities was incomplete. When Kim Jong-il refused to permit the IAEA to conduct a special inspection, it reported North Korea's non-compliance to the United Nations' Security Council. Pyongyang responded by withdrawing from the NPT, but then suspending its withdrawal before it could be put into effect.

148 Chang, *Nuclear Showdown: North Korea Takes on the World*, p. 126.

149 Ibid., p. 128.

150 Ibid., pp. 25, 126–128. See also Leon V. Sigal, *Disarming Strangers: Nuclear Diplomacy with North Korea* (Princeton, NJ: Princeton University Press, 1998); and Robert Gallucci, Daniel Poneman, and Joel Wit, *Going Critical: The First North Korean Nuclear Crisis* (Washington, DC: Brookings Institution, 2005), pp. 1–25.

In an effort to resolve concerns over North Korea's nuclear program, the United States entered into the 1994 Agreed Framework with Pyongyang. In return for U.S. assistance in obtaining two light-water nuclear reactors,¹⁵¹ North Korea was obligated to suspend operations at its 5-megawatt reactor and plutonium-processing plant at Yongbyon, as well as halt the construction of a 50-megawatt reactor at the same location and a 200-megawatt reactor at Taechon. These facilities were to be dismantled prior to the second light-water reactor's completion. North Korea was also to take steps to reach "full compliance" with IAEA safeguards, and all spent fuel from the 5-megawatt reactor placed in containers and removed from the country.¹⁵²

At the time the agreement was signed on October 12, 1994, President Bill Clinton declared:

This is a good deal for the United States. North Korea will freeze and then dismantle its nuclear program. South Korea and our other allies will be better protected. The entire world will be safer as we slow the spread of nuclear weapons.¹⁵³

Yet over the next two decades North Korea violated many of its obligations, to include those under the NPT, the safeguards agreement, the denuclearization agreement with South Korea, and the Japan-North Korea Pyongyang Declaration.

Things came to a head over the span of a little more than a year beginning on September 19, 2005. On that date, the United States and North Korea issued what was hailed as a "historic" joint statement whereby Washington declared it has no intention of attacking North Korea and Pyongyang agreed to terminate all its nuclear weapons-related activities and rejoin the NPT. The following day, however, North Korea stated it would not end its nuclear program until it was provided with a "civilian" nuclear reactor.¹⁵⁴

The following year, on October 9, 2006, North Korea exploded its first nuclear weapon. Another nuclear weapon was detonated on May 25, 2009, and a third on February 12, 2013.¹⁵⁵

151 Under the agreement, North Korea also received fuel oil and other economic assistance.

152 "The U.S.-North Korean Agreed Framework at a Glance," *factsheet*, Arms Control Association, August 17, 2004, available at <http://www.armscontrol.org/factsheets/agreedframework>.

153 Derek Hunter, "Obama Echoes Bill Clinton's North Korea Nuclear Deal Announcement," *The Daily Caller*, July 15, 2015, available at <http://dailycaller.com/2015/07/15/obama-echoes-bill-clintons-north-korea-nuclear-deal-announcement-video/#ixzz3kPqCDYbx>.

154 The standard account of this crisis is Yoichi Funabashi, *The Peninsula Crisis: A Chronicle of the Second Korean Nuclear Crisis* (Washington, DC: Brookings Institution, 2007).

155 The initial explosion has an estimated yield of 1,000 tons of TNT, or 1 KT. The following test achieved an estimated yield of 4 KT, while the third detonation's projected yield is 7 KT. By comparison, the atomic bomb dropped on Hiroshima in August 1945 had a yield of roughly 15 KT. Martin B. Kalinowski, "Second Nuclear Test Conducted by North Korea on 25 May 2009," *factsheet*, Carl Friedrich von Weizsäcker Centre for Science and Peace Research, University of Hamburg, May 25, 2009; and Kelsey Davenport, "North Korea Conducts Nuclear Test," *Arms Control Today*, Volume 43, Arms Control Association, February 28, 2013.

A “Nonexistent” Threat of War?

During North Korea’s march toward a nuclear capability and in its aftermath, Seoul has walked a tightrope between resisting the communist regime’s efforts at extortion and avoiding the war that Pyongyang threatened if its demands were not met. Some South Korean leaders see—or, perhaps, *want* to see—a rational leadership behind Pyongyang’s threats. When in 2003 North Korea threatened to end the armistice and resume the war, South Korea’s President Kim Dae-jung declared, “I believe the danger of war on the Korean peninsula is slight—in fact, nonexistent.”¹⁵⁶ Kim’s statement suggests a belief that his North Korean counterparts were “rational” in the context of Kim’s worldview, when in fact North Korea’s leadership appears to calculate cost, benefit, and risk very differently from their counterparts in the South. Kim Dae-jung’s successor, Roh Moo-hyun, likely revealed the true state of affairs when he admitted, “We will lose everything if there is another war on the Korean peninsula.” Thus Roh’s declaration: “It is my firm determination that there shall be no war under any circumstances.”¹⁵⁷ But as military leaders often say, “The enemy also gets a vote.” What if North Korea (or, more accurately, Kim Jong-un) were to find itself in circumstances in which has *nothing to lose* in choosing war, and perhaps something to gain as well?

A Fourth Set of Tests

After testing what it asserts is a thermonuclear weapon in January 2016, ten months later the North Koreans conduct two underground tests. One explosion is slightly larger than the ones before it, with a yield estimated at 11 KT.¹⁵⁸ Unbeknownst to U.S. intelligence, a senior North Korean military official involved with the regime’s nuclear and missile programs defects to China in March 2017. He informs People’s Republic of China (PRC) officials that with foreign technical assistance from Russia and Pakistan, North Korea has developed and tested a 10-KT device small enough to place atop Nodong and Taepodong missiles. The purpose of the second test was to determine if the warhead design was successful. With a nuclear-armed Nodong missile, North Korea would have a road-mobile, nuclear-armed missile capability that would be difficult to target, while Taepodong missiles armed with the warhead would give North Korea an ability to strike targets at significantly longer ranges.¹⁵⁹

¹⁵⁶ Chang, *Nuclear Showdown: North Korea Takes on the World*, p. 111.

¹⁵⁷ *Ibid.*

¹⁵⁸ The second explosion had a yield estimated at roughly 4 KT, once again leading to speculation that the weapon suffered from design problems or impurities in the fissionable materials used. Similar conjectures accompanied North Korea’s first test, which achieved a yield of only 1 KT.

¹⁵⁹ North Korea’s Taepodong-2 missile has a range estimated at between 4,500 km and 10,000 km, with most estimates centering around 6,500 km. That being said, the missile has yet to be deployed, owing to the high percentage of failed tests. “Taepo Dong-3,” *Missile Threat*, George C. Marshall and Claremont Institutes, updated October 21, 2012, available at <http://missilethreat.com/missiles/taepo-dong-3/>. The more reliable road-mobile Nodong-1 missile seems a more likely candidate for North Korea’s nuclear missile force, although its range is a more modest 1,300–1,600 km. “No Dong 1,” *Missile Threat*, George C. Marshall and Claremont Institutes, updated October 26, 2012, available at <http://missilethreat.com/missiles/no-dong-1/>; and Charles P. Vick, “Nodong,” Federation of American Scientists, updated February 17, 2015, available at <http://fas.org/nuke/guide/dprk/missile/nd-1.htm>.

An Attempt at Reform

In April 2017, following a weak 2016 harvest and declining foreign economic support, Kim Jong-un undertakes a major effort to liberalize North Korea's economy to curtail the country's economic slide and, more importantly, preserve domestic order. Toward that end, a free economic zone is established just to the west of Pyongyang along the West Korea Bay coast. The plan is to leverage North Korea's extremely low labor costs (and general disregard for working conditions) to attract Chinese and South Korean investment and technology. At the same time, North Korean farmers are given permission by the government to plant up to a quarter hectare of collective farm land with their own crops and to either consume them or sell them, tax-free, on the domestic market.¹⁶⁰

Initial reports of Kim's economic reforms are encouraging. The 2018 harvest is the best in a generation. Investment in the country's Designated Economic Zone (DEZ) has met expectations, thanks in no small measure to Chinese investment support.

A Nuclear Breakthrough?

On March 22, 2018, North Korea successfully boosts a payload into space employing a modified version of the troubled Taepodong-3 missile. This raises concerns in the American, Japanese, and South Korean intelligence communities that the missile's reliability has improved to the point where the Taepodong-3s may be armed with some of Pyongyang's small but growing inventory of nuclear warheads.¹⁶¹

During North Korea's yearly parade on July 27, 2018, to celebrate its "victory" in the Korean War, foreign intelligence analysts observe that the Nodong missiles on display have a modified tri-conical "baby-bottle" nosecone. This suggests that North Korea might have altered the shape of its nosecones to accommodate a nuclear warhead.

Given what appears to be a significant advance in North Korea's nuclear capability, the presidents of both the United States and South Korea express their willingness to engage Pyongyang for the purpose of negotiating controls on North Korea's nuclear program. Their démarche is rejected by Pyongyang. Undeterred, both Washington and Seoul approach China to explore restarting the moribund six-party talks. Their request is rebuffed, in no small measure because of the United States' refusal to acknowledge Beijing's sovereignty over

160 There are indications that China exerted enormous pressure on Kim Jong-un to pursue these reforms, primarily to reduce the strain on Beijing, which provides most of North Korea's food and the overwhelming majority of its energy imports. In the wake of China's stock-market crash and the slowdown in the country's economic growth rate, its leaders have been looking for ways to reduce their support to North Korea while retaining a high level of influence in that country. Beina Xu and Jayshree Bajoria, *The China-North Korea Relationship*, Backgrounder (Washington, DC: Council on Foreign Relations, August 22, 2014), available at <http://www.cfr.org/china/china-north-korea-relationship/p11097>.

161 This lends credence to the North Korean defector's report, which was initially met with considerable skepticism within China.

the South China Sea islands (including those artificially created) that the PLA has occupied and militarized.

In January 2019, U.S. satellite surveillance detects unusual activities near North Korea's Punggye-ri nuclear test site. A wide area has been cleared in a mountain valley, and it appears as though tunnels are being constructed in and around the clearing. Intelligence also suggests a mass evacuation of populations within a thirty-mile radius of the clearing site.¹⁶² The U.S. and Chinese intelligence services quickly (and independently) reach a disquieting conclusion: Pyongyang is planning a nuclear test at or near the Earth's surface.

The Latest Failure of *Juche*¹⁶³

The world's denunciation of Pyongyang's nuclear blast is not Kim Jong-un's biggest problem. By the autumn of 2019, Kim's economic reform effort is proving a spectacular failure, and the country slides further away from its "*Juche* idea." The unraveling of what seemed a promising initiative is swift and unlikely to be reversed quickly or easily.

Japanese and South Korean intelligence reports concur on its causes. For one, North Korean labor, while cheap, proves too unskilled to support the kinds of economic initiatives accorded priority by the regime. Simply put, the North Korean people are asked to run technologically before they have even learned how to crawl. Second, and perhaps more importantly, the effort is plagued by widespread corruption among both the North Koreans and their Chinese and South Korean partners. While Kim Jong-un fully intended to skim off much of the joint venture's profits, his collaborators in China and South Korea surpass him in their ability to generate graft.

Similarly, while Kim's agricultural reforms provide a substantial boost in the country's food production in 2018, the gains prove ephemeral. Seeking to exploit the agricultural reform's initial success, the regime begins taxing private production and imposing regulations on the conditions under which the food can be sold (such as requiring permits and selling produce only in government-controlled markets at government-controlled prices). Some "speculators" seeking to sell their produce in private markets are arrested and summarily executed, further reducing the incentive to put effort into cultivating parcels on state farms.

162 Such tunneling is not unusual, having gone on for years at various intervals. Jeffrey Lewis "New Nuclear Test Tunnel under Construction at North Korea's Punggye-ri Nuclear Test Site," *38 North*, U.S.-Korea Institute at SAIS, December 2, 2015, available at <http://38north.org/2015/12/punggye120215/>. See also "N. Korea Digging New Tunnel at Its Nuke Test Site: Official," *N.K. News*, October 30, 2015, available at <http://english.yonhapnews.co.kr/northkorea/2015/10/30/64/0401000000AEN20151030002800315F.html>.

163 *Juche* is a Korean term loosely translated as "self-reliance" or "independence." According to North Korea's official website, *juche* "means maintaining an independent and creative standpoint in finding solutions to the problems which arise in the revolution and construction. It implies solving those problems mainly by one's own efforts and in conformity with the actual conditions of one's own country. The realization of independence in politics, self-sufficiency in the economy and self-reliance in national defense is a principle the Government maintains consistently." See, "Juche Ideology," Official webpage of the Democratic People's Republic of Korea, available at http://www.korea-dpr.com/juche_ideology.html.

North Korea's agricultural situation is exacerbated as a consequence of a drought in 2019. Consequently, the country's food reserves are perilously low. Lacking hard currency, North Korea is increasingly reliant on foreign assistance for the basics of life, particularly food and fuel. China, stung by the collapse of its joint venture with North Korea and Kim Jong-un's accusation of Chinese corruption, refuses to provide food assistance on the massive scale demanded by its troublesome partner.

China's declining economic growth, which now stands at roughly 4 percent per annum, has led to growing problems at home. This further reduces Beijing's willingness to subsidize Kim. The drought that crippled North Korea's harvest is matched by droughts in several of China's principal agricultural regions. Combined with the country's increasingly modest economic prospects, spot food shortages in China raise concerns regarding internal stability. Although Kim Jong-un travels to Beijing to make his case personally, he is told China will provide less than half the food assistance it sent to North Korea prior to the stillborn agricultural reforms.

May Day and Reopening the Six-Party Talks

With the regime's position becoming increasingly precarious owing to the country's progressive economic decline, Kim deflects responsibility in his 2020 May Day speech, blaming South Korea and its U.S. "puppet masters" for subverting its economy. Yet only four days later Pyongyang agrees to restart the Six-Power talks, which resume in July. As in the past, it quickly becomes clear that Pyongyang is using the talks only to denounce the United States, Japan, and South Korea, and to demand economic assistance, especially food and fuel shipments, as a condition for "progress" on nuclear issues.

South Korean intelligence sources confirm the North's lack of seriousness. Behind closed doors, Kim Jong-un informs his negotiators that acceding to U.S. demands that he accept severe restrictions on North Korea's nuclear capabilities is to follow the path of Libyan dictator Muammar Qaddafi. Kim reportedly calls the deal the West struck with Qaddafi "an invasion tactic to disarm our country." "The Libyans took the economic bait," Kim is reported to have said, "and the Americans destroyed them."¹⁶⁴ Conversely, Kim cites Iran as a model for how to win concessions from the Western powers while preserving its nuclear program.

Armed with this information, which is confirmed by U.S. signals intelligence, the three allies demand major up-front concessions from the North Koreans. These concessions must be

164 Kim's statements are consistent with previous North Korean statements on Libya's dismantling of its weapons of mass destruction (WMD) programs in return for a new relationship with the Western powers. See Mark McDonald, "North Korea Suggests Libya Should Have Kept Nuclear Program," *New York Times*, March 24, 2011, available at <http://www.nytimes.com/2011/03/25/world/asia/25korea.html>.

translated into concrete action and fully implemented prior to the North receiving any economic assistance.¹⁶⁵

The North balks at this proposal, but agrees to continue the talks. On September 17, 2020, only three days later, a North Korean surface warship rams a South Korean patrol craft in the territorial waters off South Korea's coast. Pyongyang blames Seoul for the incident. Two days later, South Korean islands off the west coast of the peninsula are subjected to artillery strikes from the North. Eight South Koreans are killed, and several dozen are wounded. These latest incidents occur during the same week that four members of the Seoul government are found guilty of corruption in the North Korean "*Juche* Scandal."

Crisis

Rather than weakening Seoul's resolve, North Korea's military provocations only serve to isolate Pyongyang further. With food shortages leading to worries over a repeat of the 1990s famine, and little in the way of foreign assistance, Kim looks to play his nuclear card to pry aid from South Korea, Japan, and the United States.

In October 24, 2020, North Korea conducts an underground test of a nuclear weapon with a yield of approximately 20 KT. Four days later it conducts three successful tests of the Taepodong-3 missile at ranges between 2,500 and 3,700 miles. The missiles carry dummy warheads. South Korean, Japanese, and U.S. intelligence concur that North Korea has perfected the Taepodong-3 missile and has likely tested a nuclear weapon warhead design small enough to serve as the missile's payload. The missile's range is sufficient to reach all of Japan and South Korea from launch sites in North Korea, as well as the major U.S. military bases on Okinawa and Guam (roughly 2,100 miles), and American naval facilities at Singapore (roughly 3,100 miles).

Following the tests, on October 31 Kim Jong-un declares that North Korea has reached the limits of its patience with South Korea and its "puppet masters," Japan and the United States, all of whom are "waging economic warfare against the North Korean people." He demands they cease their "aggression" and provide "economic reparations" or face a "devastating riposte" from the KPA.

On November 4, at the next session of the six-party talks, Seoul, Tokyo, and Washington rebuff Kim's demands, restating their position that Pyongyang must undertake "major, concrete, and verifiable steps" to cease production of fissile material and make a full accounting of its nuclear weapons inventory before any aid will be forthcoming. Kim responds by mobilizing his armed forces and placing them on a war footing.

¹⁶⁵ The Seoul government's hard line in the talks also stems from its own weakening economic position. China's decelerating growth has had a breaking effect on the South Korean economy as well. Moreover, South Korea's rapidly aging population exerts a substantial and growing strain on Seoul's purse strings, further crimping the country's budget and fueling the growing reluctance to continue subsidizing the North.

As tensions rise, U.S. and Japanese intelligence agencies report that the execution several months earlier of several senior North Korean generals is not, as Pyongyang claims, a consequence of their engaging in corrupt activities associated with the *Juche* Scandal. Rather, their demise stems from a failed coup attempt in April.

The generals apparently concluded that the regime is on the verge of collapse, and that their only hope of keeping the regime (and themselves) in power was to establish a military government and offer substantive concessions on nuclear forces in exchange for economic assistance. They apparently unsuccessfully urged Kim Jong-un to offer to freeze the country's production of fissile material as a first step in exchange for foodstuffs and financial aid.¹⁶⁶

The North's provocative words and actions put the region's powers on edge. By early November, China, Japan, South Korea, and the United States have all taken steps in response to Pyongyang's provocations. The four countries place their armed forces on high alert, with the United States planning to deploy additional theater missile-defense assets in both Japan and South Korea, along with naval and air forces. Japan puts its Aegis warships to sea, and places its Patriot air and missile defense batteries on full alert. These requests raise concerns in Washington regarding its ability to meet its ballistic missile defense commitments in Eastern Europe and the Middle East, should a crisis emerge in either region.

Still, no senior leader in Seoul, Tokyo, or Washington believes Kim's actions will lead to war, let alone nuclear use. South Korea's president continues to view war as "impossible." While Japan's prime minister worries over the possibility of minor provocations by the KPA, he believes Kim must know that war will mean the end of his regime. In Washington, there are plans to reach out to America's two allies to review plans on how to proceed if Kim's regime collapses. At some point, National Security Council planners inform the president, the Chinese must be engaged to ensure that efforts to stabilize the northern part of the peninsula do not result in incidents with Beijing's military.

At the same time, U.S. reconnaissance satellites detect a large deployment of People's Liberation Army forces taking up position along China's border with North Korea. They are believed to have the mission of securing North Korea's nuclear weapons in the event the regime collapses—and to warn off U.S. or South Korean forces from advancing far beyond the 1953 armistice line.

In Washington, a Clinton-era State Department official who had been involved in talks with North Korea warns the president against thinking that a desperate Kim will not be tempted to push the crisis to the brink:

166 This apparently triggered Kim Jong-un's May Day speech condemning Qaddafi's attempt to secure his regime by curtailing his country's WMD program, while lauding Iran's success in getting the economic sanctions on it removed while keeping its nuclear program relatively unimpeded.

If you have only one or two bombs you don't have a military strategy. But when you have six or seven you can develop a strategy of threatening or even using some weapons while holding some in reserve. You can do more than simply fire off a single weapon in desperation or in revenge.¹⁶⁷

The president's national security adviser, while not aligning himself with these remarks, recalls that prior to Japan's attack on Pearl Harbor, Assistant Secretary of State Dean Acheson reassured President Roosevelt that war with Japan was unlikely because "no rational Japanese could believe an attack on us could result in anything but disaster for his country."¹⁶⁸

The president engages his intelligence agencies and is informed that North Korea is believed to have a nuclear arsenal comprising fifteen to twenty-five nuclear weapons,¹⁶⁹ with roughly ten to twenty being mated to ballistic missiles. The remaining weapons are believed capable of being delivered by aircraft or "non-traditional" means (such as cargo aircraft and ships). The reliability of these weapons is believed to be fair to good—they should function as designed roughly 80 percent of the time. A haystack attack is considered to pose a significant problem for U.S., Japanese, and South Korean missile defenses. Much depends on the reliability—or lack thereof—of sophisticated weaponry that has never been tested in an environment involving the use of nuclear weapons.¹⁷⁰ The president directs the Pentagon to develop military options to address these contingencies and any others that seem plausible under the existing circumstances.

That being said, the intelligence community judges a nuclear attack by North Korea as remote, given the risks involved for Kim. As the director of national intelligence informs the president, "You've given Kim a way out. In exchange for guaranteed reductions in his nuclear program, he gets the food and fuel needed to keep himself in power. For him it's the path of least resistance."

Thinking Through the Unthinkable

The view in Pyongyang is quite different. A senior North Korean official informs the Chinese ambassador that Kim believes his regime will collapse within weeks absent a major change in the situation in his favor. Kim continues to see no value in pursuing the "Libyan" or "Qaddafi" option (that is, submitting to U.S. demands). He warns his senior military advisers, "We will not be hunted down like dogs and executed at the pleasure of our enemies, like the Libyan. We

167 Chang, *Nuclear Showdown: North Korea Takes on the World*, p. 47.

168 Payne, *The Fallacies of Cold War Deterrence*, p. 1.

169 Some studies suggest that North Korea is building a significantly greater arsenal. See David Albright, *Future Directions in the DPRK's Nuclear Weapons Program: Three Scenarios for 2010* (Washington, DC: U.S.-Korea Institute at SAIS, Johns Hopkins University, 2015).

170 James Schlesinger, arguably the best strategist ever to hold the position of U.S. secretary of defense, observed, "Perhaps the most dominant element in measuring nuclear forces against each other is the unknown and immeasurable element of the probability of major technical failure. It would tend to dominate any outcome." Newhouse, *War and Peace in the Nuclear Age*, p. 498.

must be like the Persians, aggressive. It's strength the Americans respect. It's nuclear might they fear. This is our only path forward.”

Kim reviews his options with his military brain trust. A major offensive against South Korea is ruled out, as the KPA lacks the ability to mount a major combined-arms offensive. The option of massive artillery and non-nuclear missile attacks on Seoul is discussed, but is ruled out owing to several major drawbacks. First, it would enable the Americans to mount a campaign against North Korea's nuclear facilities. Second, the North needs to husband its ballistic missiles for haystack attacks.

The discussion turns to nuclear forces. Several options are presented and discussed. The first calls for a nuclear “demonstration” shot somewhere at sea between Japan and South Korea. This is ruled out for several reasons. One concerns “wasting” one of North Korea's small inventory of nuclear weapons. Another potential drawback is that, following the demonstration, the Americans, Japanese, and South Koreans could augment their defenses, while the Americans could decide (or be pressured) to employ nuclear weapons against North Korea's nuclear forces, to include its command-and-control systems. (Kim is especially worried that these systems could be infected with U.S. malware.)

Another option involves an EMP shot (or shots) that would saturate much of Japan and South Korea. Kim is informed that while work is underway on such weapons, they have not been fabricated, let alone tested.¹⁷¹

A third option calls for a nuclear warning attack on a military target. One potentially attractive target might be Okinawa, to preempt U.S. support for operations against the DPRK and to shock the American public. The downside is that the Americans have likely positioned their strongest missile defenses to cover their major bases, at Osan, South Korea, and Kadena, in

171 A nuclear explosion at high altitudes, ranging from roughly 40–400 km above the Earth's surface, can generate an EMP. The nuclear explosion creates, among other things, a short burst of energy in the form of a rapidly rising radiated electromagnetic field, which generates an electromagnetic pulse. “Nuclear Weapon EMP Effects,” Federation of American Scientists, updated October 21, 1998, available at <http://fas.org/nuke/intro/nuke/emp.htm>. HEMP detonations could theoretically be executed by a relatively unsophisticated nuclear power. It seems unlikely, however, for several reasons. For it to have widespread effects, a HEMP strike requires a relatively large warhead, perhaps in the one-megaton range. Thermonuclear weapons are the only weapons capable of achieving this kind of yield. North Korea has yet to master the technology to construct such a device, let alone miniaturize it sufficiently to deploy it on a ballistic missile to boost it to the necessary altitude for an effective HEMP attack. The existence of EMP and its effects were discovered during U.S. and Soviet atmospheric tests in 1962. The U.S. test named Starfish occurred 400 km above Johnson Island in the Pacific Ocean and disrupted electrical systems as far away as Hawaii, a distance of 1,400 km. The Soviet tests were conducted at roughly 300, 150, and 60 km above their South Asian test site and produced damage to electrical systems, including underground cables. The damage included surge arrester burnout, spark-gap breakdown, blown fuses, and power supply breakdowns. EMP Commission, *Report of the Commission to Assess the Threat to the United States from Electromagnetic Pulse (EMP) Attack*, Volume I, *Executive Report* (Washington, DC: EMP Commission, 2004), p. 3; and “9 July 1962 ‘Starfish Prime,’ Outer Space,” Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization, 2012, available at <https://www.ctbto.org/specials/testing-times/9-july-1962starfish-prime-outer-space>. North Korea's ability to create an EMP employing a nuclear weapon is unconfirmed. See Larry Bell, “The Ultimate North Korean Missile Threat to America: A Nuke Power Grid Attack,” *Forbes*, April 4, 2013, available at <http://www.forbes.com/sites/larrybell/2013/04/14/the-ultimate-north-korean-missile-threat-to-america-a-nuke-power-grid-attack/>.

Okinawa, Japan. Success would require a large-scale haystack attack, which would leave far fewer nuclear weapons as a reserve for follow-on use.

The fourth option calls for a haystack attack against a less defended city in Japan or South Korea. Such an attack would ideally “shock” North Korea’s enemies to their senses and compel them to negotiate seriously to meet Pyongyang’s demands. It would require fewer missiles and nuclear weapons than a haystack attack on a military or “hard” target. Civilian casualties are also seen as likely to generate more fear among the South Korean and Japanese people, leading them to exert greater pressure on their government to agree to Kim’s demands. While Kim and his advisers are concerned that such an attack could trigger a strong military response against the North, the risk seems inherent, to a lesser or greater extent, in the other options involving nuclear use.¹⁷²

The discussion then turns to the target for such an attack: Japan or South Korea. The issue is quickly resolved in favor of an attack on Japan. Kim wants to avoid attacking fellow Koreans. Given the latent animosity that exists between the Korean and Japanese peoples stemming from the latter’s occupation of Korea for a half century, from roughly 1894 to 1945, striking Japan may even find Kim viewed sympathetically by his countrymen to the South. At least that is what he would like to believe. This could make U.S. military action against the North more difficult.

The decision is made. A haystack attack on a Japanese soft target, a city, will be executed in two days, on April 17. Preparations will be made to launch two more such attacks if necessary against targets in Japan or South Korea. This will exhaust North Korea’s nuclear-armed missile inventory. Three nuclear bombs will be placed on fighter-bomber aircraft. The aircraft will be placed on strip alert and prepared to launch a haystack attack. Several dozen decoy attack aircraft will escort the three nuclear-armed aircraft to targets designated by Kim.

Three Allies, Three Perspectives

While Kim Jong-un is meeting with his senior advisers to deliberate options, on April 13 both Seoul and Tokyo press Washington on its plans to prevent the use of North Korean nuclear weapons against their countries, and how the United States will respond in the event of general (non-nuclear) aggression by the North, or the North’s use of nuclear weapons against their country. This produces a lively debate at an April 14 meeting of the U.S. National Security Council over sending American ground forces to South Korea to enhance deterrence or, should it fail, aid in the defense of that country.

172 A fifth method of attack discussed by Kim and his brain trust involves deploying a nuclear weapon on a “suicide” cargo ship or submarine that detonates its nuclear cargo as it approaches a coastal city. Given how small the weapon is, even a small surface vessel could accommodate it. As for a submarine, it would want to surface before detonating the weapon to maximize the destructive effect. The option is quickly ruled out owing to concerns that the intense level of maritime patrolling now underway, combined with greater levels of radar monitoring and harbor patrolling, would make such an attack exceedingly risky.

Opponents of the move argue that such a move at this time might undermine deterrence by encouraging Kim to strike before U.S. forces arrive and the military balance shifts further against him. It would also place American soldiers within range of Kim's nuclear, chemical, and biological weapons. The president decides in favor of a "goldilocks" or middle-way solution: four U.S. Army brigades will be dispatched, with one brigade going to Alaska, one to Guam, and two to the Philippines. A U.S. Marine Corps expeditionary brigade will be deployed by sea from Hawaii to Guam. This will enable these forces to deploy to northeast Asia more rapidly in the event of war.

On April 15, the president speaks via video teleconference with the Japanese prime minister and the South Korean president. He informs them of the decision to deploy American ground forces as described above, and to place U.S. forces in Japan and South Korea on high alert. They all agree to execute preexisting U.S. bilateral plans with its allies. Among the steps agreed upon are deploying U.S. submarines near North Korean submarine bases to identify and track any of the North's submarines leaving port. South Korean antisubmarine warfare (ASW) forces are assigned to cover the approaches to the country's main cities, with Japan's Maritime Self-Defense Forces (JMSDF) assigned similar missions near its major harbors. All cargo ships bound for Japanese and South Korean ports are informed they may be subjected to inspection by military and police forces of those countries. All ships of any type departing North Korean ports are to be electronically tagged and tracked by a combination of satellites and UAVs. Japanese and South Korean military commanders are instructed to intercept these ships if they steam within 60 and 35 km, respectively, of their territorial waters.

Despite their seemingly common approach to the threat posed by North Korea, the leaders of Japan and South Korea have different perceptions of Kim's motives. In his conversations with the U.S. president, Japan's prime minister sees the crisis as a major test of his policy of returning his country to the role of a "normal nation," one that is willing to assume risks and take concrete action to defend its interests against an increasingly assertive China and its North Korean client. Speaking privately, Japan's prime minister informs the U.S. president that in the event of a North Korean nuclear attack on his country, Japan expects the United States to employ nuclear weapons against North Korea to ensure there is no follow-on attack.¹⁷³ The president tells Japan's prime minister he has instructed the military to examine both

¹⁷³ The following day, China's ambassador to the United States meets with the president. He issues a warning that any use of nuclear weapons against North Korea would have the "gravest consequences" for China-U.S. relations. The timing of the Chinese message leads to concerns that they may have compromised what are considered to be "bulletproof" highly encrypted, closed U.S. government networks.

preventive and retaliatory strikes against North Korea's nuclear forces and facilities, employing conventional or nuclear strikes, or a combination of the two.¹⁷⁴

South Korea's president has a different perspective on the situation. Rather than sounding the alarm like his Japanese counterpart, he echoes the statements of his predecessors who, like president Roh, have declared war "unthinkable" because the consequences of an all-out conflict on the peninsula would inflict unimaginable destruction on both the North and the South. South Korea's opposition party and members of his own cabinet challenge the president's views as the product of "willful ignorance." He reminds them of the many past instances when Kim has threatened war, only to fail to follow through on his "hollow" threats. He also remains convinced that the massed air and missile defenses of South Korea, Japan, and the United States will further discourage Kim whose estimate of the situation, the president asserts, is in fact very close to his own. Finally, the president emphasizes that Beijing does not want war any more than Seoul. If push comes to shove, the Chinese will act to put Kim in his place.

The President and the National Security Adviser

Following the video conference, the president and his national security adviser linger in the Oval Office and exchange thoughts as to how the crisis might play out. Both believe the chances of Kim's employing nuclear weapons are low.

The president points out:

I'm just thinking out loud here. Here's how I see it. If Kim uses a nuclear weapon, he'd be signing his own death warrant. There'd be nothing left of his country but smoking ruins. Besides, we've given him an out: the help he needs in exchange for real reductions in his nuclear capability. He'd have to be crazy not to take it.

He is surprised by his national security adviser's reply:

I'm not so sure, Mr. President. Are we willing to use nuclear weapons against North Korea in response? I know that's what our Japanese allies expect if Kim attacks them with one, but what if it's a demonstration shot, or an EMP shot, that does only limited damage? And what if he does not fire off all his nuclear weapons? Suppose he uses only some and holds back the rest? Are we going to go after him when he might do far more damage?

174 In fact, U.S. senior civilian and military officials have already briefed the president on the issue. Owing to North Korea's extensive use of tunnels and deep underground facilities, they conclude that a military operation whose purpose is to "effect the *prompt, assured* destruction of North Korea's nuclear capability" will require the employment of nuclear weapons delivered by ballistic missiles. The yields of the warheads on these missiles are relatively large. The W88 warhead on the U.S. Navy's Trident fleet of SSBNs is estimated at 455–475 KT. The SSBN can also deploy with W76 warheads atop its missiles. These warheads have a yield of 100 KT. The U.S. Minuteman land-based ballistic missile is armed with the W87 warhead, whose yield is between 300–450 KT. Charles Ferguson, "Sparking a Buildup: U.S. Missile Defense and China's Nuclear Arsenal," *Arms Control Today*, Volume 30, Arms Control Association, March 1, 2000, available at http://www.armscontrol.org/act/2000_03/cftabs; "The W88 Warhead," Nuclear Weapons Archive, updated October 1, 1997, available at <http://nuclearweaponarchive.org/Usa/Weapons/W88.html>; and Hans M. Kristensen, "Congress Receives Nuclear Warhead Plan," *Strategic Security Blog*, Federation of American Scientists, December 6, 2010, available at <http://fas.org/blogs/security/2010/12/jointwarhead/>.

The president retorts:

Look, if we don't respond with a nuke, our guarantees to our allies—especially the Japanese—would mean nothing. The Joint Chiefs tell me they have an option where we use some low-yield [nuclear] weapons as part of a campaign that really hits them hard—massively—with PGMs and cyber, while flooding the area with our air and missile defense forces. So the collateral damage, even from our nukes, would be small.

The national security adviser, somewhat exasperated, replies:

But, Mr. President, even assuming the chiefs are right, that still doesn't address the problem that occurs if Kim holds back a sizable number of his nuclear missiles. If we go after them he may conclude he needs to launch them before we take them out. What kind of relationships will we have with our allies then?

Both men are now on edge. The president shoots back, "Well, what would you do? What is your recommendation?"

The national security adviser confesses, "I don't know, Mr. President; I've only questions, no good answers."

The president brightens:

Well, we've given Kim an out. He wants to stay in power and gets to. He agrees to real restrictions on his nuclear capabilities and he gets the assistance he needs. That's a win-win—although I don't think the North Korean people will see it that way.

Before the president has a moment to enjoy the benefit of his insight, his adviser notes:

Sir, I'm not so sure. I mean, from where we sit it makes sense. I'm not so sure Kim sees it that way. The concessions we want him to make will freeze his arsenal at its current size and involve intrusive inspections. Kim may view the inspections as a way for us to discover his weaknesses, and provide valuable information on how to target his forces. He could also see this as the first in a series of demands by us that will gradually strip him of his nuclear forces. It's not as if they aren't going to have another food and fuel crisis. Not the way they've been running that place. I can see him upping the ante. He may take our offer, but I don't think it's a slam dunk.

Another thing, Mr. President. We have two close allies who seem to want different things from us. If Kim goes through with his threat and attacks Japan with nuclear missiles, Tokyo expects us to flatten North Korea, to include using our nuclear weapons. Our friends in Seoul are likely to oppose such action vigorously. As for the Chinese, I think their opposition would match the [South] Koreans'.

After a few moments that seemed like hours to his national security adviser, the president replies, "Well, I don't think Kim wants to peer into the abyss. He'll take the deal and worry about tomorrow tomorrow."

CHAPTER 5

China

Andrew F. Krepinevich

During the Korean War, General MacArthur urged the Truman administration to drop atom bombs on China. During the French-Vietnamese War, President Truman and British Prime Minister Churchill consulted on several occasions, agreeing that the Allies would support U.S. use of atom bombs on China in case the Chinese intervened on the side of Vietnamese troops. The Eisenhower administration threatened to use nuclear weapons against key areas in China (including Beijing) if it launched another offensive in 1953 during the Korean War. The Taiwan Strait crisis of 1958 once again saw China threatened by U.S. nuclear weapons; top Soviet military leaders considered launching a pre-emptive strike against China with a 'limited number of nuclear weapons' during the Sino-Soviet border clash in 1969.¹⁷⁵

Yao Yunzhu, Senior Colonel, PLA

If not for the importance of U.S. nuclear superiority, why did the Soviets secretly put missiles in Cuba and lie about it?¹⁷⁶

Thérèse Delpech

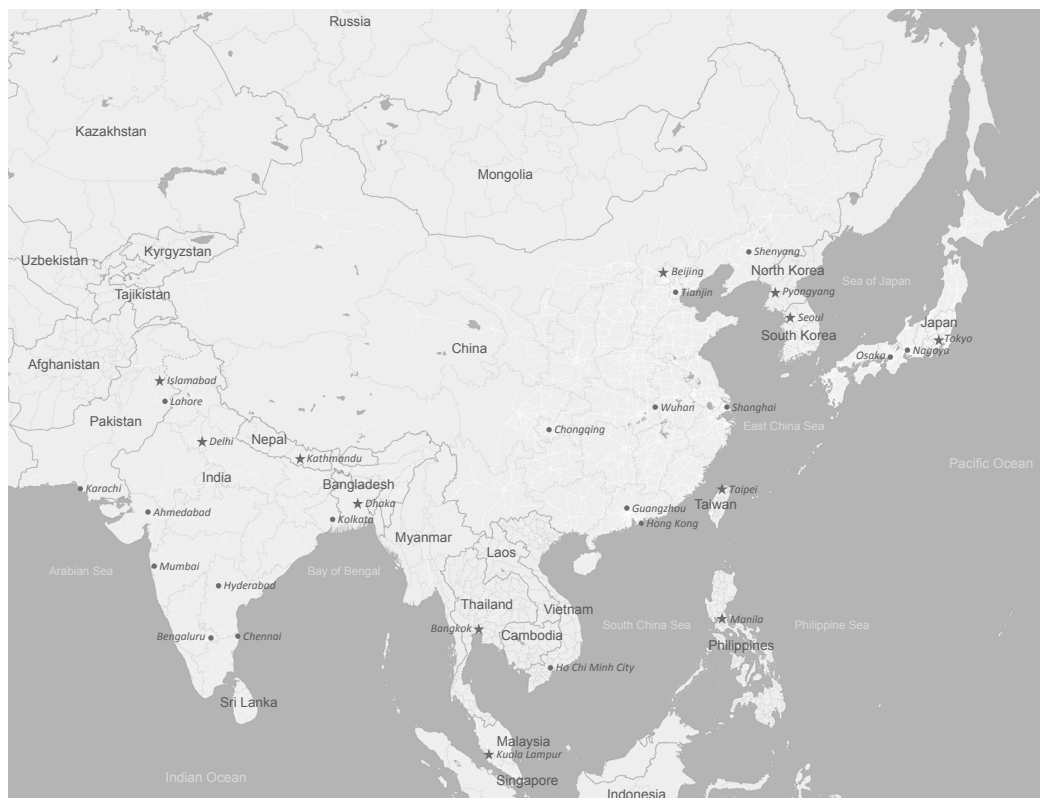
This [escalation dominance] is a capacity, other things being equal, to enable the side possessing it to enjoy marked advantages in a given region of the escalation ladder. . . . It depends on the net effect of the competing capabilities on the rung being occupied, the estimate by each side of what would happen if the confrontation moved to these other rungs, and the means each side has to shift the confrontation to these other rungs.¹⁷⁷

Herman Kahn

175 Yao Yunzhu, "China's Perspective on Nuclear Deterrence," *Air and Space Power Journal*, Spring 2010, p. 30. Cited in Delpech, *Nuclear Deterrence in the 21st Century*, p. 68.

176 Delpech, *Nuclear Deterrence in the 21st Century*, p. 68.

177 Quoted in Freedman, *The Evolution of Nuclear Strategy*, p. 219.



South and East Asia

The Four Pillars

On a warm late-spring day in 2017, an international group of China scholars meet in Cambridge, Massachusetts, to share their research findings. While their analyses often differ, even on critical issues, there is strong consensus that Asia's rising power is the world's most interesting country, with outsized ambitions and outsized problems as well.

During their discussions a new point of general agreement emerges regarding the character of the Beijing regime's legitimacy. A strong majority finds that the Chinese Communist Party (CCP), which has ruled over China for nearly seventy years, continues to accord top priority to maintaining itself in power, but that the party's legitimacy is growing progressively weaker. Their agreement derives from an extended discussion on the "four pillars" of legitimacy.

One pillar is the vote. Regimes voted into power by their people through free and open elections possess a powerful sense of legitimacy. The CCP has denied itself this source of legitimacy, as it has never offered the Chinese people the opportunity to vote it into power. A second pillar is ideology. Regimes, whether elected or not, in which the people believe to have identified the true path to security and prosperity can experience a high level of legitimacy; however, the CCP's Marxist ideology that once won over large numbers of Chinese has long been discredited.

The CCP's legitimacy rests on the other two pillars. The third centers on economic growth. Especially in countries where poverty has been the norm for generations, a regime's ability to engineer strong, sustained economic growth has proven a strong source of legitimacy. But many China hands question whether this pillar, which has been the regime's strongest over the past several decades, might be declining as the country hits the inevitable "flattening" in the economic growth curve that accompanies a country's transition from an emerging (or recovering) economy to a mature one.

The fourth and final pillar is nationalism. Regimes lacking support from the other three pillars can sustain themselves in power by demonstrating their ability, real or perceived, to restore or enhance their people's sense of national pride and honor, or to protect them from their enemies. Since its victory in its civil war over the Chinese Nationalists in 1949, the CCP has made it a priority to burnish its credentials as the entity responsible for defeating Imperial Japan in World War II, ending China's "century of humiliation" at the hands of the Western powers, and restoring the country's position as a great power. The CCP has persistently worked to rewrite history to show itself in a more favorable light than sustained by historical fact. This suggests the regime accords great value to bolstering this fourth pillar.

Rapid Economic Growth: A Weakening Pillar

By late 2017, the concerns of many China experts regarding the regime's economic pillar are borne out. In November 2016, Beijing announces that despite the market crash during the previous summer, the country's 2015 growth rate was a healthy 6.8 percent.¹⁷⁸ Independent observers, however, peg the true rate at closer to 6 percent. In June 2017, the Chinese government declares economic growth for 2016 slowed to 6.2 percent. Most economic experts believe the real rate was roughly 5 percent.

Moreover, relatively slow growth rates in the United States, Japan, and the European Union show no sign of changing for the better any time soon.¹⁷⁹ This is bad news for China's economic

178 The government had lowered its economic growth forecast to 7 percent, which some Chinese leaders referred to as the "new normal" growth level. This rate is the lowest in more than two decades. The last time the government had missed its growth target was in 1998 during the Asian economic crisis. China's Prime Minister Li Keqiang expressed concerns that "Systematic, institutional, and structural problems have become 'tigers in the road' holding up development." Mark Magnier, "China Lowers Growth Target to About 7%," *Wall Street Journal*, March 4, 2015, available at <http://www.wsj.com/articles/china-lowers-growth-target-to-about-7-1425515032>; Neil Gough, "China Lowers Official Economic Growth Target," *New York Times*, March 4, 2015, available at <http://www.nytimes.com/2015/03/05/business/china-lowers-official-economic-growth-target.html>; Mark Magnier, "China's Workers Are Fighting Back as Economic Dream Fades," *Wall Street Journal*, December 14, 2015, available at <http://www.wsj.com/articles/chinas-workers-are-fighting-back-as-economic-dream-fades-1450145329>; and Jonathan Chew, "Chinese Officials Admit They Faked Economic Figures," *Fortune*, December 14, 2015, available at <http://fortune.com/2015/12/14/china-fake-economic-data/>.

179 "Anti-Japan Protests Spread across China," *Financial Times*, September 18, 2012, available at <http://www.ft.com/cms/s/0/85f4f7a2-0138-11e2-99d3-00144feabdco.html#axzz3mO1KLgQ0>.

model, which relies heavily on exports to sustain growth. The country also seems on the path toward the bursting of a real-estate bubble.¹⁸⁰

China's economic slowdown poses a significant problem for the CCP. Some 200 million Chinese continue living in wretched poverty, with nearly 100 million living in "extreme poverty" as defined by the World Bank.¹⁸¹ These Chinese represent a major source of potential internal dissent, and thus a threat to the regime. Making matters worse, the country's stock market crash hurt many Chinese attempting to enter the middle class. Consider that 60 percent of new traders in China's stock market did not attend high school, and over 6 percent are illiterate.¹⁸²

This is not the only source of internal instability. Those Chinese who have finally made the long journey from poverty and crossed into the lower middle class are both fearful of slipping back into destitution and angry about the government's manipulation of the country's financial markets.

The regime faces hard realities in the form of strong and unfavorable trends that are flattening the country's economic growth rate. These trends have taken decades to form, and will likely take decades and considerable effort to reverse. Among these unfavorable trends are an aging population, growing water shortages, progressive environmental degradation, internal corruption, and the rise of relatively cheap and skilled labor in South and Southeast Asia.

Demography

Over the past three decades, China has enjoyed an abundant demographic dividend, defined as having an unusually large percentage of its people of working age (that is, between the age of 15 and 65). China's population is aging, however, in large part due to the CCP's decision in the early 1980s to impose a one-child policy on the Chinese people. Given current trends, China will experience negative population growth in 2027.¹⁸³ Importantly, China's demographic shift is leading to a decrease in the pool of new workers and the increase of the number of elderly people within society. Today there are roughly 120 million Chinese over the

180 Joel Kotkin and Wendell Cox, "China's Planned City Bubble Is About to Pop—and Even You'll Feel It," *New Geography*, September 25, 2015, available at <http://www.newgeography.com/content/005055-china-s-planned-city-bubble-is-about-pop-and-even-you-ll-feel-it>.

181 Chun Han Wong, "More Than 82 Million Chinese Live on Less Than \$1 a Day," *Wall Street Journal*, October 15, 2014, available at <http://blogs.wsj.com/chinarealtime/2014/10/15/more-than-82-million-chinese-live-on-less-than-1-a-day/>.

182 Linette Lopez, "China's Stock Market Dream Could Bring about Its Worst Nightmare," *Business Insider*, June 21, 2015, available at <http://www.businessinsider.com/falling-chinese-stocks-could-bring-social-unrest-2015-6>.

183 The CCP ended the one-child policy in early 2016, permitting couples to have two children. It will take time to determine the extent to which the Chinese people exercise this option, as one-child families have become the norm. "China to end one child policy and allow two," *BBC News*, October 29, 2015, available at <http://www.bbc.com/news/world-asia-34665539>; and Vasudevan Sridharan, "China formally abolishes decades-old one-child policy," *International Business Times*, December 27, 2015, available at <http://www.ibtimes.co.uk/china-formally-abolishes-decades-old-one-child-policy-1535006>.

age of 65; by 2035 the number leaps to some 320 million. Today, there are about five working-age Chinese for every retirement-age one. Current projections suggest that by 2035 there will be fewer than 2.5 working persons for every retiree. Simply put, more resources will need to be diverted to support the elderly, while relatively fewer people of working age will be available to generate economic output.¹⁸⁴

Recent data suggests that mean disposable household incomes have been rising by only 2–3 percent a year, while a number of studies suggest it has actually stagnated for some four hundred million Chinese over the past ten years, with half of China’s population subsisting on less than \$2 per day. If so, China appears woefully unprepared to meet the needs of its aging population; indeed, only some 15 percent of Chinese workers have some form of central, provincial, or local pension fund.¹⁸⁵

The CCP will likely need to increase social welfare spending dramatically to avoid social catastrophe. More than half of all medical costs are individually borne by citizens in urban areas; in rural settings it is more than 75 percent. As China continues to age, the government seems likely to face a difficult choice between its only two pillars of legitimacy: sustaining the growth in resources devoted to enhancing its military power and national prestige, and those needed to provide for the basic needs of its own people.¹⁸⁶

Environmental Degradation

The damage caused by the government’s general indifference to the environmental consequences of its efforts to sustain high levels of economic growth are proving increasingly difficult to ignore, in terms of both the human and economic costs involved. World Bank estimates find that the various forms of environmental deprecations in China cost the country roughly 9 percent of its gross national income. Only a fraction of 1 percent of China’s 500 largest cities meets the World Health Organization’s recommended air quality standards. Seven of China’s cities are ranked among the ten most-polluted cities in the world. In addition to air pollution, problems with water pollution and availability are worsening in no small consequence due to the runoff of fertilizer, pesticides, and discharges from intensive animal-production facilities. There are estimates showing that, by 2030, demand for water could exceed supply by as much as 200 billion cubic meters. Feeling directly the consequences of

184 Wenmeng Feng, “China’s Response to its Ageing Population,” in *Fostering Resilient Economies: Demographic Transition in Local Labour Markets* (Paris: Organization for Economic Cooperation and Development, 2014); and John Lee, “Pitfalls of an Aging China,” *The National Interest*, January–February 2013.

185 John Lee, “Pitfalls of an Aging China.”

186 Ibid.

environmental damage, Chinese citizens have engaged in a growing number of demonstrations against the CCP's policies.¹⁸⁷

When President Xi Jinping came to power in 2013 he declared a “war against pollution.” According to experts, success will come only with the restructuring of the country’s economy, substantial spending on environmental remediation, and a reduction in economic growth.¹⁸⁸ If so, once again this presents the CCP with tough new choices regarding its budget priorities—improving the lot of its people through environmental restoration, dealing with the social welfare challenges of a rapidly aging society, or pursuing Xi’s nationalistic “China Dream.” Xi describes the dream as working to “spread the Chinese spirit, which *combines the spirit of the nation with patriotism as the core*, and the spirit of the time with reform and innovation as the core” [emphasis added].¹⁸⁹

Nationalism: The Sturdy Pillar

Visitors to Beijing today will find the image of Mao Zedong ubiquitous. It appears in the form of posters, statues, and other representations. The “Great Helmsman’s” visage is there not to remind Chinese of Mao’s many victories in free, open elections, of which there were none under his twenty-seven-year dictatorship. Nor are they intended to recall the country’s prosperity under Mao’s rule, as he rivals Stalin in the mass starvation he inflicted by choice on his own people. Nor is he a reminder of communism’s success, for it has long since been discredited.

Mao remains useful to the Party as a reminder that, after a century of humiliation by external powers, he unified the country under a single central government and set it on the path toward restoring its status as a great power. The PLA successfully beat back U.S.-led United Nations forces during the Korean War. It became the first nation in the developing world to develop nuclear weapons. It was Richard Nixon, president of the world’s most powerful nation, who came to Beijing to visit Mao, not the other way around. The Party has not forgotten what Mao

187 Beina Xu, *China’s Environmental Crisis*, Backgrounder (Washington, DC: Council on Foreign Relations, April 25, 2014), available at <http://www.cfr.org/china/chinas-environmental-crisis/p12608>; and Qinfeng Zhang and Robert Crooks, *Toward an Environmentally Sustainable Future: Country Environmental Analysis of the People’s Republic of China* (Manila: Asian Development Bank, 2012). China’s own Ministry of Environmental Protection estimated the cost of pollution at around 3.5 percent of GDP. In 2009, the Chinese Academy of Sciences assessed the total annual cost of resource and environmental degradation in 2005 to be 13.5 percent of GDP.

188 Brian Spegele, “China War on Pollution Benefits from Economic Slowdown,” *Wall Street Journal*, July 20, 2015.

189 Suthichai Yoon, “The China Dream: What Does It Really Mean?” *The Nation*, August 1, 2013, available at <http://www.nationmultimedia.com/opinion/The-China-Dream-What-does-it-really-mean-30211609.html>. Xi also speaks of a “strong-army dream.” See “Xi Jinping and the Chinese Dream,” *The Economist*, May 4, 2013, available at <http://www.economist.com/news/leaders/21577070-vision-chinas-new-president-should-serve-his-people-not-nationalist-state-xi-jinping>. Others see it as an attempt by the CCP to further increase its hold over power. As one observer puts it, “The Communist Party already controls much of the reality in China; now it wants to control its people’s dreams.” Clarissa Sebag-Montefiore, “The Chinese Dream,” *New York Times*, May 3, 2013, available at http://latitude.blogs.nytimes.com/2013/05/03/whats-xi-jinpings-chinese-dream/?_r=0.

did for China, and what service he may still perform to sustain the Party's legitimacy with the Chinese people.

With the weakening of the economic pillar, the Party has come to rely increasingly on nationalism, based on "China's historical sense of entitlement to regional hegemony," to preserve its position, and its image as China's guardian against the depredations of hostile foreign powers.¹⁹⁰ As Aaron Friedberg notes, "Nationalism helps rulers to deflect popular frustrations, mobilize and channel mass support, forge coalitions among disparate groups, and win the backing of those who might otherwise seek their ouster."¹⁹¹

Hence the United States is portrayed as the "agitator" in the region, the country that must be "deterred" from threatening China's peaceful rise, and a "dangerous hegemon that it must replace."¹⁹² The CCP's most strident nationalist appeals, however, are directed against Japan, which defeated China in the Sino-Japanese War (1894–1895),¹⁹³ occupied Manchuria in 1931, and waged a brutal war of aggression against China itself from 1937–1945.

During the 1970s, however, the CCP sought to employ Japan as a counterweight to the Soviet Union, against which China had fought a series of battles along their common border in 1969. At the time, Moscow was seen as the principal threat to the Middle Kingdom's security.¹⁹⁴ Now Japan is seen as a useful outlet for Chinese nationalism, what one scholar has termed a "virulent new form of state-sanctioned anti-Japanese nationalism."¹⁹⁵ Yet rather than work to reduce tensions with other states in the Western Pacific, the CCP's jingoist attitudes seem designed to produce the opposite effect.

China claims its rise is intended to be peaceful, but its actions tell a different story: that of a revisionist power seeking to dominate the Western Pacific. Beijing has asserted that its "core

190 Odd Arne Westad, "In Asia, Ill Will Runs Deep," *New York Times*, January 6, 2013, available at http://www.nytimes.com/2013/01/07/opinion/why-china-and-japan-cant-get-along.html?_r=0.

191 Aaron Friedberg, *A Contest for Supremacy* (New York: W. W. Norton & Company, 2011), p. 51.

192 Jonathan Holslag, *Seas of Troubles: China and the New Contest for the Western Pacific*, unpublished draft (Brussels Institute of Contemporary China Studies, 2011); Yifu Dong, "China's Clickbait Nationalism," *Foreign Policy*, July 25, 2015, available at <http://foreignpolicy.com/2015/07/25/china-clickbait-nationalism-japan-war/>; Friedberg, *A Contest for Supremacy*, p. 161; and Michael Pillsbury, *The Hundred Year Marathon* (New York: Henry Holt and Company, 2015), pp. 99–107.

193 In defeat, China was compelled by the Treaty of Shimonoseki to cede the island of Taiwan to Japan. Although not included in the treaty's terms, Japan also annexed the uninhabited Senkaku Islands, which Tokyo viewed as part of the agreement regarding Taiwan.

194 Beijing encouraged Tokyo to abandon its traditional ceiling of spending no more than 1 percent of its GDP on defense, urging the figure be revised upward to 3 percent. Deng Xiaoping declared China "in favor of Japan's Self-Defense Force buildup." Michael Pillsbury, "A Japanese Card?" *Foreign Policy*, Winter 1978–1979, pp. 3–30. Cited in Pillsbury, *The Hundred Year Marathon*, p. 207.

195 Westad, "In Asia, Ill Will Runs Deep." Westad states, "Most Chinese today therefore regard Japan's wealth, and its position as America's main ally in Asia, as results of ill-gotten gains." See also Anna Fifield, "War between China and Japan Ended 70 Years Ago, But Fighting Continues," *Washington Post*, July 22, 2015, available at https://www.washingtonpost.com/world/asia_pacific/the-war-between-china-and-japan-ended-70-years-ago-the-fighting-continues/2015/07/21/a7f52d29-28ae-4ef7-b48c-56b5cebad3da_story.html.

interests” include absorbing not only Taiwan but also Japan’s Senkaku Islands and most of the 1.4 million square miles that make up the East China and South China Seas, where eight other countries maintain various territorial and maritime claims. The CCP has been unapologetic about pursuing those goals. In 2010, for example, China’s then foreign minister, Yang Jiechi, dismissed concerns over Beijing’s expansionism in a single breath, saying, “China is a big country, and other countries are small countries, and that is just a fact.” Or as Singapore’s Lee Kuan Yew put it:

They [the Chinese] expect Singaporeans to be more respectful of China as it becomes more influential. They tell us that countries big or small are equal: we are not a hegemon. But when we do something they do not like, they say you have made 1.3 billion people unhappy. . . . So please know your place.¹⁹⁶

As if to confirm Lee’s observations, Beijing has engaged in bullying smaller states in advancing its claims in the South China Sea. In March 2014, Chinese Coast Guard boats blocked the Philippine navy from accessing its outposts on the Spratly Islands. Two months later, China moved an oilrig into Vietnam’s exclusive economic zone, clashing with Vietnamese fishing boats. The moves echoed earlier incidents in the East China Sea. In September 2010, as punishment for detaining a Chinese fishing boat captain who had rammed a Japanese coast guard vessel, China temporarily cut off its exports to Japan of rare-earth elements, which are essential for manufacturing cell phones and computers. In 2012, China began sustained patrols around the Senkaku Islands¹⁹⁷ lasting for weeks at a time. At the same time, widespread anti-Japanese protests broke out in dozens of cities across China, with thousands of Chinese surrounding Japan’s embassy in Beijing. The CCP encouraged the protestors, broadcasting messages such as “Japan has violated China’s rights and it is only natural to express your views.”¹⁹⁸ In November 2013, China unilaterally declared an “air defense identification zone,” subject to its own air-traffic regulations, over the disputed Senkaku Islands, warning that it would take military action against aircraft that refused to comply.

In 2014, two years after reclassifying the South China Sea as a “core national interest”¹⁹⁹ (along with Taiwan and Tibet), China commenced constructing islands in the South China Sea on a cluster of reefs, and expanding a number of small islands, creating new facts on the ground that have enabled it to construct port facilities, military buildings, and airstrips capable of

196 Han Fook Kwang et al., *Lee Kuan Yew: Hard Truths to Keep Singapore Going* (Singapore: Straits Times Press, 2011), p. 331.

197 The Chinese refer to the Senkaku Islands as the Daiyou Islands.

198 “Anti-Japan Protests Spread across China,” *Financial Times*.

199 China’s “core interests” are three: maintaining the existing political system under the unquestioned rule of the CCP; economic development; and defending sovereignty claims and territorial integrity. Edward Wong, “Security Law Suggests a Broadening of China’s ‘Core Interests,’” *New York Times*, July 2, 2015, available at http://www.nytimes.com/2015/07/03/world/asia/security-law-suggests-a-broadening-of-chinas-core-interests.html?_r=0. Chinese officials have indicated that Beijing would use force to protect its core interests. Caitlin Campbell, Ethan Meick, Kimberly Hsu, and Craig Murray, *China’s “Core Interests” and the East China Sea* (Washington, DC: U.S.-China Economic and Security Review Commission, May 10, 2013), p. 3.

landing any military aircraft. These facilities enable the PLA to conduct sustained air and sea patrols of the area.²⁰⁰

These actions seem designed to reinforce, rather than dispel, the animosity, if not fear, of China's neighbors.²⁰¹ Yet stirring the nationalist passions of a people can be akin to mounting the back of a tiger, in that the Party cannot easily compromise on issues it uses to inflame popular passions, for fear of creating a nationalist backlash on itself.²⁰²

Nor is the behavior of China's leaders a historical aberration; indeed, it is the norm. As Aaron Friedberg notes:

As they begin to assert themselves, rising powers usually feel impelled to challenge territorial boundaries, international institutions, and hierarchies of prestige that were put in place when they were still relatively weak. Their leaders and people typically feel that they were left out unfairly when the pie was divided up, and may even believe that because of prior weakness, they were robbed of what ought to be theirs.²⁰³

Since the onset of the Industrial Revolution in the late eighteenth century, all rising powers have exhibited aggressive forms of behavior. In the case of China, John Mearsheimer

200 Rupert Wingfield-Hayes, "China's Island Factory," *BBC News*, September 9, 2014, available at <http://www.bbc.co.uk/news/resources/idt-1446c419-fc55-4a07-9527-a6199f5dcoe2>; and Derek Watkins, "What China Has Been Building in the South China Sea," *New York Times*, October 27, 2015, available at <http://www.nytimes.com/interactive/2015/07/30/world/asia/what-china-has-been-building-in-the-south-china-sea.html>. A number of reefs have been destroyed outright by the Chinese activity, causing extensive damage to the marine ecosystem.

201 Robert Kaplan notes that the Chinese people are "inundated with the nostrum, *While China only defends, the United States conquers*." Kaplan, seeking to convey how pervasive this attitude has become among China's educated class, cites a Chinese student confronting him with the words, "Why does the United States meet our harmony and benevolence with hegemony? U.S. hegemony will lead to chaos in the face of China's rise!" Robert D. Kaplan, *Asia's Cauldron* (New York: Random House, 2014), p. 166.

202 For those who assert that China's leaders will gradually see the virtue in seizing upon the pillar of democratization—legitimacy through the ballot box—there is no guarantee it will enable the regime to abandon easily the pillar of nationalism. If history were a guide, any Chinese transition from authoritarianism to democracy would increase appeals to nationalism and the likelihood of conflict with others. Friedberg, *A Contest for Supremacy*, p. 51; and Edward D. Mansfield and Jack Snyder, *Electing to Fight: Why Emerging Democracies Go to War* (Cambridge, MA: MIT Press, 2005). According to Lee Kuan Yew, however, this is not a problem the world will have to confront: "China is not going to become a liberal democracy; if it did, it would collapse. Of that, I am quite sure, and the Chinese intelligentsia also understands that. . . . To achieve the modernization of China, her Communist leaders are prepared to try all and every method, except for democracy with one person and one vote in a multiparty system. Their two main reasons are the belief that the Communist Party of China must have a monopoly on power to ensure stability; and their deep fear of instability in a multiparty free-for-all, which would lead to a loss of control by the center over the provinces, with horrendous consequences, like the warlord years of the 1920s and '30s." Lee Kuan Yew, Speech, World Chinese Entrepreneurs Convention, Singapore, August 10, 1991; and Lee Kuan Yew, "Question and Answer Session," International Institute for Strategic Studies, London, UK, September 23, 2008. Cited in Graham Allison and Robert Blackwill, eds., with Ali Wyne, *Lee Kuan Yew: The Grand Master's Insights on China, the United States, and the World* (Cambridge, MA: MIT Press, 2013), pp. 13–14.

203 Friedberg, *A Contest for Supremacy*, p. 40.

argues, “China, like all previous potential hegemon, [will] be strongly inclined to become a real hegemon.”²⁰⁴

Yet China’s case is different, and arguably more worrisome, than the experiences of other rising powers over the past two centuries in that aggressive nationalism may prove to be *the only source of regime legitimacy* in the wake of diminishing economic growth.²⁰⁵

“Asia’s Berlin”

As was the case with Berlin during the Cold War, Taiwan today offers a contrast for the Chinese between their life under the CCP and conditions on the diplomatically isolated off-shore island. Like West Berlin, Taiwan’s independence from China has become a symbol to countries throughout the Western Pacific and beyond. As Robert Kaplan finds:

Were Taiwan’s de facto independence ever to be seriously compromised by China, American allies from Japan to Australia—including all the countries around the South China Sea—would quietly reassess their security postures, and might well accommodate themselves to Chinese ascendancy. More hinges on Taiwan than the fate of the island itself and its 23 million inhabitants.²⁰⁶

As the Chinese Communist Party finds itself compelled to deal with China’s declining economic growth, social welfare stresses, and growing environmental degradation, the path chosen by Taiwan—the “Taiwan Model”—appears increasingly attractive to many Chinese.

On July 1, 2015, the CCP passed China’s new National Security Law (NSL). The law covers a wide range of issues. The one that drew Taiwanese attention in particular was its proclamation that “compatriots from Taiwan” (i.e., Chinese citizens) are obligated to safeguard the territorial integrity of China, as defined by the CCP. Playing its “nationalism card,” the PLA conducted military drills for an invasion of Taiwan during the 2015 visit of Tsai Ing-wen, the

204 John Mearsheimer, *The Tragedy of Great Power Politics* (New York: W. W. Norton & Company, 2001), p. 400; and Samuel P. Huntington, “America’s Changing Strategic Interests,” *Survival*, January/February 1991, p. 12. Cited in Friedberg, *A Contest for Supremacy*, p. 41.

205 The rising great powers of the mid-nineteenth century—Prussia/Germany, Japan, and the United States—all enjoyed high levels of regime legitimacy either through the vote or forms of monarchical government. All three also enjoyed sustained levels of healthy economic growth. Arguably they all benefited from a popular belief that their country’s form of government was acceptable. The Soviet Union—the twentieth century’s rising power—for a time after World War II could plausibly claim that communism was the wave of the future and point to rapid economic growth (more accurately, economic recovery) for support. Over time, these pillars of legitimacy faded and the regime was increasingly left with appeals to its people on the basis of the country’s superpower status and its leadership during the Great Patriotic War. Two of these rising powers avoided engaging in wars of aggression: the United States and the Soviet Union. Unlike the other three rising powers, the United States is a democracy. Arguably, nuclear weapons made war too risky a proposition for the Soviet Union during the Cold War era (although it pursued an aggressive revisionist strategy for most of its sixty-four-year history). Both autocratic Germany and Japan engaged in large-scale wars of aggression during their rise to great-power status.

206 Kaplan, *Asia’s Cauldron*, p. 143. Kaplan perceptively coins the phrase “Asia’s Berlin” in his book.

head of Taiwan's pro-independence Democratic Progressive Party (DPP),²⁰⁷ to Washington. Attempting to portray Taiwan as a U.S. puppet, Beijing called her visit a "job interview." China's ambassador to the United States lectured that Tsai should be more concerned about meeting the approval of China's people than with visiting America.²⁰⁸

Doubling Down, Striking Out

In 2017, Beijing continues its increasingly assertive foreign policy, with the principal focus being on establishing its control over the South China Sea. The PLA remains engaged in overseeing the dredging of areas around several of the more conspicuous islands to increase their size to the point where significant additional military infrastructure (such as airstrips and radar stations) can be built to enforce China's claims of sovereignty.

The United States declares it does not recognize these artificial creations as sovereign Chinese territory. To make its point, U.S. warships regularly sail within the disputed islands' twelve-mile boundary, accompanied by strong protests from Beijing over the Americans' "provocative actions that can only harm the region's peaceful development." After a lull of some months, on September 6, 2017, Beijing announces it is establishing an Air Defense Identification Zone (ADIZ) covering much of the South China Sea.

Despite Beijing's warnings to the United States to refrain from transiting air and naval forces in these areas, the new U.S. administration sees this as an early test of its resolve to make good on its commitment to support America's allies and friends in the Western Pacific. Less than two weeks after the ADIZ is declared, U.S. Air Force and Navy elements begin conducting regular flight and freedom of navigation operations (FONOPS) through the ADIZ and within the twelve-mile boundary of China's artificial islands, respectively. Beijing issues protests but takes no immediate further action. By early October, commercial shipping and air flights are defying China's warnings and transiting the zone.

In November, PRC coast guard vessels begin harassing some commercial ships transiting the zone, moving across their bows and compelling them to take evasive action. On one occasion this results in a tanker colliding with a Chinese ship. PLA Air Force (PLAAF) aircraft "buzz" (fly dangerously close to) several commercial aircraft. In response, in late November the U.S., Japanese, and Australian navies begin providing convoy escorts to commercial vessels transiting the zone, as well as fighter escorts for commercial flights. Once again, faced with the prospect of escalating the crisis, Beijing backs down.

207 The Chinese Communist Party undertook a major propaganda campaign to discourage the Taiwanese people from voting for DPP candidates, including airing on China's state-run television network, CCTV, footage of a PLA assault on Taiwan's presidential palace. The footage was woven into other footage from China's military exercises, named *Stride 2015 Zhurike*. See J. Michael Cole, "Chinese PLA Simulates 'Attack' on Taiwan's Presidential Office," *The Diplomat*, July 22, 2015, available at <http://thediplomat.com/2015/07/chinese-pla-simulates-attack-on-taiwans-presidential-office/>.

208 Jakub Piasecki, "Beijing's Games in the Taiwan Strait," *The Diplomat*, July 9, 2015, available at <http://thediplomat.com/2015/07/beijings-games-in-the-taiwan-strait/>.

Much of the international press and social media celebrate the victory of freedom of navigation. The Chinese people, however, are angry and shamed over the country's humiliating retreat. There are widespread protests in China against the "lawless" behavior of other states in violation of China's sovereignty, coupled with growing anger at the government, which appears to be accepting this humiliating development.

The demonstration of U.S. resolve, sustained by the support of key allies in the region and by the strong approval of Association of Southeast Asian Nation (ASEAN) states, leads Indonesia, Malaysia, and Vietnam to seek closer security ties with the United States. The result is a serious diplomatic setback for Beijing, compounding the declining internal support for the communist regime stemming from the country's growing economic difficulties and environmental problems.

The Bear Stirs

A Nuclear Buildup

The CCP's security challenges are not limited to the Western Pacific. To the north, Russia, for years China's de facto ally of convenience, continues rebuilding its armed forces, which were shattered when the Soviet Union collapsed in 1991. Moscow's nuclear arm was comparatively well protected and arguably remains its sole link to a time when it enjoyed superpower status.

The gap between Russia's conventional forces and those of the United States widened with the U.S. military's demonstration of its precision-warfare capabilities in the First Gulf War. Consequently, Russia's leaders felt compelled to rely increasingly on their nuclear arsenal to offset their military's conventional inferiority. Beginning in 1999, major Russian military exercises began incorporating the use of very-low-yield nuclear weapons.²⁰⁹ The *Zapad-1999* (West-1999) exercise centered on a NATO attack on the Kaliningrad oblast. After three days of defensive action, the Russians executed a limited nuclear strike with four air-launched cruise missiles from heavy bombers whose objective was to deescalate the conflict by posing the threat of large-scale nuclear use.²¹⁰ More recently, in *Vostok-2010* (East-2010) the Russian military conducted one of its largest military exercises since the Cold War. As its name suggests, the field exercise took place in eastern Russia, culminating with two nuclear-capable Tochka-U (SS-21) missiles being launched against the command post of a hypothetical

209 Miriam John and Joseph Braddock, *The Nuclear Weapons Effects National Enterprise*, Report of the Defense Science Board/Threat Reduction Advisory Committee Task Force (Washington, DC: Office of the Under Secretary of Defense/Acquisition, Technology, and Logistics, June 2010), pp. 8–9.

210 Nikolai N. Sokov "The Evolving Role of Nuclear Weapons in Russia's Security Policy," in Cristina Hansell and William C. Potter, eds., *Engaging China and Russia on Nuclear Disarmament* (Monterey, CA: Center for Nonproliferation Studies, April 2009), p. 78; and Gunnar Arbman and Charles Thornton, *Russia's Tactical Nuclear Weapons Part I: Background and Policy Issues*, FOI-R-1057-SE (Stockholm: Swedish Defense Research Agency, November 2003), pp. 29–30. Cited in Watts, *Nuclear-Conventional Firebreaks and the Nuclear Taboo*.

opponent.²¹¹ As in the *Zapad-99* exercise, the Russians employed low-yield weapons as a means of addressing Russia's conventional inferiority by escalating the conflict to compel their enemy to deescalate it—"escalate to deescalate."

In September 2014, the Russian military conducted the largest field exercise since the Cold War, *Vostok-2014*, involving over 100,000 troops. Once again the exercise involved Russia's nuclear missile strikes, including cruise missiles and Iskander ballistic missiles.²¹²

Just as worrisome to China, Russia continues its violations of the INF Treaty, with respect to both cruise and ballistic missiles.²¹³ There have been numerous reports alleging that a Russian GLCM violates treaty provisions.²¹⁴ Concerns have also been expressed regarding Russia's new ICBM, the RS-26, or Rubezh (a modified version of the RS-24, SS-27 Mod 2) ICBM, which the

211 Roger McDermott, "Reflections on Vostok 2010: Selling an Image," *Eurasia Daily Monitor*, 7, Issue 134, July 13, 2010, available at http://www.jamestown.org/single/?no_cache=1&tx_ttnews%5Btt_news%5D=36614.

212 Roger McDermott, "Vostok and Russia's Hypothetical Enemies (Part One)," *Eurasia Daily Monitor*, 11, Issue 167, September 23, 2014, available at http://www.jamestown.org/single/?tx_ttnews%5Btt_news%5D=42859&no_cache=1#.VhqO7cuFGRM. See also Roger McDermott, "Vostok 2014 and Russia's Hypothetical Enemies (Part Two)," *Eurasia Daily Monitor*, 11, Issue 172, September 30, 2014, available at [http://www.jamestown.org/single/?tx_ttnews\[tt_news\]=42893&tx_ttnews\[backPid\]=7&cHash=ede99f727152b5c0161dfce17247b9fe#.VhqR3MuFGRN](http://www.jamestown.org/single/?tx_ttnews[tt_news]=42893&tx_ttnews[backPid]=7&cHash=ede99f727152b5c0161dfce17247b9fe#.VhqR3MuFGRN).

213 The treaty is formally known as the Russian-American Intermediate Range Nuclear Forces Treaty. It bans the deployment of ground-launched ballistic and cruise missiles with ranges between 500–5,500 km.

214 In a letter dated July 28, 2014, President Barack Obama informed Russia's president, Vladimir Putin, that the United States considers Russia in violation of the INF Treaty. As the Compliance Report provided by the Obama administration to Congress only states that the violation concerns a GLCM in breach of the INF Treaty range limitations, some experts believe the missile in question is the R-500, a derivative of the Iskander-K missile. "R-500/Iskander-K GLCM," *GlobalSecurity.org*, available at <http://www.globalsecurity.org/wmd/world/russia/iskander-k.htm>; and Hans M. Kristensen, "Russia Declared in Violation of the INF Treaty: New Cruise Missile May Be Deploying," *Strategic Security Blog*, Federation of American Scientists, July 30, 2014, available at <https://fas.org/blogs/security/2014/07/russia-inf/>. However, in December 2014, Rose Gottemoeller, the under secretary of state for arms control and international security, stated that the Russian violation concerns "a ground-launched cruise missile. . . . It's not the Iskander [R-500]." While the United States has specifically cited a cruise missile as the source of Russia's treaty violation, this does not preclude the possibility that it may be violating the treaty with other missile systems as well. Mike Eckel, "Impasse over U.S.-Russia Nuclear Treaty Hardens as Washington Threatens 'Countermeasures,'" *Radio Free Europe/Radio Liberty*, October 19, 2015, available at <http://www.rferl.org/content/russia-nuclear-treaty-us-threatens-countermeasures/27250064.html>; and "U.S. Nuclear Arms Control Policy: A Talk with Under Secretary of State Rose Gottemoeller," The Brookings Institution, December 17, 2014, available at http://www.brookings.edu/~media/events/2014/12/17-arms-control/20141217_nuclear_policy_gottemoeller_transcript.pdf.

U.S. intelligence community believes may also have been tested at ranges prohibited by the INF Treaty.²¹⁵

The Problem of Siberia

Of equal concern to Beijing is Russia's growing resistance to Chinese migration into Siberia. Siberia is as resource-rich and people-poor as China is the opposite. The Chinese-Siberia border stretches nearly 2,800 miles, roughly the same distance as from New York City to Los Angeles. The border was drawn up in the Convention of Peking in 1860, during China's century of humiliation, a fact the Chinese leadership has not forgotten.

Along the border area six million Russians confront over 90 million Chinese "neighbors." A growing number of Chinese-owned factories, staffed by increasing numbers of Chinese nationals, operate in Siberia. As one observer proclaims, "Facts on the ground can become lines on the map."²¹⁶ There is increasing talk among Chinese elites of Siberia joining the recovery of Taiwan, the Senkakus Islands, and the South China Sea as part of the "China Dream." Russia's President Putin is extremely sensitive to such dangers, arguing publicly, "If we do not take practical steps to advance the Far East soon, after a few decades, the Russian population will be speaking Chinese, Japanese, and Korean."²¹⁷

While China shows no sign of employing its military to seize Siberia, as reflected in the series of *Vostok* exercises, the threat from China is increasingly taken seriously by the Russian military and its political masters. While the Soviet Union was able to mass dozens of divisions along its border with China during tense periods during the Cold War, this is no longer possible. The Chinese armed forces are both far larger than the Russian, and increasingly sophisticated. Russia's conventional force inferiority is likely to be aggravated further by the country's

215 Officially the RS-26 is an intercontinental ballistic missile. However, it has a different weight class and is smaller than current Russian Topol-M and Yars intercontinental ballistic missiles. In terms of dimensions, it is similar to the new Russian submarine-launched Bulava. Although the RS-26 is by definition an ICBM, its demonstrated range of 5,800 km appears to be close to the missile's maximum range. The RS-26 demonstrated this range with a single warhead. It is possible that it will fall short of meeting ICBM range standards when armed with multiple warheads. In this case, the missile is defined as an IRBM. Medium- and intermediate-range ballistic missiles with a range of up to 5,500 km are banned by the INF Treaty. The RS-26 missile was launched as part of the 2013 nuclear exercise. See Amy Woolf, *Russian Compliance with the Intermediate Range Nuclear Forces (INF) Treaty: Background and Issues for Congress*, R43832 (Washington, DC: Congressional Research Service, October 13, 2015), available at <https://www.fas.org/sgp/crs/nuke/R43832.pdf>. See also "Army Brigade to Be Equipped with Iskander Systems This Year—Commander," *ITAR-TASS*, September 29, 2009; "Ground Forces Personnel Will Be Armed with Iskanders," *Nezavisimoye Voyennoye Obozreniye*, October 29, 2009; "Russia: General Staff Chief Gerasimov Directs Key Personnel Video Conference on Strategic Exercise," *Ministry of Defense of the Russian Federation*, November 1, 2013; and "Iskander, Tochka-U tactical missiles launched in Russia's snap drill," *Interfax-AVN*, October 30, 2013. Cited in Mark B. Schneider, *Confirmation of Russian Violation and Circumvention of the INF Treaty* (Fairfax, VA: National Institute for Public Policy, February 2014).

216 Frank Jacobs, "Why China Will Reclaim Siberia," *New York Times*, January 13, 2015, available at <http://www.nytimes.com/roomfordebate/2014/07/03/where-do-borders-need-to-be-redrawn/why-china-will-reclaim-siberia>.

217 Mikhail Alexseev, "In the Shadow of the 'Asian Balkans': Anti-Chinese Alarmism and Hostility in the Russian Far East," in *Immigration Phobia and the Security Dilemma: Russia, Europe, and the United States* (Cambridge, UK: Cambridge University Press, 2005), p. 95.

demographic decline. What Moscow does enjoy is vertical escalation dominance, since it possesses far more nuclear weapons than China.²¹⁸

A Historic Weekend at the August 1st Building

Over the long weekend of January 5–7, 2018, Xi Jinping, the CCP’s general secretary and China’s president, meets with the party’s Central Military Commission (CMC), which he chairs. There is one item on the agenda: how to redress the military imbalance between China, and the United States and Russia.

Xi opens the session by telling his colleagues that:

We are in a long-term rivalry with the Americans and the Russians. They are responding with increasing hostility to our peaceful development. We cannot assume they will view our continued rise with acceptance. They believe the one-sided agreements they imposed on us when we were weak must be respected even though we are strong. Nor will the Chinese people accept returning to a period where our rights are not respected by other powers.

Xi goes on to say that the recent events in the South China Sea have convinced both the Party’s civilian and military leaders that the United States enjoys military advantages in both horizontal (geographic) and vertical (increased intensity) escalation. It is equally clear, he argues, that the Russians are determined to enhance their nuclear forces to maintain escalation dominance over China as a means of preserving their privileged position in Siberia, to the point of waging “economic warfare” against Beijing by limiting its access to key resources.

Horizontal Escalation

China’s leaders are uneasy regarding their country’s ability to withstand a U.S.-imposed maritime blockade that would choke off imports of a wide range of products and raw materials essential to the PRC’s economic health, as well as its export trade. To hedge against this threat, Beijing has for years been slowly but steadily stockpiling key raw materials, such oil, as well as foodstuffs, and working to develop overland trade routes in Central Asia (the so-called New Silk Road).²¹⁹ But neither stockpiles of strategic materials nor overland trade routes could sustain the loss of Beijing’s maritime trade for long. Nor can China count on Russia to guarantee that overland routes through its territory will remain open. The PLA’s assess-

²¹⁸ Richard Rousseau, “Will China Colonize and Incorporate Siberia?” *Harvard International Review*, July 9, 2012, available at <http://hir.harvard.edu/will-china-colonize-and-incorporate-siberia/>.

²¹⁹ According to China’s state-run Xinhua News Agency, the New Silk Road will begin in Central China and extend through Central Asia and northern Iran before moving through Iraq, Syria, and Turkey into the Balkan states, through Central Europe, then to Antwerp. Shannon Tiezzi, “China’s ‘New Silk Road’ Vision Revealed,” *The Diplomat*, May 9, 2014, available at <http://thediplomat.com/2014/05/chinas-new-silk-road-vision-revealed/>. At present, however, the road is more dream than reality. China is also working on a maritime Silk Road that would include key port facilities in Malaysia, India, Sri Lanka, Pakistan, and Kenya. James McBride, *Building the New Silk Road*, Backgrounder (Washington, DC: Council on Foreign Relations, May 25, 2015), available at <http://www.cfr.org/asia-and-pacific/building-new-silk-road/p36573>.

ments conclude that it could not break a distant blockade imposed by the United States and its allies at various Southeast Asia chokepoints. Xi is concerned that internal order may not hold up under the severe belt-tightening that would be necessary if China is confronted with a prolonged blockade.²²⁰

Vertical Escalation: Russia

The Commission turns to address the “Russian question.” The PLA’s intelligence briefer reminds the CMC members that Russia is actively engaged in subverting the INF Treaty limitations, an effort it has pursued for over a decade. As far back as 2007 a senior Russian official told the American defense secretary that Moscow wanted to withdraw from the INF Treaty so it could deploy intermediate-range missiles “to counter Iran, Pakistan, and China.”²²¹ The commissioners are reminded that Putin himself has stated, “[I]t will be difficult for [Russia] to keep within the framework of the treaty in a situation when other countries do develop such weapons systems, and among those are countries in our near vicinity.”²²² In August 2014, Russia’s deputy defense minister, Anatoly Antonov, pointed out, “[A]most 30 countries have such [intermediate range] missiles in their arsenals. The majority of them are in close proximity to Russia.”²²³ Proof that Russia’s subversion of the treaty is directed against China as well as NATO is found in the deploying of RS-26 missiles in Russia’s Far East, where they lack the range to reach Europe.²²⁴ Moscow’s employment of nuclear-capable missiles in its Vostok exercises indicates that it wants to preserve the option to use them in a conflict with China.

220 China appears to be planning to fill its strategic petroleum reserve sites at Qingdao and Huizhou, whose combined capacity at Spring 2015 import levels was 168 million barrels, or roughly 23 days’ supply. “China Retakes Top Oil-Buyer Spot from U.S. Amid Stockpiling,” *Bloomberg Business*, July 12, 2015, available at <http://www.bloomberg.com/news/articles/2015-07-13/china-crude-oil-imports-rebound-as-new-emergency-reserves-open>. The U.S. Strategic Petroleum Reserve stands at roughly 700 million barrels, or around three months’ supply at current import levels. Grant Smith, “China Is Hoarding the World’s Oil,” *Bloomberg Business*, September 17, 2015, available at <http://www.bloomberg.com/news/articles/2015-09-17/even-a-slowing-china-is-oil-s-best-defense-against-deeper-slump>. Since at least 2008, the Chinese government has manipulated prices to encourage domestic agricultural production as well as the import of foodstuffs. The government also subsidized storage costs for excess grains. This year finds China’s reserves of corn, rice, and wheat at record levels, all in the name of “food security.” Unfortunately for Beijing, storage space has not kept up with the growing quantities of reserves, thus most of them are stored in the open or in improvised shelters where they are susceptible to disease, mold, and pests. Fred Gale, “China’s Grain Stockpiling Distorts Market,” *Nikkei Asian Review*, March 17, 2015, available at <http://asia.nikkei.com/Viewpoints/Perspectives/China-s-grain-stockpiling-distorts-market?page=1>.

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

222 Luke Harding, “Putin Threatens Withdrawal from Cold War Nuclear Treaty,” *The Guardian*, October 12, 2007, available at <http://www.theguardian.com/world/2007/oct/12/russia.usa1>.

223 Yuri Gavrilov, “Russian Deputy Defense Minister Says INF Allegations Part of U.S. ‘Anti-Russian’ Spin Campaign,” *Rossiyskaya Gazeta*, August 14, 2014. Cited in Woolf, *Russian Compliance with the Intermediate Range Nuclear Forces (INF) Treaty*.

224 Pavel Podvig, “First RS-26 to Be Deployed in Irkutsk in 2015,” *Russian Strategic Forces*, July 1, 2014, available at http://russianforces.org/blog/2014/07/first_rs-26_to_be_deployed_in.shtml; and “RS-26 Rubezh/Avangard—Road Mobile ICBM,” *GlobalSecurity.org*, available at <http://www.globalsecurity.org/wmd/world/russia/ss-31.htm>.

Simply put, says the PLA briefer, Russia, which is inferior in conventional arms against both China and NATO, seeks to trump the PRC's advantage in intermediate-range missiles, most of them armed with conventional warheads, by fielding a class of similar missiles—all armed with nuclear warheads. This would add to Moscow's already-substantial advantage over China in strategic nuclear weapons and in so-called tactical nuclear weapons.²²⁵ It would also enhance Moscow's escalation dominance within the context of its "escalate-to-deescalate" nuclear doctrine. Given Russia's actions and its leader's declarations with respect to nuclear weapons, China, the briefer concludes, ignores this threat at its peril.

Vertical Escalation: The United States

With respect to vertical escalation and the United States, should China escalate a crisis, the United States has the ultimate trump card: the ability to strike at China directly on a far greater scale and across a wider range of targets than can the PLA in response. Chinese military leaders are particularly concerned with the Americans' Conventional Prompt Global Strike (CPGS) capability, as well as its great numerical advantage in nuclear weapons and its enormous potential to wage cyber warfare against both China's military and its economic infrastructure.

The CMC sees the U.S. military's CPGS capability as a potential means for the United States to achieve "absolute security" when combined with cruise and ballistic missile defenses. America's strategic forces are seen as giving the United States the ability to act preemptively against China. Chinese military writings on the subject conclude that CPGS forces, as "strategic conventional weapons," can be more readily employed than nuclear weapons, to include being substituted for nuclear strikes against a growing range of targets.²²⁶

The CMC is briefed on a "reasonable worst-case" scenario. It depicts a U.S. preemptive strike emerging in a late 2020s conflict in the Western Pacific in which Washington and its allies are facing defeat at key points along the First Island Chain and in the South China Sea. To forestall defeat and accept China's right to exercise control over its core interests, the American president decides to escalate the conflict. The United States executes a preemptive attack against China's nuclear forces. The attack is conducted by elements of the U.S. military's CPGS force, to include long-range stealthy bombers and cruise missiles, hypersonic weapons, as well as a

225 Russia also enjoys a clear edge in numbers of tactical nuclear weapons over the United States and its NATO allies. The United States is estimated to have some 760 nonstrategic or "tactical" nuclear weapons, including between 150–200 nuclear gravity bombs in Europe under sharing agreements with its NATO allies, while Russia deploys roughly 2,000 operational tactical nuclear weapons and "may have many more in reserve." Oliver Meier and Simon Lunn, "Trapped: NATO, Russia, and the Problem of Tactical Nuclear Weapons," *Arms Control Today*, January 9, 2014, available at http://www.armscontrol.org/act/2014_01-02/Trapped-NATO-Russia-and-the-Problem-of-Tactical-Nuclear-Weapons. Estimates of Russia's tactical nuclear weapons reserve run between 1,000 and 6,000, with recent Defense Department and independent commission findings centered around 3,000–4,000 weapons. See Woolf, *Nonstrategic Nuclear Weapons*, p. 22, available at <https://www.fas.org/sgp/crs/nuke/RL32572.pdf>.

226 Lora Saalman, *Prompt Global Strike: China and the Spear* (Honolulu, HI: Asia-Pacific Center for Security Studies, April 2014), p. 8.

small number of nuclear weapons delivered by American land- and sea-based missiles. The strike is supported by cyber attacks designed to confuse and disrupt China's early warning and command-and-control systems. While a few dozen Second Artillery nuclear-armed missiles survive the attack, the CCP leadership confronts a dilemma in deciding whether or not to launch a counterstrike against the United States. Their fear is that advanced U.S. missile defenses will reduce significantly this "broken-back" retaliatory strike.

Even following a successful broken-back Chinese counter strike, the Americans will still retain a nuclear force much larger than China's, as well as most of its CPGS force. Still, the Second Artillery estimates some Chinese nuclear weapons, perhaps a dozen or so, would reach their targets, inflicting significant damage on the United States. Yet the PLA's second-strike attack would effectively exhaust its nuclear forces, leaving it open to devastating attacks or nuclear blackmail by the United States, Russia or both.

Some CMC members argue that China's minimum deterrent posture rests on the belief that the Americans would not risk such an attack on China at the cost of suffering even the relatively modest damage that would ensue from a broken-back response. Others respond by reminding their colleagues that both Cold War "hegemons" (that is to say, the United States and Soviet Russia) seriously considered preventive attacks on China's infant nuclear capability, and that the Americans planned to use nuclear weapons against Chinese forces in the event of a resumption of the war in Korea.²²⁷ The briefer notes that while China's nuclear force is far more imposing now than it was in the mid- and late 1960s, the range of American strategic strike weaponry and delivery systems is more imposing as well, as are its defenses. And the Russians have improved the design and the accuracy of their nuclear weapons and delivery systems, respectively.

Playing devil's advocate, Xi counters by noting that while the Cold War superpowers may have contemplated it, neither has used nuclear weapons since the American attacks on Japan in 1945. He points out that even following China's intervention in the Korean War when it appeared that U.S. forces might collapse, Washington rejected MacArthur's proposal to use

227 In addressing the threat of Chinese military intervention in the event of a Second Korean War during a September 25, 1962 meeting, General Maxwell Taylor, serving as chairman of the Joint Chiefs of Staff, made the case for employing nuclear weapons "at once" if the Chinese crossed the Yalu River. President John Kennedy responded, "I don't think you could say if they came across the Yalu River, but you could say that we certainly use it [nuclear weapons] if they attack in force across the cease-fire line." General Taylor asserted that the critical factor was to employ nuclear weapons early in the conflict, to demonstrate to the Chinese "that we would not be prepared to hold them back by conventional methods if they came en masse." Francis J. Gavin, *Nuclear Statecraft: History and Strategy in America's Atomic Age* (Ithaca, NY: Cornell University Press, 2012), p. 45. During the 1969 crisis between China and the Soviet Union, Soviet defense minister Marshal Andrei Grechko argued the need for "eliminating the Chinese threat forever," suggesting Moscow execute a preemptive nuclear attack on China's nuclear forces. Arkady Shevchenko, *Yu Mosike Juelie* [Breaking with Moscow] (Beijing: Shijie zhishi, 1986), pp. 194–195; and Christian Ostermann, "East German Documents on the Border Conflict, 1969," *Cold War International History Project Bulletin* 6–7, Winter 1995/1996, p. 187. Cited in Yang Kuisong, "The Sino-Soviet Border Clash of 1969: From Zhenbao Island to Sino-American *Rapprochement*," *Cold War History*, 1, No. 1, August 2000, p. 32.

nuclear weapons against PLA forces,²²⁸ even though China had no nuclear weapons of its own. He asks his colleagues if they agree that no rational state would engage in nuclear war.

China's minister of national defense points out that while a rational state would not use nuclear weapons first, Americans cannot be counted on to act rationally. He points out,

The Americans said they would not fight for Korea in 1950, or send combat forces to Vietnam. Then they did. They told Saddam Hussein that Kuwait was not their affair prior to the Gulf War. Then they attacked. They said Syria's Assad must be deposed and warned him not to use chemical weapons, and then failed to back up their policy. We must conclude that the Americans either have a long history of duplicity, or are irrational, or both. Either way, we cannot trust them.

Another CMC member adds, "The Russians are even worse than the Americans."

The minister of national defense re-injects himself into the discussion, pointing out that:

Research in the cognitive sciences, particularly over the last two decades, suggests that there is no such thing as "rational economic man," let alone "rational strategic man."²²⁹ Why did Hitler declare war on three states: one with the world's greatest empire, another with the world's strongest economy, and the third with the world's largest country? Why did Saddam Hussein refuse to back down against the overwhelming might of the American military? We do not understand these acts as the behavior of rational people. Why risk our security on the assumption that the leaders in Washington and Moscow are rational? Why assume the current American president or

228 Xi's statement is not quite accurate. In February 1951, following China's intervention in the Korean War, General Douglas MacArthur, commander of U.S. and United Nations forces, argued for a counter-offensive that would "clear the enemy rear all across the top of North Korea [i.e., along its border with China] by massive air attacks." The general also proposed to "sever Korea from Manchuria by laying a field of radioactive wastes—the byproducts of atomic manufacture—across all the major lines of enemy [that is, Chinese] supply." Thus MacArthur did not request nuclear weapons use, although his request to employ "radioactive waste" was rejected by Washington. William Manchester, *American Caesar* (Boston: Little, Brown and Company, 1978), p. 627.

229 The strategist Hedley Bull observed, "A great deal of argument about military strategy . . . postulates the 'rational action' of a kind of 'strategic man,' a man who on further acquaintance reveals himself as a university professor of unusual intellectual subtlety. In my view this kind of formal theorizing is of great value in the discussion on strategic matters when it represents not a prediction of what will happen in the real world but a deliberate and conscious abstraction from it, which must later be related back again to the world." Cited in Freedman, *The Evolution of Nuclear Strategy*, pp. 184–185. Recent path-breaking research in the social sciences suggests that there may be fundamental individual and cultural differences with respect to how people calculate cost, benefit, and risk. See Kahneman, *Thinking Fast and Slow*; and Henrich, Heine, and Norenzayan, "The Weirdest People in the World." See also Hazel R. Markus and Shinobu Kitayama, "Culture and the Self: Implications for Cognition, Emotion and Motivation," *Psychological Review*, 98, No. 2, 1991, pp. 224–253; and Richard E. Nisbitt, Kaiping Peng, Incheol Choi, and Ara Norenzayan, "Culture and Systems of Thought: Holistic vs. Analytical Cognition," unpublished paper, n.d., available at <http://www-personal.umich.edu/%7Enisbett/images/cultureThought.pdf>. A version of this paper appears in *Psychological Review*, 108, No. 2, 2001, pp. 291–310. To get a sense of how national leaders can act in ways that are not viewed as rational by others, see Payne, *The Fallacies of Cold War Deterrence*. For a discussion of the limits of rationality when it comes to issues relating to nuclear weapons, see Krepinevich, *Critical Mass*, pp. 6–12.

Russian premier will not be succeeded by a man who is far more willing to use nuclear weapons to achieve his aims?²³⁰

The director of the General Political Department intervenes to pose the question, “If our adversaries are wholly irrational, what difference does the size of our military make?”

The defense minister responds, declaring:

There is a difference between a rational adversary and a completely irrational adversary, just as there are differences between individuals who are risk averse, those who are risk tolerant, and those who are suicidal. We do not think the Americans or the Russians are suicidal. We also do not think they are perfectly rational in the way we define rationality—in the way we calculate cost, benefit, and risks. Nor do we know how accurate our rivals understand our capabilities and our willingness to use them. But we do think that they will be less likely to take liberties with our security if we enhance our defenses. There is a difference between having no capability, a modest capability, and a robust capability. Over the last twenty years, as our conventional military strength has grown and we have fielded what the Americans call “anti-access/area-denial”²³¹ capabilities, they have reduced their presence in our waters and along the First Island Chain. Therefore, we must continue expanding our efforts to block the temptation of both Washington and Moscow to choose vertical escalation to strategic forces as a means of threatening our interests.

The defense minister has the briefer present a series of slides showing that the Americans could do much to cripple China’s nuclear forces by employing only a small fraction of their own, especially if the attack was supported by U.S. CPGS forces and a cyber offensive designed to cripple the PLA’s early warning and command-and-control systems, either by inserting malware or corrupting the data upon which it relies to function effectively.

The CMC votes unanimously to undertake an expansion of China’s strategic forces, to include enhancing its cyber arsenal and nascent regional prompt conventional strike (RPCS) forces,

230 Not surprisingly, individuals have played a key role in their adversaries’ calculations regarding the credibility of threats intended to deter. In assessing the Cuban Missile Crisis, former secretary of state Dean Acheson believed it was President Kennedy’s failure to demonstrate resolve during the initial stage of his presidency (such as in the Bay of Pigs operation, the Vienna Summit, or the Construction of the Berlin Wall), rather than the strategic nuclear balance between the United States and the Soviet Union, that encouraged Nikita Khrushchev to believe he could get away with deploying nuclear missiles in Cuba. Acheson argued, “The capability of U.S. nuclear power to devastate the Soviet Union has not declined over the past two years. The decline in the effectiveness of the deterrent, therefore, must lie in a change in Soviet appraisal of U.S. willingness to go to nuclear war over the issue which Khrushchev reiterates his determination to present.” Cited in Gavin, *Nuclear Statecraft: History and Strategy in America’s Atomic Age*, p. 67. Acheson’s views were seconded by the Soviets themselves. Arkady Shevchenko, a Soviet defector who held several sensitive jobs, including special assistant to Andrei Gromyko, recalled that the Vienna summit “was a good time to have a meeting with Kennedy. . . . Kennedy failed to deal with Nikita. That was dangerous. Nikita saw a weak man. He saw he could even intimidate him. Everyone was elated. It affected our inferiority complex about America. To find that an American President can be bullied and won’t react in a strong way. This psychological effect was very important. They [the leadership] remembered Truman, a cold warrior, and Eisenhower, who was all smiles, but who, they knew, was a tough man.” Newhouse, *War and Peace in the Nuclear Age*, pp. 150–151.

231 Anti-access (A2) capabilities are defined as those associated with denying access to major fixed-point locations, especially large forward bases, whereas area-denial (AD) capabilities are those that threaten mobile targets over an area of operations, principally maritime and air forces, including those beyond the littoral region.

as well as its nuclear force, air and missile defenses, and anti-satellite forces. The CMC members believe the United States enjoys significant advantages in all three areas of the strategic competition—nuclear, precision conventional, and cyber—as well as in a fourth, defense against ballistic and cruise missile attack. The CMC also finds that Russia’s only major source of advantage in strategic warfare resides in its nuclear forces, and thus concludes that Moscow would be more likely to rely on nuclear weapons than Washington in a conflict with China.

Given these factors, Xi closes the weekend’s last session by announcing his decision to increase China’s nuclear forces substantially. He directs that the buildup be completed quickly, but also subtly, with the latter objective receiving top priority to avoid arousing concern on the part of Washington or Moscow.

Xi informs the CMC that China will be prepared, if necessary, to enter into discussions with the Americans and Russians regarding expanding the INF Treaty to include other states as a means of allaying their concerns. The principal motive for such discussions, however, is to buy time for China to pursue the buildup of its nuclear forces.

That being said, Xi notes that it is important to move quickly to reduce China’s vulnerability and to demonstrate to the Chinese people in a concrete way that the Party is succeeding as the guardian of the country’s honor and interests.

The Final Briefing

In a move that seems more choreographed than spontaneous, the defense minister responds to Xi’s decision by declaring that the PLA has prepared plans to expand China’s strategic forces, and offers to brief the president and the CMC. With Xi’s approval, the briefing proceeds.

Over three hours, PLA briefers present several options for accomplishing the president’s goals. The briefing covers a broad range of issues relating to strategic capabilities, to include air and missile defenses, early warning and command-and-control systems, and extended-range conventional precision strike forces. Most of the time, however, is taken up in the discussion of nuclear forces. The PLA’s analysis identifies fissile materials as the principal near-term barrier to increasing China’s nuclear armaments. At this point in the briefing, the defense minister interjects, declaring:

We have missile production lines running and producing both long-range [ICBMs] and intermediate-range [IRBMs] ballistic missiles. We have several hundred of the latter that can be fitted with nuclear warheads and this would eliminate the Russian advantage very quickly. What we lack is [sic] large quantities of fissile material, both enriched uranium [U-235] and plutonium.

Yet with the materials we have, I am confident we can nearly quadruple our nuclear arm within three years.²³²

Depending upon the international situation, we can load these warheads on our intermediate-range missiles or our ICBMs. While our ICBMs are not yet available in large numbers, we can accelerate production modestly over the next three years. We can also arm our existing ICBMs with more than one warhead until more [missiles] become available.²³³

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- 232 The Chinese have been highly opaque regarding their stockpiles of fissionable materials, leading to much speculation on the part of analysts regarding its true size. Estimates place China's current nuclear weapons inventory at roughly 250, while stockpiles of fissionable material is estimated at roughly 16 metric tons (MT) (2,205 pounds or 1,000 kg) of highly enriched uranium (with a 20 percent uncertainty, thus the amount could be anywhere between 12–20 MT). China is also estimated to have roughly 1.8 MT of weapons-grade plutonium (with a 10–30 percent uncertainty). Thus the true figure could be between 1.3–2.3 MT. International Panel on Fissile Materials (IPFM), *Global Fissile Material Report 2013: Increasing Transparency of Nuclear Warhead and Fissile Material Stocks as a Step Toward Disarmament* (Princeton, NJ: IPFM, 2013), pp. 15, 17, 19, 24, available at <http://fissilematerials.org/library/gfmr13.pdf>. The amount of highly enriched uranium (HEU; or 90 percent U-235) needed to make a nuclear weapon varies based upon the level of enrichment, the desired yield, and the design of the weapon. All other factors being equal, the higher the enrichment, the less material required to make the weapon. Similarly, the more sophisticated the design, the less fissile material is needed. Assuming the weapon is using highly enriched uranium, a simple gun-type design of the kind used in the bomb dropped on Hiroshima would require 40–50 kg of HEU. A sophisticated implosion weapon would require far less HEU, roughly 9–12 kg. In the case of a sophisticated plutonium implosion design, the amount of plutonium needed would be around 2–4 kg. "Weapon Materials Basics (2009)," Union of Concerned Scientists, available at <http://www.ucsusa.org/nuclear-weapons/nuclear-terrorism/fissile-materials-basics#.VieQsEurRo>. Sophisticated designs are capable of generating a nuclear explosion with even less fissile material. For example, it is possible to compress 1 kg of plutonium in a way that produces a yield of roughly 100 tons. Taking another example, a plutonium weapon employing 25 kg of the material and using the Fat Man design employed in the weapon dropped on Nagasaki would generate a yield of over 100 KT, or some five times the yield of the bomb employed in the actual attack. (That bomb contained 6.2 kg of plutonium and achieved a yield of 21 KT.) Taking still another example, the U.S. Mark 18 fission design was tested with a core of 75 kg of HEU to achieve a yield of 500 KT. With regard to thermonuclear weapon designs, the same principles hold; that is, the yield is a function of the quantity of fissile materials and the weapon design, to include the use of materials inherent to the design (such as tritium and lithium-6 deuteride). Thus the U.S. W-87 nuclear warhead can have its 300 KT yield increased to 450 KT by adding an HEU "sleeve" or "rings" to the design, while the U.S. W-88 Trident warhead's yield suggests that it is equipped with the HEU sleeve. The HEU sleeve has a lower percentage of weapons-grade U-235, in the range of 20–80 percent enrichment) and is used mostly in thermonuclear weapon tampers. Carey Sublette, "Nuclear Weapons Frequently Asked Questions," section 4.0, "Engineering and Design of Nuclear Weapons," *Nuclear Weapons Archive*, updated July 3, 2007, available at <http://nuclearweaponarchive.org/>. See especially sections 4.2, "Fission Weapon Designs," and 4.5, "Thermonuclear Weapon Designs." See also, "Complete List of All U.S. Nuclear Weapons," *Nuclear Weapons Archive*, updated October 14, 2006, available at <http://nuclearweaponarchive.org/Usa/Weapons/Allbombs.html>; and Andrew Foland, "How Much Uranium?" *Nuclear Mangos*, blog, updated July 1, 2008, available at <http://nuclearmangos.blogspot.com/2008/07/how-much-uranium.html>.
- 233 The Chinese Mod-3 DF-5 ICBM is judged by the U.S. Defense Department as equipped with multiple warheads. China's DF-41 road-mobile ICBM, now under development, may also be capable of carrying multiple warheads. China is fielding a growing number of conventionally armed MRBMs, to include the CSS-5 Mod 5 (also known as the DF-21D) anti-ship ballistic missile (ASBM). The PLA's Second Artillery possesses at least 1,200 short-range ballistic missiles (SRBMs), roughly 100 MRBMs, and 50–60 ICBMs. It also has hundreds of land-attack cruise missiles with ranges in excess of 1,500 km. Office of the Secretary of Defense (OSD), *Military and Security Developments Involving the People's Republic of China 2015*, Annual Report to Congress (Washington, DC: OSD, 2015), pp. 8–9. *U.S.-China Economic and Security Review Commission, 2010 Report to Congress* (Washington, DC: Government Printing Office, 2010), pp. 83–87.

A White House Briefing

On May 6, 2020, the U.S. president holds a meeting of the senior national-security team at the White House. The meeting's purpose is to determine how to respond to increasingly firm intelligence reports that China is engaged in a significant expansion of its nuclear forces. Members of Congress are increasingly pressuring the administration to come forth with a policy to address the situation, which is quickly becoming an election-year issue, and thus a political problem for the president as well.

The president and his brain trust are informed by CIA briefers there is high confidence that sometime in 2018 the Chinese leadership instructed the PLA to begin uploading nuclear warheads on Chinese medium-range ballistic missiles, complete the "MIRVing" of its ICBMs, and equip a growing number of land-attack cruise missiles with nuclear warheads. Estimates are that the PLA has increased its nuclear-weapons inventory from somewhere in the mid-200s to over 500. At the current estimated expansion rate, the PLA will add roughly 100–150 weapons each year. Several intelligence sources (image, signals, and human intelligence) strongly indicate the Chinese have expanded fissile-material production.

The U.S. defense secretary informs the president:

We used to worry a lot about this during the Cold War: that the Soviets would "break out."²³⁴ That is, we worried that they might be stockpiling nuclear weapons covertly to, at some point, rapidly increase their nuclear forces by uploading them onto missiles and bombers. Since we could not accurately count them, our arms control treaties limited the number of launchers as a way of hedging against such a breakout.

The Chinese have roughly doubled the estimated size of their nuclear forces within two years' time to roughly 500 weapons. And they show no signs of stopping. Most of the expansion has occurred with the Second Artillery's—that's their nuclear force organization—missiles, which are prohibited to the Russians and us by the INF Treaty.

The U.S. secretary of state interjects:

The Russians, Japanese, and Indian intelligence arms have reached similar conclusions regarding these Chinese activities. They've done so independent of one another. The Russian ambassador has made it clear that Moscow is prepared to abandon the treaty if the Chinese persist in their nuclear expansion. That said, we face a problem in that the Chinese foreign minister has informed me his government is willing to enter into negotiations on expanding the treaty to include China along with other Asian states, to include Iran, North Korea, and Pakistan. While I think they're just playing for time to keep the Russians and us locked into the INF limits, it will be difficult politically for us to reject their offer out of hand.

The Russians may help us out, though, if they decide to take the initiative and withdraw from the treaty. In a sense, it's only right; we took the lead on terminating the ABM Treaty.

²³⁴ The term "breakout" was employed during the Cold War to refer to one of two situations: the first relates to a relatively sudden and large-scale violation of an arms-control agreement currently in force; the second refers to the rapid expansion of military capabilities.

The president's national security adviser sums up the key issues that must be addressed before the administration can move forward with confidence. While admitting, "I have only questions, not answers," she notes "the importance of focusing on the right set of questions, the right issues—What are we trying to do? What are our principal goals and objectives with regard to nuclear weapons?—is critical. The president would prefer decent insights to the right set of issues than great analysis on irrelevant issues.

With this in mind, she reminds the group that the U.S. goal with respect to nuclear weapons is to avoid both their use and their spread:

Given our superiority in conventional forces, to include non-nuclear forms of strategic strike and our advanced air and missile defenses, as well as our cyber capabilities, it's to our advantage to keep the tradition of non-use of nuclear weapons—the nuclear taboo—off the table. That's why the Russians are so determined to hold on to theirs, and apparently why the Chinese are building up.

Whether we like it or not, if all we've heard today is true, we are moving into an era of great power multipolar nuclear competition. We cannot simply assume, if ever we could, that having parity with the Russians in nuclear weapons assures stability. We are looking at two major competitors, not one. It's not possible for each of us to have nuclear weapons equal to the combined forces of the other two. Proceeding to try will almost certainly lead us to a new nuclear arms race with no end in sight. How do we size our nuclear force? To deal with one crisis at a time with Russia or China? Multiple crises? A major nuclear confrontation and one against a minor nuclear power? As you people in the Pentagon say, "What's the force sizing construct?"

So we need to think about what can provide for stability in this multipolar nuclear world. How do we work our CPGS capabilities, cyber munitions, and air and missile defenses into the equation? It seems to me that we need to rethink [Herman] Kahn's escalation ladder.²³⁵ There are many new rungs that need to be added and addressed, it seems to me. And I believe the Chinese and Russians are also thinking along these lines: "How can we establish some dominant positions on the 'ladder'?" For us, we need to figure out: "How do we deny them the temptation to escalate?"

We also need to consider the role of nuclear allies and partners. How do we view the Pakistani arsenal? Are the Pakistanis allies of China? What about the North Koreans? Is it to our advantage to encourage our allies—the Brits, French, and Israelis—to expand their arsenals? To what end? Or are we better off helping them develop the "softer" strategic forces—conventional, cyber, and such?

Are we going to be involved in a Nuclear Great Game with China? Russia and the others? What I mean here is: Will minor nuclear powers like the Pakistanis and potentially Iranians get technology that enables them to miniaturize their warheads, or enable their missiles to have precision guidance? What can we do to influence this sort of behavior? And how can we help our allies and partners threatened by these kinds of transfers?

²³⁵ See Herman Kahn, *On Escalation: Metaphors and Scenarios* (Westport, CT: Praeger, 1965), pp. 25–34, 290. In his book, Kahn defines escalation dominance as "a capacity, other things being equal, to enable the side possessing it to enjoy a marked advantage in a given region of the escalation ladder."

We need to be concerned about the lack of effective early warning and command-and-control systems, not only for ourselves but also with respect to the Chinese, Russians, and the others. With many more fingers on the nuclear trigger, and with many states in close geographic proximity to one another, the chances for accidental use and attack “misattribution”—is that a word?—cannot be discounted. We know, for example, that our P-2s [Pershing II ballistic missiles], when we deployed them to Europe in the [19]80s, raised serious problems for the Soviets given their rather rickety early warning systems. We’re going to see a lot more of this. And the Russians “solved” the problem by semi-automating their nuclear release. This is something we need to set a priority on avoiding.

A couple of other points. The Russians are likely to feel they’ve lost strategic depth, with the Chinese now threatening their forces beyond the Urals in ways we in NATO could not. Is this a good thing? Or does making the Russian missile forces more vulnerable to attack increase the likelihood of things unraveling in a crisis?

And what about “interspersions?” What I mean is that in some cases, for us to target China, our forces, as currently positioned, may have flight patterns that take them over other nuclear-armed states on the way to their destination. Have we thought this through? What does it mean for our forces? How they are deployed? Where they are based?

And how can we leverage arms control? Or are such efforts about to be overwhelmed by China’s decision, Russia’s response, and what I fear may occur with Iran, which may lead to a wave of proliferation in the Middle East?

The president declares that the issues raised reflect a profound change in the nuclear competition, presenting strategic challenges on a par with those confronted in the first decade or so of the Cold War. He notes that answers did not come quickly or easily then, and suspects the current case will prove no different. Calling to mind the efforts of President Truman’s “Wise Men” that produced the Containment doctrine and the NSC-68 strategy document, along with President Eisenhower’s famed “Solarium” project²³⁶—an intense effort over two months designed to explore strategies for a protracted competition with the Soviet Union—the president directs that a “Nuclear Solarium” be undertaken. The national security adviser will direct the effort in close coordination with the president. The effort will bring together several dozen of the nation’s best strategists and substantive experts who will conduct their work on three panels, each one independent of the other two, to address the issues raised in today’s meeting, along with others to be designated by him. The three panels will brief their findings and recommendations in late July or early August.

236 The Solarium Exercise (also referred to as “Project Solarium”) was undertaken at the direction of President Eisenhower. The exercise comprised three panels with a total of 21 experts exploring three different strategic alternatives. The exercise began on June 10, 1953 and concluded on July 15, lasting 36 days. The panels’ findings were briefed to the president on July 16 in the White House solarium. “Introduction: The Solarium Exercise of June 1953,” in William B. Pickett, *George Kennan and the Origins of Eisenhower’s New Look: An Oral History of Project Solarium* (Princeton, NJ: Princeton University Institute for International and Regional Studies, 2014), p. 3.

CHAPTER 6

Conclusion

Andrew F. Krepinevich

*I think it took the United States at least 2 decades to learn how to think about nuclear weapons policy after 1945.*²³⁷

Thomas Schelling

*When the facts change I change my views; what do you do, Sir?*²³⁸

Lord John Maynard Keynes

What Are We Trying to Do?

Efforts to avoid nuclear use within the broader goal of preserving peace and stability within a rules-based international system did not end with the Cold War. The dramatic reduction in tensions between the Soviet Union (now Russia) and the United States led to a relatively greater focus on preventing the proliferation of nuclear weapons. These efforts have met with mixed success, with India, North Korea, Pakistan, and potentially Iran filling the negative side of the ledger. Perhaps just as worrisome, advances in military-related technologies have enabled different nuclear weapon designs, as well as the introduction of precision-guided conventional weapons, and advanced air and missile defenses. The rise of the worldwide web—the Internet—along with greater reliance on increasingly advanced computer hardware and software (including artificial intelligence) for a wide range of commercial and military uses has led to the development of cyber weapons that may have a profound effect on the ability to preserve peace and wage war. In combination, these and other changes have produced what is increasingly referred to as the Second Nuclear Age.

237 Henry S. Rowen, “Commentary: How He Worked,” in Robert Zarate and Henry Sokolski, eds., *Nuclear Heuristics: Selected Writings of Albert and Roberta Wohlstetter* (Carlisle, PA: Strategic Studies Institute, 2009), p. 93.

238 Zarate and Sokolski, eds., *Nuclear Heuristics*, p. 103.

How Did Scenarios Help?

This assessment has employed scenarios as a means of bringing these new factors together in a way that explores how they might interact to challenge our ability to preserve the tradition of non-use of nuclear weapons. While these scenarios are not intended to predict the future, they highlight how the characteristics of the Second Nuclear Age could challenge the tradition of non-use.

As the scenarios in this report suggest, circumstances have changed, in some cases dramatically, over the quarter-century following the Cold War's end. They provide insights as to how the future might look very different from today or from the recent past, but also how those factors may drive us off our current path toward a different tomorrow.

The scenarios are diagnostic, rather than predictive or prescriptive. The scenarios help us focus on the most important issues. They do not provide answers. Yet as Andrew Marshall, one of the deans of the strategic studies community, sagely declared, "I'd rather have decent answers to the right question than great answers to irrelevant questions."²³⁹ Scenarios help us identify and focus on the most important issues.

Scenario Insights

What are some of the key issues that emerge from this effort? How have they enhanced our thinking about the problem of avoiding nuclear use?

The Nuclear Balance Has Become the Strategic Balance

Taken together, the scenarios strongly indicate that we have moved from a strategic warfare competition dominated almost exclusively by nuclear weapons, to one in which nuclear weapons maintain a dominant position but in which other capabilities have emerged as significant factors in the military balance. Put another way, the "nuclear balance," upon which so much effort was devoted to assessing during the Cold War, has become the "strategic balance."²⁴⁰ The precision warfare revolution and the rise of advanced battle networks have fulfilled Soviet military theorist predictions that conventional weaponry would, in some instances, approach the effectiveness of nuclear weapons.²⁴¹ Hence current Chinese and Russian concerns regarding the U.S. military's efforts to develop conventional prompt global strike capabilities. When these capabilities are combined with advanced air and missile defenses, they raise fears in

239 Andrew F. Krepinevich and Barry D. Watts, *The Last Warrior* (New York: Basic Books, 2015), p. 1.

240 The Pentagon's Office of Net Assessment, the defense secretary's personal "think tank," was formed in 1973 in large measure to assess the strategic nuclear balance between the United States and the Soviet Union. See Krepinevich and Watts, *The Last Warrior*, pp. 126–128, 131, 137–139, 148, 158–164, 176.

241 Marshal V. D. Sokolovsky, ed., Harriet Fast Scott, trans., *Soviet Military Strategy*, 3rd edition (New York: Crane, Russak & Company, 1975), p. 227; and Ogarkov, "The Defense of Socialism: Experience of History and the Present Day." I am indebted to my colleague Barry Watts for bringing these documents to my attention.

some quarters that the United States seeks “absolute security” through the use of “strategic conventional weapons.”

Since their inception, nuclear weapons have been relied upon by some states to offset their inferiority in conventional military capability. The difference here is that conventional and cyber weapons are increasingly playing a role in what was nuclear (or strategic) warfare. The once clear “firebreak” that existed during the Cold War between conventional and nuclear weapons has become increasingly blurred.²⁴²

To this must be added the potential of cyber weapons to support strategic strikes against an enemy’s nuclear and conventional strategic forces (especially their command-and-control and early warning systems) as well as key industrial targets. Not surprisingly, when this assessment’s principal author asked a senior U.S. general officer closely associated with the United States’ strategic forces if there should be a cyber munitions single-integrated operational plan (SIOP), he responded, “Yes, absolutely.”

These characteristics of the Second Nuclear Age affect the military balance in each of the scenarios in ways that cannot be discounted, let alone ignored. If successful, efforts to reduce the number of nuclear weapons will only further highlight these non-nuclear military capabilities’ importance to the strategic competition.

The bottom line is that traditional ways of assessing the competition among states with respect to nuclear weapons must be expanded to include these new factors that affect states’ views on the value of nuclear weapons and the circumstances in which they would be employed.

A Multipolar Strategic Competition

Both the Iran and China scenarios highlight the challenges posed not only by the introduction of non-nuclear strategic forces but also the shift from a bipolar Cold War-era nuclear competition to a multipolar strategic competition. The Iran scenario suggests that even the addition of one nuclear power (in this case Saudi Arabia) to an Iranian–Israeli competition complicates efforts to maintain stability. The scenario also raises the prospect that nuclear powers external to the Middle East could destabilize the balance in steady-state peacetime circumstances as well as in crises. Indeed, as conventional and cyber weapons maintain (or expand) their role in the strategic balance, non-nuclear powers that possess these capabilities may also exert significant influence on regional stability.²⁴³

The China scenario provides the logic for an expansion of that country’s nuclear forces to levels approaching those of Russia and the United States, creating a multipolar great-power competition. This would greatly complicate efforts to assess the strategic balance. In such an

242 For a detailed discussion of the eroding nuclear–conventional firebreak, see Watts, *Nuclear-Conventional Firebreaks and the Nuclear Taboo*.

243 See Krepinevich, *Critical Mass*, pp. 33–47.

environment it may prove difficult to avoid an arms race. The scenario posits such a situation, as both Russia and China are concerned over the United States' advantages in conventional forces and non-nuclear strategic forces. China is also uneasy over Russia's nuclear advantage—including its violations of the INF Treaty—while the United States sees its goal of maintaining nuclear equivalence with Russia eclipsed by the emergence of another peer competitor.

Strategic planners should note two other particularly important characteristics from the China scenario. The first involves international dynamics. The Cold War system was both bipolar and highly stable. There were no great movements from one camp to the other, with each side matching the other's advances. This may not prove true in a multipolar strategic competition. Just as the United States has what it considers legitimate fears regarding Chinese and Russian intentions, Beijing and Moscow are wary of both each other and the United States.

Second, the problem is exacerbated by the presence of minor nuclear powers affiliated with what, in the China scenario, are the three major nuclear powers.²⁴⁴ In the China scenario, the United States has long-standing alliances with existing nuclear powers (France, Great Britain, and Israel), as well as with states like Australia, Germany, and Japan that could easily become nuclear powers, and that also have the ability to compete effectively in other areas of the strategic competition (such as precision strike, cyber munitions, and air and missile defenses). Similarly, China has long-standing friendly relations with North Korea and Pakistan, while Russia has enjoyed good relations with India extending back to the Cold War.

Several questions arise for policymakers and planners: How might the three great nuclear powers in the China scenario view their rivals' relationships with lesser strategic powers in terms of their influence on the overall balance? How durable are these relationships—is the international system stable or dynamic? A multipolar competition may—as was the case for centuries prior to World War II—be conducted within the context of a more fluid and dynamic international system, where today's ally could be tomorrow's rival. If so, what is the potential for shifts in the environment to destabilize the strategic balance? In such a dynamic system, is it possible to create conditions that preserve and even enhance crisis stability? Perhaps most important, are there ways to avoid going down this scenario path and dissuading the Chinese from becoming a great nuclear power?

Finally, during the Cold War the two superpowers' minor allies were relatively constrained in their ability to create problems for their patrons. It may prove more difficult to control minor nuclear power allies in the Second Nuclear Age, or even those partners possessing a potent

244 This is the opposite of the issue that arises in the Iran scenario, where Saudi Arabia creates a multipolar regional strategic competition. In the Iran scenario, the influence of powers external to the region exerts a significant (and generally negative) influence on steady-state peacetime and crisis dynamics.

arsenal of cyber weapons.²⁴⁵ Two reasons for this are the greatly increased combat potential that such weapons give minor powers, and the prospect that they may be able to employ them (particularly cyber weapons) in ways that enable them to avoid attribution. (The issue of attribution will be discussed presently.)

Rethinking the Escalation Ladder

When Herman Kahn developed his famous metaphorical escalation ladder²⁴⁶ over half a century ago, the U.S.–Soviet rivalry and how to avoid nuclear war dominated thinking about escalation. While the objective of preserving the tradition of non-nuclear use still obtains, the escalation ladder’s structure is badly in need of an update, given the geopolitical and military-technical changes that have occurred over the past quarter-century.²⁴⁷

Given the rise of n-player regional nuclear competitions, the implications posed by the China scenario and minor nuclear powers, and the nuclear great game that arises in the Iran scenario, the escalation ladder should have horizontal as well as vertical components. The introduction of precision-guided munitions, advanced air and missile defenses, and cyber munitions indicates that more capabilities present more options, and thus the need for more rungs along the vertical scale.

Identifying the Second Nuclear Age’s escalation ladders—both horizontal and vertical—could provide important insights as to where the United States is vulnerable to escalation by existing and prospective nuclear-armed adversaries. Moreover, given the prospect of having to address more than one nuclear contingency simultaneously, policy planners may find these escalation ladders useful in identifying where efforts to diffuse one crisis could enable (and thus incentivize) adversaries to gain escalation dominance in another.

With the ongoing rapid advances in military-related technologies, the escalation ladder will likely need regular updating. U.S. strategic planners focusing on the long-term future may find the escalation ladder, like scenarios, useful in identifying how new military capabilities can reduce the ability of rivals to achieve escalation dominance. They may also find it useful in determining where to create new rungs that will enable U.S. policymakers to establish

245 Pre–Cold War history provides examples of minor allies who involved their more powerful partners in conflicts the latter would have preferred to avoid. For example, Germany in 1914 had little interest regarding the Balkans, yet found itself at war owing to its ally, Austria-Hungary, which felt threatened by Serbian nationalism. In the spring of 1941 Germany, engaged in war with Great Britain and in preparations to invade the Soviet Union, found itself diverting forces to the Balkans in part to rescue its ally Italy from reversals following Benito Mussolini’s invasion of Greece. Indeed, when notified that Italy—which had fought poorly when allied with Britain in the previous war—had aligned with Germany in 1940 and declared war on Britain, Prime Minister Winston Churchill is reported to have remarked, “That’s only fair—we had them the last time.”

246 See Kahn, *On Escalation: Metaphors and Scenarios*.

247 See, for example, Forrest E. Morgan et al., *Dangerous Thresholds: Managing Escalation in the 21st Century* (Santa Monica, CA: RAND, 2008).

dominant positions of their own at key points on the ladder to better achieve their policy objectives, to include preserving the nuclear taboo.

Missile Plenty, Haystack Attacks, and Arms Race Dynamics

As the Iran and North Korea scenarios demonstrate, unlike the First Nuclear Age, where both the United States and the Soviet Union had sizable nuclear arsenals before developing ballistic missiles, the opposite is true in the case of these two competitors. Both scenarios suggest that effective employment of their limited stock of nuclear weapons might be realized through haystack attack tactics (launching many non-nuclear missiles along with each nuclear-armed missile, to overwhelm defenses). The preliminary examination of haystack attacks in the North Korean scenario indicates that the risk to the defender from such attacks is hardly trivial, even when employing advanced missile defenses.

Thus a key challenge for the United States is to get minor nuclear powers like North Korea (and, prospectively, Iran) to keep their arsenals below the threshold where haystack attacks become effective and attractive. Yet states that must rely on haystack attacks will be highly incentivized to expand their inventory of nuclear weapons and ballistic missiles. This is demonstrated in the North Korea scenario, where Kim Jong-un is determined not to freeze his nuclear arsenal. The result could find an asymmetric arms race between a minor nuclear power and a great nuclear power, with the former focusing on nuclear weapons and ballistic missiles, and the latter emphasizing missile defenses. In summary, if haystack attacks prove attractive to minor nuclear powers, it may also make it difficult to conclude arms control agreements that prevent nuclear-armed states like North Korea (or, prospectively, Iran) from expanding their nuclear arsenal to scores of weapons.

Finally, if a minor nuclear power can further miniaturize its warheads to fit on cruise missiles it would introduce a new dimension to the competition, presenting a very different problem for missile defenses. Cruise missiles do not have to fly a ballistic trajectory, and can be readily deployed aboard ships and aircraft. This raises the possibility that an attack from North Korea against Japan, or Iran against Israel or Saudi Arabia, could be launched from a different direction than a ballistic missile attack.

Extended Deterrence

From a U.S. perspective, the Iran, North Korea, and Russia scenarios suggest that providing extended deterrence to allies and key partners will remain challenging. The scenarios find U.S. allies wanting different, incompatible forms of reassurance. In the North Korea scenario, for example, Tokyo wants a far more aggressive response to Pyongyang's act of aggression than does Seoul. In the Iran scenario, the Saudis are concerned that the United States will privilege Israel over the desert kingdom in defending against an Iranian haystack attack. Washington is faced with a challenging task as well in the Russia scenario, as once again the allies cannot agree upon a common course of action.

Both deterrence and extended deterrence lies in the eye of the beholder. Referring to the Cold War, former British defense minister Dennis Healey once observed, “It only takes five percent credibility of American retaliation to deter the Russians, but ninety-five percent credibility to reassure the Europeans.”²⁴⁸ Yet the problem of establishing a nuclear/strategic force posture under these circumstances is likely to prove a daunting challenge for policymakers and defense planners alike.

The Death of “Rational Strategic Man”

France’s former foreign minister, Hubert Védrine, once remarked to concerns over Iran becoming a nuclear power by declaring that “a country that possesses the bomb does not use it and automatically enters the system of deterrence and doesn’t take absurd risks.”²⁴⁹ As noted in this assessment’s introduction, advances in both strategic studies and the cognitive sciences indicate that Védrine’s assertion is more akin to wishful thinking than reality.

The work on deterrence theory early in the First Nuclear Age often assumed the adversary to be a unitary actor with a clear set of goals and a well-defined sense of costs, benefits, and risks with respect to achieving those goals in the face of efforts by rivals to deter it from doing so. It took until the 1960s for these views to be subjected to serious challenge by scholars like Andrew Marshall, Ernest May, Richard Neustadt, and others. They found, as Hedley Bull observed,

A great deal of argument about military strategy . . . postulates the “rational action” of a kind of “strategic man,” a man who on further acquaintance reveals himself as a university professor of unusual intellectual subtlety. In my view this kind of formal theorizing is of great value in the discussion on strategic matters when it represents not a prediction of what will happen in the real world but a deliberate and conscious abstraction from it, which must later be related back again to the world.²⁵⁰

A growing body of scholarship found that the personality of individual decision-makers, the differing interests of bureaucratic actors involved in the decision, and the priorities of different organizations with varying institutional goals and perspectives could produce different decisions from what might be expected from utility theory.²⁵¹

These insights predated advances on human decision-making that emerged from work in the cognitive sciences in what has become known as prospect theory, and which was described in this assessment’s introduction. Generally speaking, research in the cognitive sciences finds that individual choices are often (and perhaps primarily) driven by heuristics and biases as

248 Gordon Barrass, *The Great Cold War* (Stanford, CA: Stanford University Press, 2009), p. 147.

249 Elaine Sciolino, “Chirac’s Iran Gaffe Reveals a Strategy: Containment,” *New York Times*, February 3, 2007, p. A8.

250 Quoted in Freedman, *The Evolution of Nuclear Strategy*, pp. 184–185.

251 Krepinevich and Watts, *The Last Warrior*, pp. 61–64. The insights of May, Marshall, Neustadt, and other members of the “May Group” were fully developed by the group’s rapporteur. See Graham Allison, *Essence of Decision: Explaining the Cuban Missile Crisis* (Boston: Little, Brown and Company: 1971).

much as by individuals carefully calculating costs and benefits. Prospect theory finds that even when acting as a single individual (“unitary actor”) with perfect information, decision-makers cannot be assumed to maximize their gains or minimize their losses. Rather, they are prone to overweighting prospective losses relative to comparable gains. Put another way, decision-makers will “act more aggressively to avoid a loss than to secure an equal gain, and will pursue loss aversion beyond a rational expectation of benefits.”²⁵² All other things being equal, decision-makers tend to be relatively risk averse when it comes to obtaining something of value they do not possess, and relatively risk tolerant when it comes to retaining possession of something of value they do possess. They will take risks to avoid losing what they have beyond a reasonable expectation of the benefits of doing so.

Prospect theory leads us to conclude that the adversary is more likely to be deterred than coerced, all else being equal.²⁵³ This is reflected in the Korea scenario, where Kim Jong-un is willing to run great risks in order to preserve his nuclear weapons program (and, as he sees it, his regime).²⁵⁴ Yet our North Korea scenario complicates matters even further. Recall that Kim believes that freezing his nuclear arsenal at its current level is only the first step in the U.S.-led coalition’s plan to move him toward the fate incurred by leaders like Saddam Hussein and Muammar Qaddafi, men that had aspirations to acquire nuclear weapons but who came up short. One might also note that freezing Kim’s arsenal would put him at risk of eventually losing the haystack attack option as Japan, South Korea, and the United States enhanced and expanded their air and missile defenses. Thus former defense secretary William Perry’s belief that negotiating with North Korea to freeze its nuclear arsenal offers far greater promise than efforts to eliminate the arsenal may be viewed by Kim as only the lesser of two unacceptable evils.²⁵⁵

Implications for the U.S. Strategic Arsenal

Given the diagnostic character of scenarios, offering detailed prescriptions regarding their implications for the size and composition of the U.S. nuclear arsenal are beyond the scope of this assessment. That being said, the crisis scenarios—Iran, North Korea, and Russia—find U.S. decision-makers exploring options involving non-nuclear strategic forces, to include precision strikes, air and missile defenses, and cyber weapons. The scenarios also suggest there may be significant value in providing the U.S. president with a greater range of options

252 Jeffrey D. Berekjian, “A Cognitive Theory of Deterrence,” *Journal of Peace Research*, March 2002, p. 172.

253 Gary Schaub, Jr., “Deterrence, Compellence, and Prospect Theory,” *Political Psychology*, 25, No. 3, June 2004, p. 402.

254 While beyond the scope of this assessment, an important aspect of prospect theory concerns the decision-maker’s choice of a reference point, which is assumed to be the status quo. But this may be open to individual interpretation, further complicating efforts at deterrence or compellence. Schaub, “Deterrence, Compellence, and Prospect Theory,” p. 406.

255 William J. Perry, “How to Contain North Korea,” *Politico*, January 16, 2016, available at <http://www.politico.com/magazine/story/2016/01/north-korea-nuclear-weapons-contain-213516>. Former defense secretary Perry argues that while it is unrealistic to expect North Korea to give up its nuclear program, it is “reasonable” to believe that negotiations that would freeze that country’s nuclear weapon production as well as efforts to make qualitative improvements in its arsenal can succeed when coupled with “positive economic incentives.”

regarding nuclear use, in terms of both weapon yield and delivery systems. The U.S. nuclear arsenal's size is not a factor in either the Iran or North Korea scenarios, and does not play a defining role in the Russia scenario.

The size of the U.S. arsenal looms far greater in the China scenario. The emergence of a multipolar competition among great nuclear powers involving Beijing, Washington, and Moscow would almost certainly raise questions regarding the United States' ability to preserve nuclear parity with both China and Russia combined—a modern-day version of Great Britain's "two-power standard."²⁵⁶

The United States' ability to address the threats posed by its two major challengers echoes the British maritime strategic metric. In World War II, the United States emerged as a world power while waging war against Germany and Italy in Europe, and Japan in the Pacific. During the Cold War, prior to President Richard Nixon's opening to China in 1972, the United States maintained a "two-war strategy" designed to enable it to wage war against the Soviet Union and China simultaneously.²⁵⁷ Following the Cold War, Washington preserved the ability to wage two regional conflicts in overlapping time frames. So there is significant historical precedent for the world's dominant global power attempting to maintain force levels larger than that of any other single power, perhaps equal to its two principal rivals. Attempting to do so, however, could lead Beijing, Moscow, or both to match Washington's efforts. If so, it would likely yield very little in the way of additional security for the United States. As noted earlier, the planning problem becomes more difficult still if, to take one example, U.S. policymakers feel compelled to add Pakistan's rapidly growing nuclear arsenal into the mix.

This assessment's scenarios present a range of plausible contingencies against which the United States must prepare, or at least hedge. Others meriting attention come to mind as well, such as a crisis between India and Pakistan, or a failure of deterrence between minor nuclear powers (a clear possibility in the Iran and North Korea scenarios). Both present U.S. policymakers with the challenge of employing (or threatening to employ) strategic forces to terminate the conflict before further escalation—horizontal or vertical—can occur.

Deciding which scenarios should take precedence could do much to inform the size and mix of U.S. strategic forces. In so doing, clearly some difficult choices will have to be made. In the

256 In 1889 Great Britain established a policy of maintaining a battle fleet both larger than any other and equal in size to the world's second- and third-largest navies combined—hence the term "two-power standard." Arthur J. Marder, *From the Dreadnought to Scapa Flow*, Vol. 1, *The Road to War* (Barnsley, UK: Seaforth Publishing, 2013), pp. 123–125.

257 As the U.S. flexible response strategy took hold in the 1960s, the Kennedy administration sought to maintain forces sufficient to wage a war against the Soviet-led Warsaw Pact in Europe and against China in the Far East. It also intended to maintain forces to fight a "brushfire" war against enemy irregular forces, such as occurred in South Vietnam. Given that most of the U.S. Army and large elements of America's air and maritime forces were engaged in the Vietnam War, it seems the so-called Two-and-a-Half-War strategy was more an aspiration than a reality. Ronald E. Powaski, *The Cold War: The United States and the Soviet Union, 1917–1991* (Oxford, UK: Oxford University Press, 1998), p. 170. Similarly, Great Britain eventually fell off its two-power standard in favor of maintaining a clear advantage over Germany, and the 1990s witnessed a spirited debate over whether the United States truly had sufficient forces to wage two regional wars in overlapping time frames.

North Korea scenario, for example, forward-based missile defenses may help deter haystack attacks. But these kinds of deployments may prove difficult in the Iran scenario owing to Arab state opposition to hosting forward-based U.S. forces. Focusing back on the North Korea scenario, in responding to Pyongyang's use of a nuclear weapon, the United States may want to keep open the option of employing precision and cyber strikes, or discriminate nuclear strikes, or some combination of both, backed by air and missile defenses. In the Russia scenario, the ability to conduct discriminate nuclear strikes is seen as potentially important, but delivery by ballistic missiles is seen as preferable to legacy aircraft or cruise missile systems, which are viewed as highly vulnerable to interception by advanced integrated air defense systems. Given that the United States may have to plan for multiple nuclear contingencies, the question will also arise as to how much of its strategic forces should be held in reserve in any given contingency. This issue emerged in the Iran scenario in the form of Saudi concerns regarding U.S. missile defenses.

Finally, the China and Russia scenarios suggest that both countries view the U.S. advantage in existing and prospective conventional prompt global strike capabilities and missile defenses as conferring upon it significant advantages in the strategic competition. American policymakers interested in shaping the perceptions of their Chinese and Russian counterparts should take their expanded view of the strategic competition into account.

Crisis Stability

If only for the growing number of nuclear powers, it seems plausible that the world will experience more nuclear crises in the coming decades than over the past few score years. More discouraging still, the four "crisis" scenarios presented here (two with respect to Iran, and one each on North Korea and Russia) argue that crisis stability—the disincentive to engage in nuclear use—will become less sturdy than before. There are several reasons for this.

Geographic Proximity, Early Warning, and Command-and-Control Systems. As the Iran scenario suggests, crisis stability may be undermined by structural factors *even when both parties seek to avoid employing nuclear weapons*. The relatively small Iranian nuclear arsenal, the speed at which nuclear weapons can be delivered, the limitations on early warning and command-and-control systems (made worse by the potential of cyber weapons) find both Iran and Israel (and Saudi Arabia in the scenario) adopting hair-trigger postures in a crisis and, in Iran's case, delegating nuclear release authority to lower-level commanders.

It seems plausible that even if Iran, Israel, and Saudi Arabia were not so close geographically, the resources—material, human, and technical—required to field and sustain effective early warning and command-and-control systems could well be beyond their means. How might a nuclear power with a limited ability to detect a nuclear attack and order a counterstrike posture its forces? The scenarios suggest their leaders might be tempted to adopt destabilizing postures in a crisis.

Attribution. As the Iran scenarios indicate, crisis stability may be compromised by the absence of effective early warning and command-and-control systems. In the case of a multipolar regional nuclear environment, such as that posited in the Iran scenario, it is plausible that Iran could face threats from Israel, Pakistan, and Saudi Arabia. Lacking effective early warning, Iranian leaders may not be able to determine promptly the source of an attack, compromising their ability to retaliate with confidence against the aggressor. This could erode the effectiveness of Iran's nuclear deterrent.

Moreover, the prospect that early warning and command-and-control systems could be corrupted through cyber malware could further reduce a state's incentive to deploy them, while making states possessing them vulnerable to attack misattribution. For example, in the Iran scenario both Israel and Saudi Arabia possess nuclear weapons. An Iranian early warning system whose data has been corrupted could fail to correctly identify the source of a nuclear attack and retaliate against a nonbelligerent state. Difficulties with attribution may encourage a third party hostile to Iran (and perhaps hostile to Israel and Saudi Arabia as well) to provoke a conflict among them by employing malware that shows Iran to be under nuclear missile attack when it is not.

Nuclear-armed cruise missiles present still another source of concern, particularly in a multipolar regional nuclear competition. In the Iran scenario excursion, the source of an attack by a ballistic missile fired from the territory of Iran, Israel, or Saudi Arabia would likely be more readily identifiable than that of a cruise missile launched off a ship in the Arabian or Eastern Mediterranean Sea. This strongly suggests that the proliferation technology associated with miniaturizing nuclear warheads to fit on ballistic missiles and cruise missiles would prove highly destabilizing.

Undeclared Arsenals. As we find in the Iran scenario, there may be instances where it becomes difficult to diffuse a crisis where one or both parties (in this case, Iran and Israel) have *undeclared* nuclear arsenals, and place a high priority on maintaining ambiguity regarding their true capabilities. In such cases, introducing third-party observers to build both sides' confidence that its rivals are standing down their nuclear forces could prove difficult if not impossible, as national leaders assert disingenuously they have no such forces to stand down.

Multiple Extended Deterrence Commitments. Similarly, it may be unclear who controls the nuclear weapons based by one party on the territory of another (as in the case of Pakistani nuclear weapons based on Saudi Arabia's territory in the Iran scenario excursion). This could hamper efforts to diffuse a crisis between India and Pakistan if New Delhi believes the Pakistanis control the Saudi-based weapons, when de facto control belongs to the Saudis.

Predelegation of Release Authority. The spread of nuclear weapons in the Second Nuclear Age to India, North Korea, and Pakistan, along with the prospect of further proliferation, has introduced a greater level of cultural diversity. With it comes the potential for significantly different approaches to calculating cost, benefit, and risk. The situation may be further complicated if (as the Iran scenario presents) nuclear release authority is predelegated to

lower-level commanders. Rather than focusing on deterring a Kremlin gerontocracy, as during the Cold War, U.S. policymakers cannot assume (if they ever could) that a “one size fits all” approach to deterrence can be applied in the Second Nuclear Age.

The Mobilization Race: Deployment of Missile Defenses. The Iran, North Korea, and Russia scenarios all involve some form of mobilization race with conventional forces, particularly non-nuclear strategic forces. In the Iran and North Korea scenarios in particular, the issue of deploying U.S. missile defenses from outside the theater of operations presents Tehran and Pyongyang with the prospect that their haystack attacks would become increasingly risky. This creates a situation where the leaders of both countries are confronted with a “use-it-or-lose-it” problem with respect to their nuclear forces.

The Iran scenario also revealed a problem for U.S. policymakers. They feared that even a covert employment of missile defenses could undermine crisis stability by encouraging the Israelis (or, theoretically, the Saudis as well) to launch a preemptive strike against Iran. The rationale is that with stronger missile defenses, Israel (or Saudi Arabia) would have greater confidence that they could defeat an Iranian “broken-back” retaliatory strike. Indeed, our preliminary calculations on the requirements for a successful haystack attack suggest this may be the case.

Arms Control

With respect to nuclear forces, arms control has been dominated by agreements between the Cold War superpowers, the United States and Soviet Union (now Russia). This was understandable, given that the two countries’ nuclear arsenals were far greater than those of any other country. But in the Second Nuclear Age, greatly reduced U.S. and Russian arsenals have dramatically reduced the numeric advantage they once enjoyed over other nuclear powers. There are also more nuclear powers, including some (Pakistan in particular) that are rapidly increasing their arsenal’s size. In brief, the bipolar nuclear rivalry of the First Nuclear Age is giving way, albeit gradually, to a multipolar competition. Complicating matters further is the introduction of conventional and cyber capabilities into the strategic balance. It follows that if we must fundamentally rethink our view of strategic warfare, so too must we rethink how this military competition might best be regulated through diplomacy to achieve the overriding U.S. interest of avoiding breaking the nuclear taboo.

One might compare the shift from the First to the Second Nuclear Age to the change in the naval competition after World War I. Prior to the war, Germany had emerged as the principal challenger to the world’s dominant maritime power, Great Britain. In 1912, as both countries were engaged in a furious race to build *Dreadnought*-type battleships, Britain’s first lord of the admiralty, Winston Churchill, offered what amounted to an arms control treaty to Germany

that would limit the number of these ships in each navy.²⁵⁸ Following the war, a defeated Germany lost its navy, but Britain had to cope with the rapid rise in U.S. naval power, and Japan's as well. The Russian Revolution had put that country's navy in disarray, but France and Italy remained formidable naval powers. Efforts to restrain this multipolar maritime competition required the involvement of all the principal naval powers. These efforts led to the Washington Naval Conference that produced the Washington Naval Treaty (also known as the Five-Power Treaty) in 1922. Just as the current strategic military competition requires considering new forms of military capability (such as advanced missile defenses and precision-guided munitions), so too the Washington negotiations had to take into account "new" vessels like aircraft carriers and submarines, with limits placed on the former as well as on battleships.²⁵⁹ Given the shift from a nuclear competition to a broader strategic competition involving a wider range of military capabilities, it seems increasingly likely that future strategic arms agreements may resemble the Washington Conference more than the SALT and START/New START²⁶⁰ agreements. It is not too early to begin thinking about how such highly complex negotiations might be structured to best achieve U.S. policy objectives.

Further Research

As noted earlier, the scenarios are neither predictive nor prescriptive; they are diagnostic. At best they provide insight into the key aspects of a dynamic competitive environment to enable policymakers to focus their efforts more productively. Given the insights derived from this set of scenarios, the following areas seem promising candidates for additional analysis:

Additional Scenarios. This assessment could benefit from a few additional scenarios, particularly with respect to South Asia (India-Pakistan, perhaps with an excursion that includes China and Iran), and a non-state actor.²⁶¹ Importantly, given the dynamic geostrategic and economic environments, as well as rapid advances in military-related technologies, the scenario set will need to be updated regularly to identify emerging key aspects of the competition that merit attention, as well as those issues initially identified as fading in importance.

258 Britain abandoned the two-power standard in favor of focusing on Germany alone—a bipolar competition. In 1912 Britain offered to maintain a 16:10 (Britain/Germany) ratio in battleships. Churchill proposed a "naval holiday," meaning that if Germany refrained from building battleships in any given year, Britain would do the same. Marder, *From the Dreadnought to Scapa Flow*, Vol. 1, *The Road to War*, pp. 284, 313–316.

259 The negotiations failed to reach an agreement on submarines, which the British sought to abolish. Limits on cruisers and destroyers could not be reached, in part because of general concerns over the ability to monitor compliance and some maritime powers' concerns that they needed to enjoy an advantage owing to their unique interests (such as the British need for cruisers to police their global empire) or to redress what they believed to be an existing capability gap. See John Maurer, "Arms Control and the Washington Conference," in Erik Goldstein and John Maurer, eds., *The Washington Naval Conference, 1921–22* (Portland OR: Frank Cass, 1994), pp. 267–293; and Paul M. Kennedy, *The Rise and Decline of British Naval Mastery* (Atlantic Highlands, NJ: The Ashfield Press, 1983), pp. 274–279.

260 SALT refers to the Strategic Arms Limitation Talks/Treaty, while START is the abbreviation for Strategic Arms Reduction Treaty.

261 Scenarios on these two general cases can be found in Krepinevich, *7 Deadly Scenarios*, pp. 30–90.

War-Termination Scenarios. Preventing the use of nuclear weapons is a high priority for the United States as well as for many other states. Yet this assessment finds that nuclear crises may well increase and that crisis stability may decline significantly, increasing the risk of nuclear use. While a nuclear exchange between the two Cold War superpowers would likely have ended life on Earth as we know it, there would likely be a “day after” following a nuclear conflict between minor powers. Prudence dictates that scenarios be developed that examine how best to address a situation where deterrence fails and priority shifts to terminating such a conflict as promptly as possible. In a more hopeful vein, by identifying the factors that led to the failure of deterrence, these scenarios can potentially alert policymakers to react when these factors appear and failure is in its early stages. Thus these scenarios may enable leaders to move off the path of deterrence failure, thereby avoiding policy failure and the need for war termination.

Multipolar Strategic Competition: Net Assessment. Scenario-based planning is an important analytic tool in most net assessments of a particular military competition. But net assessments—although diagnostic, like scenarios—are far more comprehensive, taking into account a range of factors in far greater detail than is possible in scenario planning. Indeed, the challenge of crafting a good net assessment has been compared by its originator, Andrew Marshall, to a doctoral dissertation.²⁶² The challenge of preparing an assessment of the nuclear balance during the Cold War was a daunting one. Given the gradual shift from a bipolar nuclear competition to a multipolar strategic competition, both the need for and the difficulty of undertaking such an assessment is likely to be formidable. (NB: The other research initiatives outlined in this section would likely be elements of a net assessment.)

Deterring (and Defending against) Haystack Attacks. More analysis is needed to examine the characteristics of haystack attacks. While they emerge as a significant problem in the Iran and (especially) North Korea scenarios, the matter of what military strategies and capabilities and what diplomatic initiatives might be useful in deterring (or responding to) such attacks should be analyzed.

Emerging Technologies and Their Effects on the Strategic Competition. Just as the past quarter-century has witnessed the emergence of precision warfare and cyber warfare, advances in technologies such as directed energy (lasers) and hypervelocity weapons (rail-guns), artificial intelligence, “big data,” and robotics, among others, have the potential to alter the strategic competition and introduce a Third Nuclear Age. The scenarios in this assessment did not examine these technologies, but such an examination is warranted.

Improving Attack Attribution. Research and analysis to increase the probability of prompt attack attribution could, given the insights gleaned from the scenarios, significantly improve crisis stability. If the early warning systems of minor powers become increasingly

²⁶² For an overview of net assessment methodology, see Krepinevich and Watts, *The Last Warrior*, pp. 64–66, 69–71, 89–92, 101–105, 108–110.

suspect, other forms of intelligence (such as signals intelligence and human intelligence) may offer ways to identify, with a high degree of confidence, the source of an attack. If so, it could significantly reduce the incentive for certain kinds of attack.

Identifying New Metrics. As described in this assessment's introduction and highlighted in the scenarios, the Second Nuclear Age is different from the first in many ways. Metrics like "parity" in nuclear capability that were relied upon during the bipolar Cold War environment seem far less useful, if not irrelevant, in a multipolar nuclear competition that has expanded into a strategic competition with the introduction of conventional precision strike, advanced air and missile defenses, and cyber munitions.

Take another example: In such an environment, particularly where major power alignments may be subject to shifting on short notice, what constitutes a secure second-strike capability, or mutual assured destruction? In the case of arms control negotiations, how might one weigh nuclear weapons against elements of conventional prompt global strike forces, or cyber munitions? How does one defend against cyber attack relative to air and missile defenses? Problems abound, while answers are elusive. This issue would benefit from an initial assessment of the problem, which seems likely only to become more complex over time.

Final Thoughts

The Thomas Schelling quote above laments that it took twenty years after the dawn of the nuclear age (or just about the time he introduced his seminal work) for strategists and policymakers to think through the implications of nuclear weapons. If we mark the advent of the Second Nuclear Age as the point the Soviet Union collapsed and the United States introduced what has become known as precision warfare, then we are a quarter-century along in this new era.

Yet this new age, despite the advantage of being five years beyond the point marked by Schelling, has yet to produce the foundational analyses that the Bernard Brodies, Herman Kahns, William Kaufmanns, Henry Kissingers, Andrew Marshalls, Thomas Schellings, Albert Wohlstetters and other notables of the first age contributed. Perhaps it is because the Second Nuclear Age appears so much more complex—although a big challenge has hardly discouraged brilliant and ambitious analysts in the past. Or maybe it is because the Second Nuclear Age lacks the immediate existential danger posed by the Soviet Union so soon after a major war that did so much to incentivize thinking during the First Nuclear Age. Or it may be that in the current age the best analytic talent has been devoted primarily to supporting efforts to reduce the number of nuclear players (nonproliferation) and number of weapons (arms control and disarmament), rather than the consequences of these efforts achieving only partial success.

Whatever the reason for this benign neglect, the existing and prospective challenges posed by the Second Nuclear Age, as reflected in the scenarios presented here, are sobering. If the United States seeks to preserve the nuclear taboo, it ignores them at its peril.

APPENDIX A

Haystack Attack

Ryan Boone

Several scenarios in this paper feature a haystack attack, a method by which an adversary with relatively few nuclear weapons, but a robust missile inventory, could threaten even well defended targets with nuclear strikes. By mixing nuclear-tipped weapons among a salvo of conventionally armed missiles of similar design, the adversary complicates the defender's ability to prioritize targets for interception. Defenders can either attempt to engage every incoming weapon and risk exhausting their magazines of interceptors, or they can hold interceptors in reserve and risk allowing a missile carrying a nuclear warhead to strike its target uncontested.

The following simulations exploring the threat posed by a haystack attack are illustrative. They assume an attack employing ballistic missiles as the delivery system against a defended counter-value target, in this case, a city defended by the MIM-104 Patriot system. Important factors (e.g., missile time of flight, accurate telemetry data, electronic interference, and saturation of defensive systems' targeting capabilities) that could have a significant bearing on the prospects for a successful attack (or defense) are left for further analysis. Theater missile defenses like THAAD or Aegis have also been excluded. Missile interdiction depends on many factors, and the simulation assumptions are estimates based on publically available information. Changes in the assumptions, for example, regarding system capabilities and reliability, as well as attack size and synchronization, defensive capacity, or attack warning time could also significantly affect the chances of a successful nuclear strike or defense.

Each haystack attack case was run 100,000 times via the statistical computing programming language R and RStudio software to generate distributions of results with an eye toward minimizing variability in results caused by probability-based factors.¹ Assumptions affecting the

¹ RStudio is a free statistical modeling program. Modeling these encounters is relatively straightforward, allowing readers to adjust the assumptions as they see fit. An RStudio download is available at <https://www.rstudio.com/>.

results include the risk offensive missiles will malfunction on launch, the probability missiles will arrive at their intended target (P_a), interceptor malfunction rates, and the probability of kill (P_k) of functioning PAC-2 and PAC-3 interceptors. MIM-104 Patriot batteries are presumed to fire up to two PAC-3 interceptors in a shoot-look-shoot manner at each incoming target.² If the battery exhausts its PAC-3 interceptors, it will employ its PAC-2 interceptors to engage incoming targets until all are destroyed or the launchers have expended all of their PAC-2s.³ It's assumed that all incoming weapons are successfully detected and tracked, although the defender cannot distinguish between missiles armed with conventional or nuclear warheads.

Two cases are examined here. The first case assumes the attacker launches a single salvo of fifty missiles, of which five are armed with nuclear weapons. Defending against this attack is one U.S. MIM-104 Patriot battery with six missile launchers, of which four are armed with four PAC-2 interceptors and two with sixteen PAC-3 interceptors, for a total of forty-eight weapons.⁴ The battery will fire interceptors until all incoming missiles are destroyed or it has exhausted its interceptors.

A second case splits the ballistic missile attack into two salvos, with nuclear-tipped missiles concentrated exclusively in the second salvo. This haystack attack tactic seeks to increase the chances of success by employing all of the nuclear-armed weapons in the second salvo, ideally after a defender's interceptors have been depleted engaging the first salvo, which is constituted

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- 2 Patriot battery loadouts vary by deployment and country due to the weapon system's modularity. PAC-3 interceptors are optimized for ballistic missile defense at the expense of effectiveness against aircraft. A single MIM-104 launcher can carry up to four PAC-2 or sixteen PAC-3 ballistic missile interceptors. Additionally, while normal missile defense doctrine usually emphasizes a "shoot-shoot-look-shoot" doctrine, a "shoot-look-shoot" doctrine has been modeled here to conserve interceptors against a large salvo. Engagement time windows, however, may preclude this conservatism in reality.
 - 3 The Patriot fire control system is sophisticated enough to determine, given the incoming target, whether it is more appropriate to fire the less expensive PAC-2 interceptors first or utilize the more capable PAC-3s. For simplicity, these simulations assumed that PAC-3s were fired first in all cases. Relaxing this assumption and allowing either PAC-2s or PAC-3s to be fired first would not materially change the outcome.
 - 4 In addition to the United States, several other countries field MIM-104 systems. According to the latest IISS Military Balance, Japan has 120 MIM-104 systems. If they were all in service and the JASDF utilized the same unit organization as the United States, this would yield roughly fifteen batteries across Japan. However, the JSDF has instead organized its MIM-104s into twenty-four batteries armed with either PAC-2s or PAC-3s. South Korea has forty-eight Patriot systems armed with PAC-2s. *The Military Balance 2015* (London: The International Institute for Strategic Studies, 2015), pp. 260, 266. See also, "Japan Achieves Deployment of Its 24 Patriot Air Defense Batteries," *MissileThreat.com*, October 29, 2015, available at <http://missilethreat.com/japan-achieves-deployment-of-its-24-patriot-air-defense-missile-batteries/>. While each Patriot launcher could be loaded with up to sixteen PAC-3 missiles, this would limit the diversity of targets the Patriot system can engage. For an examination of alternative U.S. missile defense postures, see Mark Gunzinger and Bryan Clark, *Winning the Salvo Competition: Rebalancing America's Air and Missile Defenses* (Washington, DC: Center for Strategic and Budgetary Assessments, forthcoming in 2016).

entirely of decoy warheads.⁵ Both salvos are launched within the defenders' reload window, denying the defender the opportunity to rearm its launchers.⁶

The second case was repeated to explore a range of defensive capacities and attack sizes. The results are at the end of this appendix.

Again, these simulations are intended to be illustrative, not definitive. Their purpose is to stimulate thinking about how an adversary that is "nuclear poor" but "missile rich" could threaten even defended targets. Further studies looking at the "haystack problem" from the perspective of attack synchronization and defense saturation should be examined with an eye toward increasing understanding of the potential value of haystack attacks. For example, it would likely be useful to assess the value of moving towards a higher PAC-3 load out per battery, introducing additional missile defense systems like THAAD or (looking toward the long-term future) electromagnetic rail guns and powder guns. For the attacker, it might be worth exploring the use of multiple dummy warheads.

Case 1 Assumptions: Random Distribution of Nuclear Warheads

Nuclear Weapons in Adversary Arsenal	5
Ballistic Missile Salvo Size ⁷	50
Missile Launch Reliability	90.00%
Missile Flight Reliability	90.00%
Interceptor Malfunction Rate	5.00%
PAC-2 Pk ⁸	65.00%
PAC-3 Pk	85.00%
"Shoot-Look-Shoot" PAC-3 Interceptor Effectiveness	97.75%
PAC-2 Interceptors	16
PAC-3 Interceptors	32

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- 5 Decoy warheads here refer to all non-nuclear missiles launched. Conventionally armed weapons could still destroy important targets, like missile defenses, if unheeded.
- 6 Operationally, the attacker's ability to execute this form of haystack attack hinges in part on several factors, including the number of available ballistic missile launchers, how quickly launchers can be reloaded, and whether the additional waves of weapons can arrive before defensive systems can be rearmed.
- 7 The DPRK has an estimated 200 Rodong ballistic missiles capable of ranging Japan and maintains active missile production lines. Chinese inventories of similar weapons are substantially larger. To execute an attack of this size, an attacker must either have fifty launchers or a fewer number of launchers that can be reloaded faster than defenses can be replenished. "North Korea Missile Capabilities," *Nuclear Threat Initiative*, May 1, 2010, available at <http://www.nti.org/analysis/articles/north-korea-missile-capabilities/>.
- 8 MIM-104 Patriots engaged fifty-three incoming missiles during Desert Storm with 157 PAC-2 interceptors, successfully intercepting fifty-one missiles (a 96.23 percent success rate, or roughly a 66.46 percent Pk per weapon launched). See "Patriot (PAC-1, PAC-2, PAC-3)," *MissileThreat.com*, updated December 22, 2013, available at <http://missilethreat.com/defense-systems/patriot-pac-1-pac-2-pac-3/>.

Case 1 Results

Average Number of Nuclear Weapons Successfully Launched	4.50
Average Number of Salvo Weapons Successfully Intercepted	30.62
Probability of One or More Nuclear Weapons Getting Through	46.76%

Case 1 Comments

Given a salvo size of fifty weapons, a little more than forty missiles should successfully arrive at the intended target area, on average, where they will be engaged by defenses. With the interceptor magazine described above, a U.S. Patriot battery can expect to intercept approximately thirty weapons, allowing roughly ten weapons to reach their target, with a 46 percent chance of at least one nuclear warhead reaching the target. Additional missiles launched quickly drive up the probability of achieving a successful nuclear strike.

Case 2 Assumptions: Nuclear Warheads Concentrated in Second Salvo

Nuclear Weapons in Adversary Arsenal	5
Ballistic Missile Salvo Size	50
Missile Launch Reliability	90.00%
Missile Flight Reliability	90.00%
Interceptor Malfunction Rate	5.00%
PAC-2 Pk	65.00%
PAC-3 Pk	85.00%
“Shoot-Look-Shoot” PAC-3 Interceptor Effectiveness	97.75%
PAC-2 Interceptors	16
PAC-3 Interceptors	32

Case 2 Results

Average Number of Nuclear Weapons Successfully Launched	4.50
Average Number of Salvo Weapons Successfully Intercepted	30.63
Probability of One or More Nuclear Weapons Getting Through	65.18%

Case 2 Comments

Case 2 is similar to Case 1, save that the total ballistic missiles launched are broken into two equally sized salvos, *with all the attacker’s nuclear warheads concentrated in the second salvo*. Provided the defender cannot know for certain that all of the nuclear weapons are loaded in the second half of the salvo, the defender is forced to engage all missiles in the first wave, expending much of its interceptor inventory before the second wave arrives. As such, a back-loaded salvo has a much higher chance of successfully executing a nuclear strike than one in which nuclear warheads are randomly distributed in the two salvos. Increasing the

size of the salvo also dramatically increases the likelihood of a nuclear warhead arriving after defenses have been depleted.

The Case 2 simulation was run several additional times, pitting differently sized offensive strikes against varying defensive postures. The chart below gives the probability that one or more nuclear weapons arrive on target against varying missile defenses. The leftmost column indicates the number of Patriot launchers comprising the defensive force, while the topmost row shows the total number of weapons launched against the target. Since some U.S. allies have fewer MIM-104 Patriot launchers per battery than is standard among U.S. forces, their effectiveness would be correspondingly diminished.

For example, consider a hundred-missile attack broken into two fifty-missile salvos against a target defended by a U.S. Patriot battery with six launchers armed with thirty-two PAC-3 interceptors and sixteen PAC-2 interceptors. All of the attacker's five nuclear weapons are placed on missiles fired in the second salvo. In this case, the probability of at least one nuclear weapon getting through to their target is nearly 100 percent, given the large number of missiles launched at the target, even though the number of nuclear-armed missiles in the attack remains the same. Had the attack been conducted with fifty missiles, again in two salvos with all five nuclear weapons being located in the second salvo, the probability of one or more nuclear weapons getting through to their target would drop to approximately 65 percent.

Probability of One or More Nuclear Weapons Getting Through													
Defensive capacity				Total missiles fired at target									
Patriot launchers	Total tubes	PAC-2s	PAC-3s	10	20	30	40	50	60	70	80	90	100
2	8	5	12	17.48%	76.54%	99.48%	99.97%	99.97%	99.97%	99.97%	99.97%	99.98%	99.98%
4 (partner battery)	16	10	24	16.37%	17.08%	35.05%	81.10%	97.15%	99.78%	99.96%	99.97%	99.98%	99.98%
6 (U.S. battery)	24	16	32	16.40%	16.35%	18.12%	27.51%	65.16%	88.87%	97.32%	99.58%	99.94%	99.97%
8	32	21	44	16.23%	16.41%	16.59%	17.60%	22.30%	41.71%	71.89%	88.45%	95.83%	98.84%
10	40	26	56	16.58%	16.38%	16.55%	16.70%	17.10%	20.53%	27.65%	53.33%	75.41%	87.96%
12 (2 U.S. batteries)	48	32	64	16.58%	16.72%	16.56%	16.58%	16.61%	17.81%	20.91%	25.44%	44.34%	67.24%

*Each test was run 100,000 times. Variations in random number generation will result in minor deviations between simulation attempts, even with the same assumptions. Total missiles fired are divided evenly into two salvos, with five nuclear warheads in latter salvo so as to arrive after defensive interceptor depletion. While the number of launchers was adjusted, the simulation kept the ratio of approximately two tubes dedicated to PAC-2s for every tube dedicated to quad-packed PAC-3 missiles.

LIST OF ACRONYMS

A2	anti-access
AD	area denial
ADIZ	Air Defense Identification Zone
AN/TPY-2	Army-Navy/portable radar surveillance
AQAP	al-Qaeda in the Arabian Peninsula
ASBM	anti-ship ballistic missile
ASEAN	Association of Southeast Asian Nation
ASW	anti-submarine warfare
BMD	ballistic missile defense
C4ISR	command, control, communications, computers, intelligence, surveillance, and reconnaissance
CCP	Chinese Communist Party
CIA	Central Intelligence Agency
CMC	Central Military Commission
CNA	computer network attack
CPGS	Conventional Prompt Global Strike
CSBA	Center for Strategic and Budgetary Assessments
CSM	conventional strike missile
CYBERCOM	U.S. Cyber Command
DARPA	Defense Advanced Research Projects Agency
DEW Line	Distant Early Warning Line
DEZ	Designated Economic Zone
DoD	Department of Defense
DPP	Democratic Progressive Party
DPRK	Democratic People's Republic of Korea
EMP	electromagnetic pulse
FALCON	Force Application and Launch from Continental United States
FONOPS	freedom of navigation operations
GCC	Gulf Cooperation Council
GDP	gross domestic product
GLCM	ground-launched cruise missile
HEMP	high altitude electromagnetic pulse
HEU	highly enriched uranium
HPM	High-Power Microwave

LIST OF ACRONYMS

IADS	integrated air and missile defense system
IAEA	International Atomic Energy Agency
IAF	Israeli Air Force
ICBM	intercontinental ballistic missile
IDF	Israeli Defense Force
INF Treaty	Intermediate-Range Nuclear Forces Treaty (effective 1988)
IPFM	International Panel on Fissile Materials
IRBM	intermediate-range ballistic missile
IRG	Iranian Revolutionary Guards
IRGC	Islamic Revolutionary Guard Corps
ISIS	Islamic State of Iraq and al-Sham
JCPOA	Joint Comprehensive Plan of Action
JMSDF	Japan's Maritime Self-Defense Forces
JSDF	Japanese Self-Defense Forces
K.A.CARE	King Abdullah City for Atomic and Renewable Energy
KPA	Korean People's Army
KT	kiloton
LaWS	laser weapon system
LRU Party	Latvian Russian Union Party
MANPADS	man-portable air defense system
MEB	Marine Expeditionary Brigade
MIRV	multiple independently targetable reentry vehicle
MRBM	medium-range ballistic missile
MT	metric ton
NATO	North Atlantic Treaty Organization
New START	New Strategic Arms Reduction Treaty (effective 2011)
NPT	Nuclear Nonproliferation Treaty (effective 1970)
NSC	National Security Council
NSL	National Security Law
OSD	Office of the Secretary of Defense
PAC	Patriot Advanced Capability
PGM	precision-guided munition
PLA	People's Liberation Army
PLAAF	People's Liberation Army Air Force

LIST OF ACRONYMS

PNI	Presidential Nuclear Initiatives (1991)
PRC	People's Republic of China
RAMM	rockets, artillery, mortars, and missiles
RPCS	regional prompt conventional strike
SACEUR	Supreme Allied Commander Europe
SAIS	Johns Hopkins University's School of Advanced International Studies
SALT	Strategic Arms Limitation Talks (1969–1979)
SIGINT	signals intelligence
SIOP	single-integrated operational plan
SLBM	submarine-launched ballistic missile
SLIRBM	submarine-launched intermediate-range ballistic missile
SM	Standard Missile
SRBM	short-range ballistic missile
SSBN	ballistic missile submarine
START	Strategic Arms Reduction Treaty (effective 1994)
STRATCOM	U.S. Strategic Command
TEL	transporter erector launcher
THAAD	Terminal High Altitude Area Defense
TNT	Trinitrotoluene
UAE	United Arab Emirates
UAV	unmanned aerial vehicle
UNIFIL	The United Nations Interim Force in Lebanon
VJTF	Very High Readiness Joint Task Force
WMD	weapons of mass destruction



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