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RETHINKING THE BOMB: NUCLEAR WEAPONS AND AMERICAN GRAND STRATEGY

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Nuclear weapons have long played a central but often unappreciated role in American grand strategy. In spite of the unimaginable consequences of their use in war, we know far less about how the bomb shapes U.S. national security and world politics than we should. Both our leading theories and histories have failed to fully explain important choices American leaders have made about the bomb over the past eight decades. This is less a failing of scholarship and more a reflection of the steep methodological, linguistic, and normative barriers to understanding nuclear strategy and statecraft. This challenge will only deepen, as new geopolitical and technological forces return the critical question of the purpose and consequences of nuclear weapons to the heart of the debate about the future of America's grand strategy.

Nuclear weapons, and the role they play in American grand strategy, are an issue of fundamental importance.[1] Any use of these fearsome tools of destruction, whether intentionally or by mistake, would be catastrophic. Nuclear weapons also buttress much of American grand strategy — explicitly and more often implicitly — to a far greater extent than is acknowledged. The mere existence of these weapons shapes strategy, statecraft, and the international system in profound, powerful, and often puzzling ways.

Despite the obvious importance of the bomb, its role is largely taken for granted by the American public, even among foreign policy experts. The purpose of nuclear weapons in American grand strategy draws little focused attention, much less probing questions. There are discussions about aspects of U.S. nuclear policy: debates over whether the U.S. nuclear deterrent should be modernized, what the consequences would be if a particular arms-control agreement is signed or abandoned, or worries about the possible nuclearization of a "rogue" state. These discussions, however, are episodic. They tend to fade quickly from headlines and only rarely do they bring to the surface underlying assumptions about the role of nuclear weapons in U.S. grand strategy.

Academic discussion of the bomb has its own challenges. Within the most influential school of thought in security studies, nuclear weapons' effect on foreign policy and international relations is largely understood as a settled question. This is not to suggest that there is consensus among academics: More so than many fields of inquiry, nuclear studies is plagued by intellectual stove-piping, methodological disputes, and disciplinary divides. Within these academic worlds, moreover, much of the debate over nuclear issues focuses on peripheral questions and is often divorced from the realities of policymaking. Most tellingly, discussions of nuclear weapons are rarely connected to larger questions surrounding American politics, policy, and purpose in the world. Most of these disputes center on competing versions of the past. And the academic discipline of history — the field that could arbitrate these disagreements — marginalizes the study of nuclear weapons and rarely contributes to these debates.

This article seeks to disturb this complacency about the role of nuclear weapons in U.S. grand strategy to explore important questions: What is

1 The ideas for this paper were first discussed at the September 2017 Nuclear Studies Research Initiative workshop in Greenbriar, West Virginia. I am grateful to all the participants for their feedback and especially grateful to Janne Nolan for hosting the event. I would also like to thank Hal Brands, Natalie Britton, Ryan Evans, Austin Long, Joshua Rovner, Philip Zelikow, and four anonymous reviewers for their excellent suggestions.

the rationale for these weapons, and how do they advance America's interests in the world?

Unfortunately, much of the conventional wisdom surrounding these issues is incomplete, unfalsifiable, and, at times, simply wrong. This is not the result of a lack of effort or intellect in the academy. To be clear, the body of scholarly work on nuclear weapons is enormous and impressive. Rather, the nature of nuclear weapons and the unusual and unexpected role of the bomb in American grand strategy have often been perplexing, hard to measure and assess, and even contradictory. This has led to confusion and unproductive — sometimes sharp — disagreements among scholars of nuclear weapons and international relations. Decision-makers often share this confusion.

To better understand the purpose and consequences of nuclear weapons in American grand strategy, this essay interrogates many widely held assumptions and beliefs, with a goal of updating the intellectual architecture undergirding analysis of the role of the bomb. In the process, this article makes five arguments.

Argument One

The leading and theoretical approach to nuclear politics — known as the nuclear-revolution school — has failed to predict and explain critical aspects of U.S. nuclear policies, including nuclear strategy and nonproliferation. The most important insight from this approach is correct: that few if any political objectives were worth the extraordinary costs of a thermonuclear war. The theory, however, does not offer much insight into almost eight decades of U.S. "exceptional" behavior with the bomb — or policies at odds with the predictions of the nuclear-revolution framework.

Argument Two

Our understanding of the history of U.S. nuclear weapons policies, and the bomb's role in American grand strategy, is often incomplete, misleading, and even wrong. Much of this stems from a shameful lack of attention to the subject by academic historians, leaving largely unchallenged a decades-old, stylized narrative crafted by participants and scholars of security and strategic studies who lack access to key archival sources. America's nuclear past is more complex than the conventional wisdom allows. There are at least four complementary and competing strands of U.S. nuclear history — intellectual, rhetorical, operational, and presidential — that should be recognized and reconciled. Furthermore, U.S. nuclear history should be understood as distinct from, if inextricably interwoven with, other powerful streams of world history since 1945, including the Cold War, decolonization, and globalization.

Argument Three

The inadequacies of theory and history in explaining the policies of the United States are not surprising, since the nature of nuclear statecraft presents severe methodological and rhetorical challenges to getting the "right" answer. Furthermore, nuclear weapons raise profound moral considerations, making it difficult to distinguish between scholarly arguments and advocacy. These challenges demand intellectual humility and are ignored at great peril.

Argument Four

Emerging challenges — technological, geopolitical, and normative — will make questions of nuclear weapons and American grand strategy both more difficult and more consequential in the years and decades to come. Some of these forces make the use of nuclear weapons increasingly unthinkable, while others appear to make the bomb's use more likely, both with consequences for American grand strategy. The tensions and contradictions in U.S. policy — between nuclear activism and nuclear abstinence — will make an already difficult situation increasingly unsustainable in the future.

Argument Five

America's often puzzling nuclear policies are best understood through a grand-strategic lens. What does such a framework reveal about the United States?

While American nuclear policies have often appeared uncertain, ambiguous, and inconsistent, when assessed over time it is clear that the United States has persistently used nuclear weapons to achieve one overriding grand-strategic goal: to "resist" the elements of the "nuclear revolution" that limit America's freedom of action in the world and expose it to vulnerability. This was true during the Cold War and after the Cold War ended, and it remains true to this day. Washington has sought to eliminate its vulnerability and promote freedom of action through policies and behaviors that often appear to be in tension or even contradictory. Academics have often missed this important point, which is often intuitively understood by American policymakers.

How did the United States pursue this grand-strategic goal? At times, the U.S. government pursues *nuclear activism* by treating nuclear weapons as the most important element of its grand strategy. It did this, for example, by prizing

nuclear superiority and by adopting strategies to use these weapons early and first in a crisis. At other times, Washington has pursued policies of *nuclear abstinence*, highlighting how unusable and even repugnant nuclear weapons are and encouraging other states to eschew their benefits. Many times, American grand strategy has been to pursue both, seemingly incompatible, positions. This split was driven less by strategic ambiguity than real uncertainty about the best path forward and a desire to fully cover its bet. When it comes to activism or abstinence, the United States, like a switch-hitter in baseball choosing between batting left or right, chooses the option with the greatest odds of achieving its grand-strategic goals.

I. The Wrong Revolution?

How *should* nuclear weapons affect U.S. strategy and statecraft? What does the leading theory — the nuclear-revolution school — say about how American grand strategy should be influenced by the bomb?

Under the nuclear-revolution framework, assessing the purpose and consequences of the bomb through a grand-strategic lens can make for an awkward fit. After all, grand strategy is about making choices: what means and instruments, including war, states and their leaders select to achieve desired ends in geopolitical competition in international relations. It reflects "a purposeful and coherent set of ideas about what a nation seeks to accomplish in the world, and how it should go about doing so."[2] Grand strategies vary enormously over time, location, individuals, and regimes. The United States has pursued a variety of grand strategies since its founding, and debate is fierce over what grand strategy it should pursue today and what means it should employ.

The nuclear-revolution school argues that the bomb severely constrains and limits — and at times eliminates — the grand-strategic choices that were available to states and statesmen in the past. Robert Jervis, the leading thinker in the nuclear-revolution school, has argued that "[f]orce and the threat of it cannot support foreign policy in the same way that it did in the past."[3] Historian Lawrence Freedman agrees, suggesting that the notion of a nuclear strategy "is a contradiction in terms."[4]

What is the "nuclear revolution" framework, and what predictions and explanations does it offer? While scholars differ on some aspects,[5] Stephen Walt has nicely defined its broad outlines:

> As refined by scholars like [Bernard] Brodie, Thomas Schelling, Glenn Snyder, Robert Jervis, Kenneth Waltz, and Stephen Van Evera, nuclear weapons are said to provide states with the ability to protect their sovereignty and independence not via direct defense but rather through *deterrence*.

According to the "logic of the 'nuclear revolution,' therefore, states with second-strike capabilities were secure against attack and didn't need to worry very much about their sovereignty or independence." The nuclear revolution "means that 'nuclear superiority' was a meaningless concept. … A handful of survivable weapons makes it very unlikely that another state will attack you directly or try to invade and take over your country."[6]

According to Jervis, the leading scholar in this tradition, nuclear weapons "can kill but not influence."[7] Nuclear weapons even "eliminate the security dilemma," the phenomena that many scholars believe drove international conflict for centuries, making cooperation among states more likely.[8] Nor can they be used for much else besides deterrence. As Todd Sechser and Matthew Fuhrmann argue in a recent study, "For all the money spent on atomic bombs, they have bought precious little coercive leverage for states."[9]

2 Hal Brands, *What Good Is Grand Strategy? Power and Purpose in American Statecraft from Harry S. Truman to George W. Bush* (Ithaca, NY: Cornell University Press, 2014), 3.

3 Robert Jervis, *The Meaning of the Nuclear Revolution: Statecraft and the Prospect of Armageddon* (Ithaca, NY: Cornell University Press, 1990), 8.

4 Lawrence Freedman, *The Evolution of Nuclear Strategy* (New York: Palgrave Macmillan, 2003), 458.

5 While there are a range of perspectives within the nuclear-revolution framework, most derive and share the assumptions of defensive realism, which may be the most predominant theoretical approach to international relations within the field of American political science. For an interesting take on efforts by different realist camps to understand the effects of nuclear weapons on world politics, see Zanvyl Krieger and Ariel Ilan Roth, "Nuclear Weapons in Neo-Realist Theory," *International Studies Review* 9, no. 3 (Autumn 2007): 369–84, https://www.jstor.org/stable/4621831.

6 Stephen M. Walt, "Rethinking the 'Nuclear Revolution,'" *Foreign Policy*, Aug. 3, 2010, https://foreignpolicy.com/2010/08/03/rethinking-the-nuclear-revolution/.

7 Robert Jervis, *The Illogic of American Nuclear Statecraft*, (Ithaca, NY: Cornell University Press),12.

8 Charles L. Glaser, *Analyzing Strategic Nuclear Policy* (Princeton, NJ: Princeton University Press, 1990), 95.

9 Todd S. Sechser and Matthew Fuhrmann, *Nuclear Weapons and Coercive Diplomacy* (Cambridge, UK: Cambridge University Press, 2017), 6. The classic work arguing that nuclear weapons are ineffective for coercion is by Richard K. Betts, *Nuclear Blackmail and Nuclear Balance* (Washington, D.C.: Brookings Institution Press, 1987).

The nuclear revolution should have had important consequences for proliferation dynamics, nonproliferation policies, and alliances. Joshua Rovner explains that according to the nuclear-revolution view, "if nuclear weapons were great for deterrence but lousy for battle, then Washington should have been sanguine as new countries went nuclear. It might even have been optimistic, since proliferation would, under this theory, lead countries to become cautious."[10] Even if the United States wanted to stem the spread of nuclear weapons, however, the effort would be futile. According to Kenneth Waltz, "[I]f countries feel insecure and believe that nuclear weapons would make them more secure, America's policy of opposing the spread of nuclear weapons will not prevail."[11] Waltz, the most influential international relations theorist of modern times and one of the more extreme advocates of the nuclear-revolution framework, went further still, arguing that nuclear weapons "make alliances obsolete."[12] The mere presence of the bomb would override the grand-strategic choices made by a particular state or leader. "Nuclear weapons can carry out their deterrent task no matter what other countries do."[13]

The nuclear-revolution school argues that the bomb severely constrains and limits — and at times eliminates — the grand-strategic choices that were available to states and statesmen in the past.

The key insight of this framework is that the bomb is a defensive weapon of such powerful force that it transforms strategy and statecraft, constraining the grand-strategic options available to states and leaders before the nuclear age, regardless of a state's history, geography, culture, or regime type. According to Waltz, "American estimates of what is required for deterrence were absurdly high." In other words, "not much is required to deter."[14]

Summing up the conventional wisdom among scholars in this tradition, Charles Glaser and Chaim Kauffman argue that the nuclear revolution reveals that "this technology so heavily favors defense that when all the major powers have nuclear weapons *variation in other factors* becomes relatively unimportant."[15] According to Stephen Van Evera, "the nuclear revolution gave defenders a large military advantage," so large that conquest "became virtually impossible."[16] John Mearsheimer similarly concludes that "there is no question ... the presence of nuclear weapons makes states more cautious about using military force of any kind against each other."[17]

How well did the theory of the nuclear revolution do in predicting American nuclear weapons policy and explaining the role of the bomb in U.S. grand strategy? The framework's key point — that nuclear weapons made total, thermonuclear war a horrifying absurdity to be avoided at all costs — is of course a profound insight. As the historian John Lewis Gaddis argued during the Cold War, "It seems inescapable that what has really made a difference in inducing this unaccustomed caution has been the workings of the nuclear deterrent."[18]

Yet, the implications of this incontrovertible truth for American grand strategy are both contested and uncertain. Did the United States accept mutual vulnerability with nuclear-armed adversaries, as the theory would have predicted? Was the bomb understood only as a defensive weapon to defend American sovereignty and territorial integrity? Were American leaders nonplussed as other states expressed interest in the bomb, and, even

10 Joshua Rovner, "Was There a Nuclear Revolution? Strategy, Grand Strategy, and the Ultimate Weapon," *War on the Rocks*, March 6, 2018, https://warontherocks.com/2018/03/was-there-a-nuclear-revolution-strategy-grand-strategy-and-the-ultimate-weapon/.

11 Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: An Enduring Debate* (New York: W.W. Norton, 2012), 37.

12 Kenneth N. Waltz, "The Emerging Structure of International Politics," *International Security* 18, no. 2 (Fall 1993): 73, https://doi.org/10.2307/2539097.

13 Kenneth N. Waltz, "Nuclear Myths and Political Realities," *American Political Science Review* 84, no. 3 (September 1990): 732, https://doi.org/10.2307/1962764.

14 Sagan and Waltz, *The Spread of Nuclear Weapons*, 21–22.

15 Charles L. Glaser and Chaim Kauffman, "What Is the Offense-Defense Balance and Can We Measure It?" *International Security* 22, no. 4 (Spring 1998): 5–6, https://doi.org/10.2307/2539240. Italics added.

16 Stephen Van Evera, *Causes of War: Power and the Roots of Conflict* (Ithaca, NY: Cornell University Press), 178.

17 John J. Mearsheimer, *The Tragedy of Great Power Politics* (New York: W.W. Norton, 2001), 129.

18 John Lewis Gaddis, "The Long Peace: Elements of Stability in the Postwar International System," *International Security* 10, no. 4 (Spring 1986): 121, https://doi.org/10.2307/2538951.

if concerned, did they recognize and accept that there was little they could do to stop proliferation? Did alliances become less important, and was the United States less likely to use force of any kind? Perhaps most critical, did the United States behave like any other state in the system, bowing before the constraints the nuclear revolution imposed on its strategy and statecraft?

Taken to its logical end, this school of thought suggests that many states should seek nuclear weapons and that the United States should or could do little to stop other states from pursuing and attaining their own bomb. When building arsenals, the ease of securing a second-strike capability meant that seeking quantitative or qualitative advantages beyond a certain point would be a foolish goal for a state: At best it would be wastefully expensive; at worst, destabilizing and dangerous. According to the theory, strategic stability, both in dyadic competitions and on a broader, horizontal scale, should emerge naturally from the nuclear revolution.[19] Nor should the particular circumstance, history, leadership or regime type, or interests of the nuclearizing state affect the powerful, system-wide effects of these weapons.

Or so went the story largely crafted by American academics specializing in security and strategic studies.[20] As Rovner has noted,

> If the nuclear revolution affected grand strategy, the United States should have settled for a small arsenal for the sole purpose of deterrence. It would never have sought to integrate nuclear and conventional forces, because nuclear weapons were fundamentally different in that they could never be used. U.S. leaders should have recognized that defenses against nuclear attack were futile, and avoided pouring time and money into such efforts. And they should have managed the process of proliferation so that states, great and regional powers alike, enjoyed the security benefit of a reliable second-strike capability. None of these things happened.[21]

Why not?

Exceptional, but Not for the Reasons Many Think

The nuclear-revolution framework provides a powerful lens to understand two of the most important aspects of world politics since 1945: the disappearance of great-power war and the non-use of nuclear weapons against adversaries after the United States dropped atomic bombs on Hiroshima and Nagasaki, Japan, in August 1945. It is less helpful in explaining other aspects of U.S. grand strategy in the nuclear age. U.S. behavior and policies diverged from expectations of the nuclear-revolution school in at least three ways.

The first involves American leaders' interest in making nuclear weapons such a core element in U.S. grand strategy. According to the nuclear-revolution school, the most powerful role of nuclear weapons is as "invasion insurance," or to prevent the conquest of sovereign territory. Whatever the fears raised by the Japanese attack of Pearl Harbor, the United States has faced almost no threat of conquest since the Civil War ended in 1865. A United States without nuclear weapons — in 2019 or in 1955 or 1975 or any other year — faced almost zero threat of conquest. Rarely has a state had less need for the bomb to guarantee its immediate territorial integrity, sovereignty, and security.[22] Yet, no state has invested greater resources in developing and deploying nuclear weapons, nor has any other state relied more heavily on nuclear weapons to implement its grand strategy. The United States has spent astronomical sums on nuclear weapons since 1940, dwarfing the expenditures of other

19 Highlighting an irony: If the nuclear revolution was so obvious, powerful, and irresistible, why do analysts have to spend so much time telling policymakers to *pursue* the policy (or not fight against it) if it was the natural consequence of the revolution?

20 There were, of course, exceptions to this view. Among the original strategists, Albert Wohlstetter was often critical of the focus on mutual assured destruction, as was Herman Kahn. For an overview of the early debates, see Fred Kaplan, *The Wizards of Armageddon* (New York: Simon & Schuster, 1983). Later critics of this view included Colin Gray and Keith Payne. See especially Colin S. Gray and Keith Payne, "Victory Is Possible," *Foreign Policy*, no. 39 (Summer 1980): 14–27, https://www.jstor.org/stable/1148409.

21 Rovner, "Was There a Nuclear Revolution?"

22 Protecting the territorial sovereignty of the homeland is obviously not the only U.S. national interest. The United States fought two world wars, in large part to prevent any state from consolidating Europe and using it as a base to threaten the Americas. The United States has been obsessed with expelling great-power influences from its hemisphere and guaranteeing that conflict takes place far away from its homeland. Historically, however, that is a rare luxury for a great power — even Britain and Japan, as well as the continental great powers, have had to worry far more about invasion of the homeland. And the United States developed nuclear weapons during World War II because of fears that Nazi Germany was developing the bomb.

rivals.[23] It plans to spend an additional $1.3 trillion over the next few decades.[24] This is not to suggest that it is surprising the United States pursued and developed the bomb, or even that it pursued a survivable nuclear capability. What is surprising, however, is the central and expensive role that nuclear weapons have played in American grand strategy. Advocates of strategic stability and the nuclear-revolution framework, to say nothing of the historians of American grand strategy before 1950, would likely struggle to explain the United States' experiments with "nuclear sharing" with its allies, its willingness to use nuclear weapons first in a conflict, and pre-delegating authority to launch the bomb to military commanders in the field.[25]

Second, extraordinary new scholarship is making it increasingly clear that the United States never permanently abandoned its efforts to achieve nuclear superiority.[26] For a decade and a half after the United States lost its nuclear monopoly, it strove diligently to build far more deliverable nuclear weapons than any other country.[27] It is true that the United States began to accept *quantitative* equality with its primary adversary, the Soviet Union, by the late 1960s and 1970s. Two points are in order. First, the United States accepted parity only reluctantly. As James Cameron astutely observed, "Nixon hated MAD, believed its logic was defeatist and naïve, yet he signed agreements that enshrined it at the heart of the United States' relations with the Soviet Union."[28] Mired in a disastrous war in Southeast Asia and facing both economic and domestic political constraints on military spending, the United States pulled in its horns. Second, while American policymakers accepted quantitative parity, they still sought *qualitative* primacy over U.S. adversaries.

How did the United States seek this superiority? Concurrent to American policymakers negotiating and accepting the Strategic Arms Limitation Talks (SALT I and SALT II) and the Anti-Ballistic Missile treaties, the U.S. government undertook a massive, extraordinary effort to develop and deploy more sophisticated nuclear weapons and systems to support them. This allowed the United States to exploit its natural advantages over the Soviet Union. As John Maurer has argued,

> American leaders raced the Soviets in military technologies where the United States was perceived to enjoy significant advantages, while simultaneously entangling the Soviet Union in an arms control regime that would limit areas of Soviet strength. By combining arms racing and arms control, the United States pursued a holistic offset strategy.[29]

As historians Niccolo Petrelli and Giordana Pulcini reveal, between 1969 and 1976 the Nixon and Ford administrations "actively sought to transcend nuclear parity."[30]

In the years after quantitative parity was accepted, the United States developed and deployed a number of technologically sophisticated and expensive capabilities, including the Pershing II, MX, Trident D-5, as well as cruise missiles. It also invested enormous resources into missile defense; anti-submarine warfare (i.e., targeting and eluding Soviet nuclear submarines); and command, control, communications, and intelligence

23 Between 1940 and 1996, the United States spent $5.5 trillion on nuclear weapons. Stephen I. Schwartz, "The Hidden Costs of Our Nuclear Arsenal: Overview of Project Findings," Brookings Institution, June 30, 1998, https://www.brookings.edu/the-hidden-costs-of-our-nuclear-arsenal-overview-of-project-findings/.

24 The Congressional Budget Office estimates the cost of operating and modernizing U.S. nuclear security forces at more than $1.2 trillion over the next 30 years. See: Congressional Budget Office, *Approaches for Managing the Costs of U.S. Nuclear Forces, 2017–2046,* October 2017, https://www.cbo.gov/system/files?file=115th-congress-2017-2018/reports/53211-nuclearforces.pdf.

25 On nuclear sharing, see Marc Trachtenberg, *A Constructed Peace: The Making of the European Settlement, 1949–1963* (Princeton, NJ: Princeton University Press, 1999), passim. The best work on pre-delegation remains Peter Feaver, *Guarding the Guardians: Civilian Control of Nuclear Weapons in the United States* (Ithaca: Cornell University Press, 1992).

26 See the path-breaking scholarship of Keir Lieber, Daryl Press, Brendan Green, Austin Long, Niccolo Petrelli, and Giordana Pulcini, among others, cited throughout this essay. Two excellent forthcoming works will also provide comprehensive insight on this history: Brendan Green, "The Meaning of the Nuclear Counterrevolution: Arms Racing and Arms Control After MAD" (book manuscript in progress); and Timothy McDonnell, "The Sources of US Nuclear Posture, 1945 to Present" (PhD diss., MIT, in progress).

27 David Alan Rosenberg, "The Origins of Overkill: Nuclear Weapons and American Strategy, 1945–1960," *International Security 7*, no. 4 (Spring 1983): 3–71, https://doi.org/10.2307/2626731.

28 James Cameron, *The Double Game: The Demise of America's First Missile Defense System and the Rise of Strategic Arms Limitation* (New York: Oxford University Press, 2017), 5.

29 John D. Maurer, "The Forgotten Side of Arms Control: Enhancing U.S. Competitive Advantage, Offsetting Enemy Strengths," *War on the Rocks*, June 27, 2018, https://warontherocks.com/2018/06/the-forgotten-side-of-arms-control-enhancing-u-s-competitive-advantage-offsetting-enemy-strengths/.

30 Niccolo Petrelli and Giordana Pulcini, "Nuclear Superiority in the Age of Parity: US Planning, Intelligence Analysis, Weapons Innovation and the Search for a Qualitative Edge, 1969–1976," *International History Review* 40, no. 5 (2018), https://doi.org/10.1080/07075332.2017.1420675.

capabilities.[31] As Austin Long and Brendan Green demonstrate in their path-breaking work, the United States "invested massive resources into intelligence capabilities for a first strike, including successful innovation in tracking submarines and mobile missiles."[32] These expenditures were oriented toward systems whose characteristics and capabilities, such as speed, stealth, intelligence, and accuracy, were best suited to a nuclear posture that focused on counterforce, damage limitation, and even preemptive uses. In other words, the nuclear forces built in the decades after the SALT and ABM treaties made little sense if the United States had fully embraced the consequences of mutual vulnerability spelled out by the nuclear-revolution school. This is certainly how the Soviet Union perceived these efforts. Because of the "development of American counterforce capabilities," Soviet leaders "were uncertain they could indefinitely maintain a secure second strike in spite of their strenuous efforts."[33]

Rarely has a state had less need for the bomb to guarantee its immediate territorial integrity, sovereignty, and security.

This interest in maintaining superior nuclear capabilities continued after the Cold War ended.[34] As a 2003 RAND report observed,

> The force is larger than it needs to be if deterrence by threat of nuclear retaliation is the sole objective of U.S. nuclear strategy. Even a mildly expanded target base that included selected targets in emerging nuclear powers as well as chemical and biological weapons facilities in a larger set of countries would not necessarily require the sort of force that the United States plans to maintain. What the planned force appears best suited to provide beyond the needs of traditional deterrence is a *preemptive counterforce capability against Russia and China*. Otherwise, the numbers and the operating procedures simply do not add up.[35]

It has been argued that bureaucratic and organizational politics were the primary drivers of these expensive, risky, and politically polarizing nuclear postures.[36] Organizational and bureaucratic factors no doubt played some role, but the fact that the search for qualitative superiority has spanned decades, encompassing multiple administrations and great shifts in global politics, undermines such interpretations. As Green and Long argue, "In sum, it was international politics, not domestic politics, which killed hopes for nuclear stability."[37]

Why did the United States seek nuclear primacy? This relates to the third point: The United States

31 For excellent details on the characteristics of these systems and their influence on the strategic balance, see especially Austin Long and Brendan Rittenhouse Green, "Stalking the Secure Second Strike: Intelligence, Counterforce and Nuclear Strategy," *Journal of Strategic Studies* 38, no. 1–2 (2015), https://doi.org/10.1080/01402390.2014.958150; Keir Lieber and Daryl Press, "How Much is Enough? Testing Theories of Nuclear Deterrence," unpublished manuscript, found at http://politics.virginia.edu/wp-content/uploads/2015/11/Lieber-Press-VISC.pdf, cited with permission of authors; and Petrelli and Pulcini, "Nuclear Superiority in the Age of Parity." The best work on U.S. efforts on antisubmarine capabilities remains Owen R. Cote Jr.'s *The Third Battle: Innovation in the US Navy's Silent Cold War Struggle with Soviet Submarines* (Newport, RI: Naval War College, 2003).

32 Long and Green, "Stalking the Secure Second Strike," 41.

33 Brendan R. Green and Austin Long, "The MAD Who Wasn't There: Soviet Reactions to the Late Cold War Nuclear Balance," *Security Studies* 26, no. 4 (2017): 608, https://doi.org/10.1080/09636412.2017.1331639.

34 Keir A. Lieber and Daryl G. Press, "The New Era of Counterforce: Technological Change and the Future of Nuclear Deterrence," *International Security* 41, no. 4 (Spring 2017), https://doi.org/10.1162/ISEC_a_00273.

35 Glenn Buchan, David M. Matonick, Calvin Shipbaugh, and Richard Mesic, *Future Roles of U.S. Nuclear Forces: Implications for U.S. Strategy* (Santa Monica, CA: RAND Corp., 2003), 92, https://www.rand.org/pubs/monograph_reports/MR1231.html. Italics in original.

36 For a thorough exploration and ultimate rejection of the argument that an overly aggressive nuclear strategy was driven by "Pentagon bureaucrats and military officers pursuing organizational or service agendas, rather than national interest" — or what he calls "'pathological posture' theory" — see Timothy McDonnell, "The Sources of US Nuclear Posture, 1945 to Present" (PhD diss., MIT, in progress).

37 Brendan Rittenhouse Green and Austin Long, "The Geopolitical Origins of US Hard-Target-Kill Counterforce Capabilities and MIRVS," in *The Lure and Pitfalls of MIRVs: From the First to the Second Nuclear Age*, ed. Michael Krepon, Travis Wheeler, and Shane Mason (Washington, DC: Stimson Center, 2016), https://www.stimson.org/sites/default/files/file-attachments/Lure_and_Pitfalls_of_MIRVs.pdf; and Petrelli and Pulcini, "Nuclear Superiority in the Age of Parity."

asked more of its nuclear weapons in its grand strategy than any other nuclear state.[38] Most states seek nuclear weapons to protect themselves from invasion and conquest. This is a scenario the United States has not had to worry about, and even if it did, such protection would not require the massive, sophisticated nuclear forces and related systems the U.S. government built. Instead, the United States employed its nuclear forces to achieve far more ambitious, historically unprecedented goals. From the early 1950s onward, the United States pursued an audacious strategy of relying on its massive nuclear capabilities to both protect far-flung allies from nuclear attack or conventional invasion while also inhibiting the nuclear desires of those same allies. As Green and Long demonstrate, "Successive administrations discovered that the threat of retaliation and the existential risk of nuclear escalation posed by stability doctrines were not a sufficient military solution for their perceived geopolitical challenges."[39]

There has long been a tension between the goal of strategic stability and extending deterrence to America's allies. As analysts from RAND pointed out in 1989, there was a clash between the "objectives of enhancing first[-]strike stability, on the one hand, and extending deterrence and limiting damage, on the other," such that the more robust the Soviets believed stability was "the less they might hesitate to precipitate a deep crisis by engaging in serious aggression."[40] As Earl Ravenal explained in 1982, extending deterrence demanded expensive and potentially destabilizing counterforce capabilities, employed in first-strike strategies. "Such a damage[-]limiting attack, to have its intended effect, must be preemptive."[41] Permanently extending deterrence while inhibiting proliferation have been cornerstones of American grand strategy for so long it is easy to forget how historically unusual, difficult, and demanding this ambition is.

There was, of course, great tension between the goal of a preemptive strategy and strategic stability. Counterforce strategies were not about mutual vulnerability, Ravenal makes clear:

> [C]ounterforce and first nuclear strike are mutually dependent. A first strike implies counterforce targeting, since the only initial attack that makes sense is a damage-limiting strike, the destruction of as much of the enemy's nuclear force as possible. And counterforce targeting, in return, implies a first strike, a preemptive attack, because a second strike against the enemy's missiles is useless to the extent that one's missiles would hit empty holes.

As an assistant to Defense Secretary Robert McNamara told a reporter in the mid-1960s, "There could be no such thing as primary retaliation against military targets after an enemy attack. If you're going to shoot at missiles, you're talking about first strike."[42]

To be clear, this is not to argue that American leaders seriously contemplated a first strike or even made full-out efforts to acquire meaningful first-strike forces.[43] While American presidents refused to accept *qualitative* parity with the Soviet Union and pursued expensive and arguably dangerous counterforce options, they also shied away from seeking a full-scale, first-strike capability. One of the great unanswered questions of the nuclear age involves what U.S. leaders thought they were getting with this qualified superiority.[44] Strategies of inhibition required strategic forces that went far beyond mutual vulnerability, but such postures

38 This is not to say there is not variation in the nuclear strategies, as Vipin Narang lays out brilliantly in his book about regional nuclear strategies. In addition to assured-retaliation postures, regional nuclear powers can choose catalytic or asymmetric escalation postures, both of which imply first use. See Vipin Narang, *Nuclear Strategy in the Modern Era: Regional Powers and International Conflict* (Princeton, NJ: Princeton University Press, 2014).

39 Green and Long, "The Geopolitical Origins of US Hard-Target-Kill Counterforce Capabilities and MIRVs," 21.

40 Glenn A. Kent and David E. Thaler, *First Strike Stability: A Methodology for Evaluating Strategic Forces* (Santa Monica, CA: RAND Corp., 1989) 5, https://www.rand.org/content/dam/rand/pubs/reports/2008/R3765.pdf.

41 Earl C. Ravenal, "Counterforce and Alliance: The Ultimate Connection," *International Security* 6, no. 4 (Spring 1982): 26–43, https://doi.org/10.2307/2538676.

42 Henry L. Trewhitt, *McNamara: His Ordeal in the Pentagon* (New York: Harper and Row, 1971), 115.

43 For insight on how American policymakers explored and assessed pre-emptive nuclear options, see Francis J. Gavin and Mira Rapp-Hooper, "The Copenhagen Temptation: Rethinking Prevention and Proliferation in the Age of Deterrence Dominance," unpublished paper, available at https://www.tobinproject.org/sites/tobinproject.org/files/assets/Gavin%26Rapp-Hooper_US_Preventive_War_Thinking.pdf.

44 Logically, it would seem debatable that possessing increased potential for damage limitation well short of perfect first-strike capabilities would increase U.S. willingness to risk nuclear war to protect allies and enhance extended deterrence and even coercive leverage. Yet, the historical record demonstrates that American leaders were willing to pay quite a bit — financially, politically, and in terms of risk — to acquire these capabilities and, perhaps more important, that the Soviet Union and U.S. allies took these efforts seriously.

might dangerously undermine strategic stability.[45] One promising explanation is Glenn Kent and David Thaler's idea of "optimum instability" — developing enough counterforce to make the other side think you might go first in a crisis but without making your adversary think you are eager to do so. "Indeed, one might argue that an optimal amount of first-strike instability is possible: that is, enough to deter the Soviets from generating a major crisis (say, by invading Western Europe), but not enough to allow a major crisis to spiral out of control."[46]

This aggressive posture was pursued, in large measure, to inhibit the development of independent nuclear weapons programs among ostensible allies. The United States went to great lengths to prevent what otherwise might have been a natural development in world politics: the emergence of independent, capable states acquiring their own nuclear weapons. Nuclear weapons would, after all, effectively guarantee their possessors against invasion and conquest for the first time — ever. Rare was the state in history that turned away from an effective military technology or turned over its security to another state. Washington, however, aggressively pursued a wide range of policies to achieve inhibition, including threats of force or abandonment, forward deployed forces, enacting sanctions, selling arms, and encouraging treaties and norms.[47] To achieve its goals of inhibition, the United States often cooperated with its most bitter ideological and geopolitical adversary, the Soviet Union, at the expense of U.S. partners and allies.[48]

It is easy to lose sight of how strange, even radical, these grand-strategic choices were when they were developed in the 1950s and the extent to which they remain so today. There is little in the nuclear-revolution theory that can explain the cost, number, and technological sophistication of America's nuclear weapons systems, nor the aggressive postures in which they were employed. Imagine explaining in the early 20th century that the United States was going to risk a global war that would kill tens of millions of people to defend a conventionally indefensible portion of a city — West Berlin — 100 miles within enemy territory that had no geostrategic value whatsoever. Imagine that everyone would think this was normal (and call it "extended deterrence"). Imagine the weapons and military strategy necessary to convince an adversary that was far closer, that had superior conventional arms, and that, arguably, had more at stake that this was a credible commitment. Try to imagine a parallel in world history for this situation before 1950. Then think about how the strategists who constructed these theories did so based largely on their view of how this story unfolded between 1958 and 1963. The United States, which had little need for nuclear weapons to prevent an invasion or nuclear attack upon its homeland, built, at great expense, the largest and most sophisticated nuclear forces in the world and placed them within forward-leading and often preemptive strategies, backed by military technologies that potentially undermined strategic stability. American leaders worked feverishly, often with adversaries, to prevent the rise of independent nuclear-weapons states — ally, enemy, or neutral — and this remains a cornerstone of U.S. grand strategy. These strategies were exceptional.

In one sense, however, nuclear weapons *did* revolutionize American grand strategy. Before 1949, the United States had no permanent peacetime alliances. America demobilized during peacetime, and it typically pursued slow strategies of attrition when conflict did arise. Congress was widely perceived as the more powerful foreign policy actor during peacetime, while military leaders were afforded little leeway. All of that changed dramatically after the early 1950s, across administrations and shifts in the structure of the international system.[49] Since then, the United States has developed strategies, on semi-permanent alert status, that escalate quickly — even preemptively — with nuclear weapons, and it has concentrated enormous power to initiate war into the hands of the American presidency, all on behalf of defending a sprawling set of countries around the world. Simply put: There *was* a (thermo-) nuclear

45 Francis J. Gavin, "Beyond Deterrence: U.S. Nuclear Statecraft Since 1945," in Linton Brooks, Francis J. Gavin, and Alexei Arbatov, *Meeting the Challenges of the New Nuclear Age: U.S. and Russian Nuclear Concepts, Past and Present* (Cambridge, MS: American Academy of Arts and Sciences, 2018), https://www.amacad.org/content/publications/pubContent.aspx?d=43051.

46 Kent and Thaler, *First Strike Stability,* 5. See also Brendan Rittenhouse Green and Austin Long, "Correspondence: The Limits of Damage Limitation," *International Security* 42, no. 1 (Summer 2017), https://doi.org/10.1162/ISEC_c_00279.

47 Francis J. Gavin, "Strategies of Inhibition: U.S. Grand Strategy, the Nuclear Revolution, and Nonproliferation," *International Security* 40, no. 1 (Summer 2015): 9–46, https://www.mitpressjournals.org/doi/pdf/10.1162/ISEC_a_00205.

48 Andrew J. Coe and Jane Vaynman, "Collusion and the Nuclear Nonproliferation Regime," *Journal of Politics* 77, no. 4 (2015): 983–97, https://doi.org/10.1086/682080.

49 For excellent insight on the challenges this new environment presented to traditional constitutional practices in United States national security decision-making, see Matthew Waxman, "NATO and War Powers: Remembering the 'Great Debate' of the 1950s," *Lawfare,* July 11, 2018, https://www.lawfareblog.com/nato-and-war-powers-remembering-great-debate-1950s; Matthew C. Waxman, "The Power to Threaten War," *Yale Law Journal*, no. 123 (2014), https://ssrn.com/abstract=2316777.

revolution that shaped American grand strategy — but it was a much different revolution than the conventional wisdom puts forward.

II. Missing Histories

What is the history of U.S. nuclear weapons and their role in American grand strategy? Careful assessment of what is known — and whether these accounts accurately capture the past — is critical. Most theories and policy analysis are based on assumptions and beliefs about what happened in the past. Unfortunately, less is known about U.S. nuclear history and its role in American grand strategy than is presumed, and what many people do know is often overly simplistic, misleading, or otherwise problematic.

Why is this the case? The major works that cover the history of U.S. nuclear weapons policy were, for the most part, written some time ago — before many primary documents were released. These works were often penned not by historians but by policy participants, scholars of strategic and security studies, or analysts outside of the academy. Many of these works are excellent first cuts at history.[50] Most, however, are older, do not engage recent archival finds, and often accept the logic of the nuclear-revolution school to explain U.S. policy.

What of the discipline of academic history? To be sure, impressive international research has been conducted into various elements of global nuclear history, especially the issues surrounding various state decisions about whether to build a bomb.[51] There are also excellent monographs exploring particular aspects of U.S. nuclear history.[52] Writ large, however, treatment of American nuclear weapons history has been episodic rather than systematic. This is part of a larger, and unfortunate, decades-old trend within history departments. As Hal Brands has argued, "The historical profession in the United States has simply deprioritized the study of statecraft and international relations, at least as those subjects were conventionally

Unfortunately, less is known about U.S. nuclear history and its role in American grand strategy than is presumed, and what many people do know is often overly simplistic, misleading, or otherwise problematic.

50 Exemplary works in this category include McGeorge Bundy, *Danger and Survival: Choices About the Bomb in the First Fifty Years* (New York: Random House, 1988); George Bunn, *Arms Control by Committee: Managing Negotiations with the Russians* (Stanford, CA: Stanford University Press, 1992); Gregg Herken, *Counsels of War* (New York: Knopf, 1985); Kaplan, *The Wizards of Armageddon*; Richard Rhodes, *Arsenals of Folly: The Making of the Nuclear Arms Race* (New York: Alfred A. Knopf, 2007). Specialists in security studies and strategic studies demonstrate great appreciation for history, though they rarely pursue exhaustive, multi-archival work on their own and do not claim to do scholarly history. The best works in this tradition include the following: Richard Betts, *Nuclear Blackmail and Nuclear Balance* (Washington, D.C.: Brookings Institution Press, 1987); Lawrence Freedman, *Evolution of Nuclear Strategy* (London: Palgrave Macmillan, 4th edition, 2019); Charles Glaser, *Analyzing Strategic Nuclear Policy* (Princeton, NJ: Princeton University Press, 1990); Robert Jervis, *The Meaning of the Nuclear Revolution* (Ithaca: Cornell University Press, 1989); Scott Sagan, *Moving Targets: Nuclear Strategy and National Security* (Princeton, NJ: Princeton University Press, 1990). It is no overstatement to say that those in security and strategic studies would be thrilled if the scholarly history profession in the United States would devote more intellectual resources to mine the extraordinary increases in archival materials made available in recent years. That said, some of the best work with primary materials has been done by scholars in this field, including Brendan Green, Keir Lieber, Austin Long, and Daryl Press.

51 What follows is just a sample of this excellent new work on national nuclear programs, much of it supported by the path-breaking Nuclear Proliferation International History Project: https://www.wilsoncenter.org/program/nuclear-proliferation-international-history-project. On Australia, see Christine M. Leah, *Australia and the Bomb* (New York: Palgrave MacMillan, 2014); on Brazil, see Carlo Patti, "Origins and Evolution of the Brazilian Nuclear Program (1947–2011)," Nuclear Proliferation International History Project, Nov. 15, 2012, https://www.wilsoncenter.org/publication/origins-and-evolution-the-brazilian-nuclear-program-1947-2011; Avner Cohen, *The Worst-Kept Secret: Israel's Bargain with the Bomb* (New York: Columbia University Press, 2010); on Italy, see Leopoldo Nuti, "Italy's Nuclear Choices," *UNISCI Discussion Papers*, no. 25 (January 2011), https://revistas.ucm.es/index.php/UNIS/article/viewFile/UNIS1111130167A/26876; on Japan, see Fintan Hoey Sato, *America and the Cold War: U.S.–Japanese Relations, 1964–72* (New York: Palgrave MacMillan, 2015); on Pakistan, see Feroz Khan, *Eating Grass: The Making of the Pakistani Bomb* (Stanford, CA: Stanford University Press, 2012); on Romania, see Eliza Gheorghe, "Atomic Maverick: Romania's Negotiations for Nuclear Technology, 1964–1970," *Cold War History* 13, no. 3 (2013), https://doi.org/10.1080/14682745.2013.776542; on South Korea, see Se Young Jang, "Dealing with Allies' Nuclear Ambitions: U.S. Nuclear Non-proliferation Policy toward South Korea and Taiwan, 1969–1981" (PhD diss., Graduate Institute of International and Development Studies, 2015); on Sweden, see Thomas Jonter, "The Swedish Plans to Acquire Nuclear Weapons, 1945–1968: An Analysis of the Technical Preparations," *Science & Global Security*, no. 18 (2010): 61–86, http://scienceandglobalsecurity.org/archive/sgs18jonter.pdf; on West Germany, see Andreas Lutsch, "The Persistent Legacy: Germany's Place in the Nuclear Order," Nuclear Proliferation International History Project (NPIHP), Woodrow Wilson International Center for Scholars, NPIHP Working Paper no. 5, May 19, 2015, http://www.wilsoncenter.org/publication/the-persistent-legacy.

52 To give three examples: For an excellent history of U.S. arms-control policy during the Nixon presidency, see Cameron, *The Double Game*; for an excellent study of America's early nuclear strategies, see Edward Kaplan, *American Strategy in the Air-Atomic Age and the Rise of Mutually Assured Destruction* (Ithaca, NY: Cornell University Press, 2015); for an excellent history of U.S. nuclear nonproliferation policies, see Shane Maddock, *Nuclear Apartheid: The Quest for American Atomic Supremacy from World War II to the Present* (Chapel Hill: University of North Carolina Press, 2010).

understood."[53] This is especially true in nuclear history, where there is almost no participation by scholarly historians on these contested issues. The academic discipline of history

> has largely abandoned studying important issues such as international security and nuclear weapons and is in the midst of a four-decade, slow[-]motion act of collective suicide. There simply is not, nor will there be anytime soon, a critical mass of diplomatic and military historians available to research these important questions or make use of these amazing materials.[54]

Even when scholarly historians do focus on issues of foreign policy or international relations, nuclear questions often get short shrift. Large, synthetic accounts of the Cold War either accept the nuclear-revolution framework or do not break new ground on nuclear issues.[55] Arguably far more is known about the development of U.S. human rights policies, for example, or the role of race and gender in American foreign policy, than about how U.S. decision-makers have discussed and debated the purpose and consequences of the bomb in its relations with the world. Given the extraordinary importance and potential consequences of American nuclear weapons policies, and the massive increases in primary documents available to researchers, the failure of the American historical profession to support and undertake this work is shameful.

The Challenge of Nuclear History

What would a comprehensive history of U.S. nuclear weapons policy and its role in grand strategy look like? To be fair, undertaking historical work on nuclear issues is particularly difficult. There are the methodological challenges that will be laid out in the next section: Assessing historical evidence and making causal claims is difficult when the issues at stake — deterrence, assurance, credibility, and resolve — are unobservable. Speeches and written evidence are often hard to interpret. Top-secret deliberations often reveal American presidents taking contradictory approaches or blowing off steam. U.S. officials' public pronouncements are frequently intended to convey signals to various audiences and may not represent operational policy. Furthermore, the decisions behind nuclear policies and strategies are some of the government's most carefully guarded activities, and access to top-secret documents is heavily restricted. While the situation has improved considerably in recent years, archival materials on nuclear policy are notoriously difficult to declassify, and even when they are released, they are often heavily redacted. With important pieces of evidence unavailable, constructing an all-inclusive, seamless narrative remains enormously challenging.

A larger question looms: What does it mean to talk about nuclear history? The history of nuclear weapons was once told as the history of the Cold War, and vice-versa. It is now understood that they were not the same. Sometimes nuclear history and Cold War history overlapped, while at other times they moved on independent paths, so much so that it is often hard to determine whether nuclear weapons prevented the bipolar competition from breaking out into war or dangerously exacerbated underlying tensions. A history that conflates Cold War and nuclear dynamics could not, for example, fully explain why the United States cooperated with the Soviet Union to deny their respective allies nuclear weapons.[56] Alliances once ascribed solely to Cold War dynamics, in Europe, the Middle East, and Asia, have not only persisted since that struggle ended but have broadened and deepened in ways that show that nuclear considerations (among other non-Cold War factors) were always at their root. It is essential to disentangle the interconnected but distinct histories of the nuclear age and the geopolitical and ideological rivalry between the superpowers.[57]

53 Hal Brands, "The Triumph and Tragedy of Diplomatic History," *Texas National Security Review* 1, no. 1 (December 2017), https://repositories.lib.utexas.edu/bitstream/handle/2152/63939/Vol-1-Issue-1-Brands.pdf?sequence=2&isAllowed=y. Even when there are diplomatic historians, there is almost no incentive for them to work on U.S. nuclear weapons policy. "Yet the turn toward diplomatic history as cultural, social, or gender history often pulled the field in a very different direction, one that dramatically deemphasized matters of foreign policy as it was traditionally understood?" See also Hal Brands and Francis J. Gavin, "The Historical Profession is Committing Slow-Motion Suicide," *War on the Rocks*, Dec. 10, 2018, https://warontherocks.com/2018/12/the-historical-profession-is-committing-slow-motion-suicide/.

54 Francis J. Gavin, "What We Talk About When We Talk About Nuclear Weapons: A Review Essay," H-Diplo Roundtable, June 15, 2014, https://networks.h-net.org/node/28443/discussions/31776/h-diploissf-forum-"what-we-talk-about-when-we-talk-about-nuclear.

55 The exception is Marc Trachtenberg's path-breaking account of the first decades of the Cold War, which brilliantly integrates nuclear strategy into an understanding of U.S. grand strategy. Marc Trachtenberg, *A Constructed Peace: The Making of the European Settlement, 1949–1963* (Princeton, NJ: Princeton University Press, 1999).

56 Gavin, "Strategies of Inhibition."

57 For one excellent example that reveals the deep interconnections between Cold War geopolitics, imperialism and decolonization, international economics and globalization, and nationalism and regional rivalries, see Philip Zelikow and Ernest May, *Suez Deconstructed: An Interactive Study in Crisis, War, and Peacemaking* (Washington, DC: Brookings Institution Press, 2018).

The Cold War was not, however, the only powerful historical force interacting with, shaping, and being shaped by nuclear history. Decolonization, whose deep roots in imperialism and resistance date back centuries, had an enormous influence — in many cases, more than the Cold War — shaping nuclear decision-making in Great Britain, France, Israel, South Africa, India, and Pakistan, as well as others that decided not to acquire the bomb. Other factors, such as regional dynamics and the effects of globalization, influenced America's grand strategy and its approach to nuclear weapons. Disentangling competing global histories since the end of World War II is a difficult but necessary task when trying to understand how nuclear weapons influence international relations.

There is also the question of periodization and chronology. Is the nuclear age one continuous stream, beginning in August 1945 — if not earlier — and continuing to the present? Or are there sharp breaks dictated by key technological advances such as the development of thermonuclear weapons or intercontinental ballistic missiles? Important political events had profound consequences for nuclear history: the emergence of Soviet nuclear parity and the negotiation of major arms-control treaties, the end of the Cold War, and the collapse of the Soviet Union. Is there such a thing as a second nuclear age, and, if so, how is it different from the first? Defining nuclear history and its scope is difficult; calculating how American grand strategy incorporates and reacts to these shifts even more so.

Competing Histories

The most important historical challenge is reconciling contending and often contradictory narratives that chronicle the past. This is especially true when trying to understand the American experience with the bomb. There are at least four competing histories of how nuclear weapons influenced U.S. grand strategy and vice-versa: intellectual, rhetorical, operational, and presidential. Assessing which of these strands is most important, and how they interact with each other, is challenging.

The first strand is the *intellectual* history of the United States. For many within the security studies community, the most familiar strand is what might be called the "Wizards of Armageddon" story. In this tale, smart strategists, typically civilians from universities and think tanks like the RAND Corp., wrestled with and explained to the wider world the new realities created by nuclear weapons. In the process, great thinkers such as Bernard Brodie, Thomas Schelling, Albert Wohlstetter, and others made sense of "the unthinkable," created modern deterrence theory, transformed U.S. policy and grand strategy, and probably prevented World War III. This history is both familiar and comforting — to the extent that nuclear history can be comforting — because it explains the rise of the field of security studies and provides the intellectual architecture for the ideas behind nuclear peace. Because a key part of the stylized telling is how the wizards transformed American policy (and saved the world!), it also suggests that scholarly ideas matter to policymakers. As Marc Trachtenberg points out, however, analysis of the civilian nuclear strategists often suffered from being both "apolitical in substance" and "ahistorical in method."[58] Bruce Kuklick is even more harsh: The strategists "professed deep understanding" but actually "groped in the dark" and their ideas "had little causal impact."[59] The problem is that as history, the story of the "Wizards of Armageddon" is, at best, overstated and misleading; at worst, it bears little relation to what actually happened.[60]

The second history is *rhetorical*. Through speeches and published documents, the United States government has used public declarations to indicate its views on nuclear weapons. Prominent examples include Eisenhower administration Secretary of State John Foster Dulles' "massive retaliation" speech given at the Council on Foreign Relations in 1954, Defense Secretary Robert McNamara's University of Michigan commencement address in 1962 laying out the flexible-response doctrine and his 1967 doctrine on missile defense, Nixon administration Defense Secretary James Schlesinger's announcement of a new doctrine in January 1974, or the discussion surrounding President Jimmy Carter's Presidential Directive

58 Trachtenberg, *History and Strategy*, 46.

59 Bruce Kuklick, *Blind Oracles: Intellectuals and War from Kennan to Kissinger* (Princeton, NJ: Princeton University Press, 2006), 15–16. "Yet my philosophers in government knew and understood little, and had little influence qua intellectuals, except to perform feats of ventriloquy."

60 For an excellent analysis, see Janne Nolan, *Guardians of the Arsenal: The Politics of Nuclear Strategy* (New York: Basic Books, 1989).

59.[61] Understandably, these public declarations are analyzed to better understand the role of nuclear weapons in American grand strategy. Interpreting policy rhetoric is always challenging, however, especially when nuclear strategy is involved. These speeches and documents were often vehicles to send signals to a variety of audiences — domestic, allied, and adversarial — that involved assurance, reassurance, inhibition, and deterrence missions.[62] Cameron notes that American policymakers frequently played a "double game," struggling to "balance the demands of presenting a front of strategic coherence" when, behind the scenes, things were far more complicated and uncertain.[63] Many public missions and messages of nuclear strategy were at cross purposes. For example, "the rhetoric of flexible response ... was convenient to top U.S. policymakers for reasons that had little to do with enhancing deterrence or winning a nuclear war."[64] And, as will be discussed further, nuclear rhetoric is often imprecise, unrealistic, and easily drained of meaning.

The intellectual history, as told by the "Wizards of Armageddon," and the rhetorical history laid out by political leaders often bears little resemblance to the acquisition, deployment, and use plans developed as core parts of U.S. grand strategy.

The third strand is the *operational* history of the United States and nuclear weapons. The United States devoted enormous resources to develop certain kinds of nuclear weapons systems, deployed in surprising ways and places, as part of often-extraordinary strategies. It is critical to understand what weapons were developed and why, where and how they were deployed and targeted, and in what strategies. This history is closely guarded, but these operational decisions appear to have been driven by a complex brew of technological factors, alliance relations, and geopolitical competition, as well as bureaucratic and organization interests and domestic political considerations. The intellectual history, as told by the "Wizards of Armageddon," and the rhetorical history laid out by political leaders often bears little resemblance to the acquisition, deployment, and use plans developed as core parts of U.S. grand strategy. As the historian David Alan Rosenberg argues, "nuclear strategy does not, in reality, consist of concepts or even policy statements. It consists of concrete decisions regarding war plans, budgets, forces, and deployments."[65]

The fourth strand of history is both the most important and the most obscure: *presidential* history. The structure, laws, and customs of war-making in the United States combined with the unique characteristics of nuclear weapons provides the president extraordinary power and singular responsibilities over nuclear weapons.[66] What a president thought about nuclear weapons — whether and under what circumstances he might threaten or even use nuclear weapons — is of fundamental importance. How can scholars get at these beliefs and how they informed decisions?[67] How did such beliefs change over time — both across and within administrations? How did thinking about nuclear use — or avoiding nuclear use — shape particular decisions about

61 John Foster Dulles, "The Strategy of Massive Retaliation," speech before the Council on Foreign Relations, Jan. 12, 1954, http://msthorarinson.weebly.com/uploads/4/1/4/5/41452777/dulles_address.pdf; Robert McNamara, "No Cities" commencement address in Ann Arbor, Michigan, July 9, 1962, http://www.atomicarchive.com/Docs/Deterrence/Nocities.shtml; Robert McNamara, speech on anti-China missile defense and U.S. nuclear strategy, Sept. 19, 1967, https://www.nytimes.com/1967/09/19/archives/text-of-mcnamara-speech-on-antichina-missile-defense-and-us-nuclear.html; "Nixon's Nuclear Doctrine," *New York Times*, Jan. 15, 1974, https://www.nytimes.com/1974/01/15/archives/nixons-nuclear-doctrine.html; "The Carter Transformation of Our Strategic Doctrine," memo from National Security Adviser Zbigniew Brzezinski to President Jimmy Carter, Aug. 26, 1980, https://www.archives.gov/files/declassification/iscap/pdf/2011-064-doc33.pdf.

62 For an excellent synthesis of how policymakers wrestle with domestic politics in nuclear decision-making, see Elizabeth N. Saunders, "The Domestic Politics of Nuclear Choices: What Have We Learned?" (unpublished paper).

63 Cameron, *The Double Game*, 7.

64 Francis J. Gavin, *Nuclear Statecraft: History and Strategy in America's Atomic Age* (Ithaca, NY: Cornell University Press, 2012), 31.

65 David Alan Rosenberg, "Reality and Responsibility: Power and Process in the Making of United States Nuclear Strategy, 1945–68," *Journal of Strategic Studies* 9, no. 1 (1986): 35, https://doi.org/10.1080/01402398608437247.

66 For a recent overview — with recommendations for how these procedures should be changed — see Richard K. Betts and Matthew C. Waxman, "The President and the Bomb: Reforming the Nuclear Launch Process," *Foreign Affairs* 97, no. 2 (March/April 2018), https://www.foreignaffairs.com/articles/united-states/2018-02-13/president-and-bomb.

67 As Timothy McDonnell argues, "presidents, defense secretaries and other members of the president's civilian executive team drive US nuclear posture, making posture decisions that they believe will advance American interests. At the same time, nuclear policy is a tough business, fraught with uncertainty and existential risk." Timothy McDonnell, "The Sources of US Nuclear Posture, 1945 to Present," (PhD diss., MIT, in progress).

larger issues surrounding U.S. foreign policy and grand strategy? Even when the question of using nuclear weapons was not explicit, it no doubt cast a shadow over multiple policies. Understanding and reconstructing this past is extraordinarily difficult.[68] What is one to make, for example, of Nixon's loose rhetoric about nuclear use in private, when his actions and policies often revealed quite careful and responsible considerations? Or Dean Acheson's advice to President John F. Kennedy that he never reveal whether or not he would use nuclear weapons? As former Secretary of Defense Robert McNamara told Rosenberg,

> nuclear strategy ... is determined by the President's views and intentions, not by policy or planning documents, or even force structures. The President alone determines how nuclear war will be fought, by virtue of his position in a highly centralized command and control structure.[69]

Reconstructing America's nuclear past and explaining how it both shaped and was shaped by U.S. grand strategy is a daunting task. It demands integrating all four strands of this history, while deconflicting contradictory elements and assessing what forces and factors are most important. It also requires figuring out how nuclear history interacts with, and is distinct from, other powerful historical forces as varied as regional rivalries, decolonization, and the Cold War. This task is made all the more difficult by the challenges laid out in the next section: Ultimately, the past scholars and analysts are exploring is a history that never happened and thus cannot be observed, analyzed, or measured — the history of thermonuclear war.

III. A Loss for Words?

It should not be surprising that neither international relations theory nor history has satisfactorily explained the role of nuclear weapons in American grand strategy. Two reasons for this are baked into the nature of the nuclear enterprise.

First, nuclear weapons present profound and often unsettling moral challenges that can make discussing their role in grand strategy difficult and divisive. It can also cause scholarship to bleed into advocacy. Second, there are profound methodological challenges in trying to understand the role of nuclear weapons. When scholars analyze the role of nuclear weapons in American grand strategy, we are most interested in phenomena that have not occurred, such as thermonuclear war, and policy outcomes that are difficult to observe and measure — such as deterrence, assurance, and resolve — or even to prove operative.

These challenges pull in different directions. Analysts understandably hold strong views about nuclear weapons, which drives them to speak with authority and passion about the role and purpose of the bomb in American grand strategy. Yet, many of these deep-seated beliefs are difficult, even impossible, to prove with history or with theory. A debate that should be marked by humility and respect is often polarizing and unproductive.

Talking About the Unthinkable

The moral problem surrounding nuclear weapons is basic and unsettling. How should one speak about and analyze something that is unthinkable: detonating nuclear weapons against another nation? Use of these weapons would be catastrophic. It would reflect a historic failure of policy and, in many cases, would amount to mass murder. Yet, the threat to use these weapons in a variety of scenarios — including many that do not involve an attack upon the United States or an adversary's use of nuclear weapons — has been the backbone of American grand strategy for decades. The language used to discuss these dilemmas rarely captures the magnitude of nuclear decision-making, and both academic and policy discourse often drift into a world of insider jargon and toothless acronyms that mask the extraordinary potential consequences of this debate. More than 30 years ago, Carol Cohn highlighted "the elaborate use of abstraction and euphemism, of words so bland that they never forced the speaker or enabled the listener to touch the realities of nuclear holocaust that lay behind the words."[70] As Michael Quinlan wisely recommended, "thinking about nuclear weapons must be constantly on the alert — the more so in the absence of historical experience to anchor and calibrate discussion — to

68 For an excellent effort to make sense of the often contradictory policies and rhetoric of President Dwight D. Eisenhower on nuclear weapons, see Andrew P.N. Erdmann, "'War no longer has any logic whatever': Eisenhower and the Thermonuclear Revolution," in *Cold War Statesmen Confront the Bomb,* ed. John Lewis Gaddis, et al. (Oxford: Oxford University Press, 1999), 87–119.

69 Rosenberg, "Reality and Responsibility," 48. McNamara's view is obviously in slight tension with Rosenberg's argument.

70 Carol Cohn, "Sex and Death in the Rational World of Defense Intellectuals," *Signs* 12, no. 4 (Summer 1987): 490, https://www.jstor.org/stable/3174209.

probe behind words and customary expressions so as to recall the underlying realities."[71]

The colorless language used to describe elements of this strategy and the underlying threat of nuclear confrontation that undergirds it — deterrence, credibility, signaling, escalation — is often eerily disconnected from the realities behind the words. Nina Tannenwald observed a "disconnect between how ordinary people" thought about nuclear weapons and how academic deterrence theory discussed these issues. "These game theoretic analyses, I found, had little to say about issues of revulsion and morality."[72] Reid Pauly has termed this "rhetorical evaporation" — whereby the words policymakers and scholars use to describe U.S. nuclear policies are drained of meaning.[73] This rhetorical evaporation goes to the heart of a grand-strategic problem the United States has faced since the start of the thermonuclear age: The most important goal of American nuclear weapons policy is to guarantee that they are never used. This policy tautology was bound, over time, to undermine the threat needed to project deterrence and arguably has driven the United States to greater and more strenuous actions to demonstrate the credibility of an action no one really believes it would take.

The lack of clarity about language and meaning surrounding the purposes of nuclear weapons has consequences for policy. An October 2016 report by the Center for Strategic and International Studies connected poor morale and dysfunction among American officials responsible for nuclear weapons to the difficulties of clearly communicating what role the bomb served in American grand strategy. Looking over years of nuclear policies, the report pointed out that "a coherent narrative about the fundamental role of U.S. nuclear weapons has not been sufficiently stated and promulgated" to those in the military responsible for nuclear weapons. The report criticized how U.S. nuclear weapons policy "is described in highly sophisticated strategic logic that is not very accessible to the general public or the junior nuclear personnel." It is filled with "concepts and jargon that are not routinely defined and explained" and focuses on "what nuclear weapons will not do," supplemented by "descriptions of decline, reduction, and diminishment."[74] The inability to connect these fearsome weapons to explicit U. S. interests in a convincing manner arguably plays into a culture burdened by accidents and scandal.[75]

The lack of clear language to describe a willingness to do the unthinkable, in order to avoid the unthinkable, is only one challenge. It would be impossible to wrestle with these issues without engaging deep moral considerations, a stance which presents difficulties for a purely "social scientific" approach. The lines between analysis and advocacy are often easily — if understandably — blurred. Robert Jervis, the father of the nuclear-revolution framework, admirably has acknowledged that mutual second-strike capabilities may not "have been as secure as I and most others believed" in the 1980s. In May 2018, he explained:

> Although I stand behind the arguments I made in *The Illogic of American Nuclear Strategy* and *The Meaning of the Nuclear Revolution*, and believe that they represent a significant scholarly contribution, they were also interventions in a fierce political debate. ... I was trying to persuade as well as analyze.[76]

This moral and rhetorical challenge is especially pointed for the United States. One can imagine, for example, a state using nuclear weapons as a last resort to repel a more powerful enemy that seeks to conquer its territory. The United States, however, fields nuclear weapons to achieve a variety of goals that fall well below the level of existential, including extending deterrence over allies while

71 Michael Quinlan, "Thinking About Nuclear Weapons," *Royal United Services Institute*, Whitehall Paper 41, online edition 2005, http://fisherp.scripts.mit.edu/wordpress/wp-content/uploads/2017/03/Thinking-about-Nuclear-Weapons-RUSI-WHP41_QUINLAN1.pdf.

72 Nina Tannenwald, *The Nuclear Taboo: The United States and the Non-Use of Nuclear Weapons Since 1945*, (Cambridge: Cambridge University Press, 2007), ix.

73 Reid Pauly, "Stop or I'll Shoot, Comply and I Won't: The Dilemma of Coercive Assurance in International Politics" (PhD diss., MIT, in progress).

74 Rebecca K.C. Hersman, Clark Murdock, and Shanelle Van, *The Evolving U.S. Nuclear Narrative: Communicating the Rationale for the Role and Value of U.S. Nuclear Weapons*, Center for Strategic and International Studies, October 2016, http://nuclearnarrative.csis.org/report/.

75 See, for example, Patrick Malone, "Repeated Safety Lapses Hobble Los Alamos National Laboratory's Work on the Cores of U.S. Nuclear Warheads," *The Center for Public Integrity,* June 18, 2017, https://apps.publicintegrity.org/nuclear-negligence/near-disaster/; Editorial, "What the Air Force Can Learn from the Nuclear Cheating Scandal," *Washington Post*, April 6, 2014, https://www.washingtonpost.com/opinions/what-the-air-force-can-learn-from-the-nuclear-cheating-scandal/2014/04/06/e1a24a0e-bba5-11e3-9a05-c739f29ccb08_story.html?noredirect=on&utm_term=.96d83a6d39a4.

76 Robert Jervis, "Politics and Political Science," *Annual Review of Political Science*, no. 21 (May 2018), https://www.annualreviews.org/doi/10.1146/annurev-polisci-090617-115035. "This intention matters because it led me to deemphasize the question of why, if the nuclear balance was so stable, the policy of multiple options was dangerous (as well as unnecessary). Relatedly, I said little about what was clear from my work on perceptions: If leaders on either side believed that nuclear superiority mattered, that belief would affect their behavior. These are nasty problems, and I think that had the political stakes not been as great, I would have delved into them more deeply."

HOW DO YOU GENERATE RELIABLE THEORIES, HISTORIES, AND POLICY RECOMMENDATIONS ABOUT PHENOMENA FOR WHICH THERE ARE FEW OR NO OBSERVATIONS OR MEASUREMENTS?

inhibiting their nuclear ambitions and seeking coercive advantages during crises with adversaries. These goals require more nuclear weapons in far more aggressive strategies than simply deterring invasion or nuclear attack upon the American homeland. Relying on such profoundly powerful instruments to achieve less-than-existential goals inevitably generates credibility issues. How believable are American nuclear policies? The United States has worked hard to ameliorate these credibility concerns over the years using a variety of tactics, including diplomacy and consultation with allies, nuclear sharing, developing and deploying counterforce delivery capabilities, and a willingness to use nuclear weapons first, in addition to foreign policy and military commitments that would, in a non-nuclear world, be puzzling at best.[77]

Given nuclear weapons' fundamental role in American grand strategy, will these words, commitments, weapons, and strategies remain convincing and credible in years to come? Within decades after the close of World War II — a horrendously violent war of savage conquest and genocide — analysts began to doubt that the United States would use nuclear weapons against a bitter ideological and geopolitical rival committed to its downfall. In today's far different world, marked by relative peace, stability, and the apparent disappearance of war between the great powers, does anyone — ally or foe — know the circumstances that would prompt the United States to use nuclear weapons? Does Russia or China believe that the United States would use nuclear weapons in response to an attack on Estonia or Taiwan, for example? How and in what ways will that matter for the future of American grand strategy?

Measuring the Unobservable, Observing the Immeasurable

The second, and bigger, challenge to understanding nuclear weapons and U.S. grand strategy is the methodological conundrum. The most important question surrounding nuclear weapons involves a non-event: understanding why there has never been a thermonuclear war and what lessons can be derived from this non-event to keep this streak going, preferably forever. As John Lewis Gaddis pointed out while the Cold War was still ongoing, "Anyone attempting to understand why there has been no third world war confronts a problem not unlike that of Sherlock Holmes and the dog that did not bark in the night: how does one account for something that did not happen?"[78]

What factors start or prevent thermonuclear war are arguable since one has never taken place. Nuclear deterrence and assurance, in all their forms, are ultimately connected to estimates about the causes and likelihood of thermonuclear war that are difficult, if not impossible, to calculate.

Social science relies on observations and measurements to identify patterns and causal paths in order to generate theories that drive predictions and inform policies. History requires accumulating, sorting, and making sense of evidence about things that happen in the world. How do you generate reliable theories, histories, and policy recommendations about phenomena for which there are few or no observations or measurements? Analysts have used a variety of plausible proxies, such as how nuclear weapons affect state behavior, both in normal circumstances and crises, but the insights of such approaches have limits. It is hard enough for scholars to find consensus on things that actually happened, such as the origins of World War I.[79] Developing a consensus about a non-event one cannot observe, measure, or assess is obviously harder.

This challenge plagues any assessment of U.S. nuclear postures and their role in grand strategy. Desired outcomes such as deterrence, extended deterrence, assurance, re-assurance, and credibility are elusive and can be proven only *ex post*, if at all. As Quinlan notes, "We have no further empirical data about how events may run if nuclear weapons are used, or if nuclear powers come seriously to blows with one another without such use."[80] Even if deterrence and credibility could, somehow, be observed and measured, they are characteristics and phenomena driven by intangible qualities such as fear, uncertainty, and resolve. These psychological factors depend far more on context and circumstance than the material factors

77 Of course, the United States has also tried to demonstrate credibility by fighting wars that otherwise make little geostrategic sense from a narrow, traditional, non-nuclear "self-interest" perspective, such as in Korea in the early 1950s and in Southeast Asia in the 1960s and 1970s. One might ask how U.S. decision-making toward limited wars would have proceeded in a world without nuclear weapons, where the demands of credibility are, presumably, smaller.

78 Gaddis, "The Long Peace," 100.

79 Francis J. Gavin, "History, Security Studies, and the July Crisis," *Journal of Strategic Studies* 37, no. 2 (2014): 319–33, https://doi.org/10.1080/01402390.2014.912916.

80 "Even propositions about the achievement of nuclear weapons in deterrence lack hard evidence, since such propositions are essentially about alternative history — about what would have happened had matters been other than they were." Quinlan, "Thinking About Nuclear Weapons," 5.

that make up much of international politics. Furthermore, these are human characteristics and it is unclear how to aggregate such feelings from the level of individuals to the policies and behaviors of institutions and states. These challenges affect understanding of other important nuclear behavior, such as why states that our theories would have expected to develop nuclear weapons — a wide-ranging group that might have included Australia, Brazil, Egypt, Indonesia, Japan, Sweden, Switzerland, and Yugoslavia — never developed the bomb. Decisions *against* doing things — not to detonate a nuclear device during a war, not to acquire nuclear weapons — are difficult to fully assess.[81]

Even though many of these phenomena are elusive, analysts intuit that nuclear weapons cast a powerful shadow over foreign policy and grand strategy. Nuclear weapons obviously matter enormously, even if precisely how cannot always be proven. Consider the heated controversy over whether and how nuclear superiority — if it could be properly measured — is important to outcomes in the world. Perhaps the best that can be done is to acknowledge, as Philip Zelikow writes, that "U.S. nuclear superiority mattered. And, at some level, it also didn't. At times both of these propositions were, at one and the same time, true."[82]

These challenges — linguistic, moral, and methodological — should not prevent the development of rigorous theories and histories of nuclear weapons and American grand strategy. If anything, they invite working harder to surface underlying assumptions and rigorous examination of both the deductive and inductive foundations of these arguments. What is most important here is to better recognize the challenges and barriers to certainty and proceed with humility in the face of daunting questions that have profound policy consequences. As Quinlan notes, the "limitation in our knowledge ought to instill in all who make predictive statements about these issues a degree of humility not always evident."[83] American grand strategy with nuclear weapons is based on a variety of deeply held assumptions that have rarely been tested and are difficult to prove.

IV. Worse Before It Gets Better

The incomplete understanding of nuclear history and dynamics has consequences for present and future American grand strategy. If these theories and histories are problematic or questionable, it may affect how to evaluate nuclear policies and grand strategies that are chosen in the future. Even if little changed in the contemporary nuclear landscape, it is critical to have a far better, more comprehensive understanding of the past. The circumstances and environment in which nuclear decisions are made will change enormously in the years to come. Four trends stand to be especially consequential.

The Return of Geopolitics

The first trend is *geopolitical*. World politics is changing in at least three ways that might influence how nuclear weapons and U.S. grand strategy interact.

First, the structure of world politics has shifted from bipolarity during the Cold War to unipolarity in the years since the demise of the Soviet Union to the possible emergence of multi-polarity or even, as Richard Haass has dubbed it, non-polarity. Contemporary analysts and decision-makers have no experience with nuclear dynamics in such a transformed international system. Will states increase their desire for and efforts to acquire the bomb? Would states be more willing to threaten and even use nuclear weapons in a post-bipolar and post-unipolar world?

This relates to the second change: the increased geopolitical assertiveness of America's primary nuclear-armed competitors, China and Russia.[84] Both countries are modernizing their nuclear forces (albeit at different paces and in different ways), and both have made efforts to reexamine their nuclear doctrines. There are dangerous scenarios — such as a crisis over Taiwan, a clash over disputed territories in the South China Sea, or an attack on a NATO member in the Baltics — in which nuclear weapons might plausibly be engaged, either on purpose or inadvertently.

Third, U.S. allies and adversaries, as well as

81 The nuclear-revolution framework would have predicted that these states would acquire nuclear weapons. Some excellent work exists on states that decided not to go nuclear. On Sweden, for example, see Thomas Jonter, *The Key to Nuclear Restraint: The Swedish Plans to Acquire Nuclear Weapons During the Cold War* (London: Palgrave Macmillan, 2016). On Australia, for example, see Leah, *Australia and the Bomb.*

82 Philip Zelikow, "Review," *HF-Diplo Roundtable Reviews* XV, no. 1 (2013), https://issforum.org/roundtables/PDF/Roundtable-XV-1.pdf.

83 Quinlan, "Thinking About Nuclear Weapons," 5.

84 The Trump administration focused on the return of great-power geopolitical competition in both its *National Security Strategy* and its *National Defense Strategy*: *National Security Strategy of the United States* (Washington, DC: White House, 2017), https://www.whitehouse.gov/wp-content/uploads/2017/12/NSS-Final-12-18-2017-0905.pdf; *Summary of the 2018 National Defense Strategy of the United States of America* (Washington, DC: Department of Defense, 2018), https://dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf.

neutral countries, will continue to make their own choices about nuclear capabilities based in part on their beliefs about the role of nuclear weapons in American grand strategy. This can take many forms. Changes in the international environment or American grand strategy, perceptions of declining U.S. credibility or power, intensifying regional rivalries, or technological developments might contribute to shifts in the global nuclear landscape. The use of nuclear weapons by regional adversaries — India and Pakistan, for example — might entangle the United States and its nuclear forces in unforeseen and unwelcome ways. Smaller, arguably less responsible countries such as North Korea or Iran could expand their nuclear programs. Geopolitical shifts are taking place today under a U.S. administration whose policies on nuclear weapons and grand strategies can most generously be described as erratic; meanwhile, America's role in the world, regardless of who is in the White House, is uncertain.

Brave New World

The second trend affecting nuclear weapons and American grand strategy is *technological*. As Keir Lieber and Daryl Press argue in their path-breaking research, "Changes in technology ... are eroding the foundations of nuclear deterrence."[85] Three forces in particular are expected to have important consequences for nuclear weapons' role in American grand strategy: first, changes in nuclear technology and the systems that support nuclear weapons; second, emerging technologies such as cyber and artificial intelligence; and third, the blurring of the once-stark line between nuclear and non-nuclear capabilities.

Changes in nuclear technology have had and will continue to have profound consequences for American grand strategy. The nuclear-revolution school often portrays the bomb in a binary fashion: as a technology that, once achieved, needs little change or improvement. In this thinking, what matters is whether or not one possesses a bomb, not what kind one has, where it is held, or how it is delivered or supported. Analysts often forget, however, three crucial characteristics about nuclear weapons. One, as Michael Horowitz has written, "nuclear weapons and missiles are relatively old technologies," within the reach of many if not most modern states.[86] Next, nuclear weapons are not a static technology but one that has changed and will continue to shift over time. Finally, nuclear bombs are only one aspect of the technology that affects American grand strategy. Enormous changes to intelligence, surveillance, and reconnaissance; command, control, and communications; and the capabilities to deliver nuclear bombs have had and will continue to have profound consequences for nuclear strategy and statecraft. As Lieber and Press point out, synergistic revolutions in computing power and remote sensing make nuclear forces "far more vulnerable than before."[87]

The nuclear-revolution school often portrays the bomb in a binary fashion: as a technology that, once achieved, needs little change or improvement.

These changes will intensify in the decades to come. The United States has committed to spending more than $1 trillion on modernizing its capabilities — a remarkable commitment in a time of competing demands. Much of this modernization, moreover, focuses on advancing characteristics — accuracy, speed, stealth, and miniaturization — that could make nuclear weapons appear more usable in a crisis. This massive, multi-decade investment began during the previous U.S. administration, despite being seemingly at odds with President Barack Obama's 2009 pledge "to seek the peace and security of a world without nuclear weapons."[88]

In addition, technologies are emerging that may influence and potentially shape the future nuclear environment. Cyber, artificial intelligence, robotics, unmanned aerial vehicles, hypersonic and directed energy, nanotechnology, and as-yet-undeveloped technologies will have unknown effects. A recent RAND study, for example, warned that "artificial intelligence (AI) might portend new capabilities that could spur arms races or increase the likelihood of states escalating to nuclear use

85 Lieber and Press, "The New Era of Counterforce," 9.

86 Michael Horowitz, "How Surprising Is North Korea's Nuclear Success? Picking Up Where Proliferation Theories Leave Off," *War on the Rocks*, Sept. 6, 2017, https://warontherocks.com/2017/09/how-surprising-is-north-koreas-nuclear-success-picking-up-where-proliferation-theories-leave-off/.

87 Lieber and Press, "The New Era of Counterforce," 10.

88 Ian Traynor, "Barack Obama Launches Doctrine for Nuclear-Free World," *Guardian*, April 5, 2009, https://www.theguardian.com/world/2009/apr/05/nuclear-weapons-barack-obama.

— either intentionally or accidentally — during a crisis."[89] Cyber presents similar challenges. As a recent Chatham House report explained,

> During peacetime, offensive cyber activities would create a dilemma for a state as it may not know whether its systems have been the subject of a cyberattack. This unknown could have implications for military decision-making, particularly for decisions affecting nuclear weapons deterrence policies. At times of heightened tension, cyberattacks on nuclear weapons systems could cause an escalation, which results in their use.[90]

These capabilities would have direct bearing on the role and use of nuclear weapons in American grand strategy.

Meanwhile, the United States has already developed impressive non-nuclear and non-kinetic weapons capable of carrying out missions that were once the sole provenance of the bomb, including holding an adversary's nuclear capabilities at risk. This shift has the potential to blur the line between conventional and nuclear war. As Rovner points out, there is an increasing worry that "inadvertent escalation may occur when conventional attacks put the adversary' s nuclear force at risk."[91] Caitlin Talmadge argues that American military action could easily be misunderstood by China as a direct threat to its retaliatory capabilities, and so "Chinese nuclear escalation in the event of a conventional war with the United States is a significant risk."[92] New technologies, combined with how the United States has prosecuted its recent wars, may leave a nuclear adversary uncertain as to whether its nuclear forces are being targeted for elimination, possibly inciting "use it or lose it" pressures. Michael Kofman controversially suggests that, "The Pentagon remains wholly committed to the fantasy of having conventional wars with nuclear states, where they will let us win, accepting defeat without a nuclear exchange."[93]

How should one think about conventional capabilities — or non-kinetic tools — that potentially blunt or eliminate a country's ability to use its nuclear weapons? How to define and respond to a cyberattack that undermines a country's secure deterrent yet did not kill or injure a single person? Much existing analysis of the role of nuclear weapons assumes a stark divide between nuclear and non-nuclear conflict, a distinction that may become dangerously cloudy over time. According to Andrew Krepinevich, "The firebreak between conventional and nuclear war is slowly disappearing."[94] As a recent study explained,

> The future of nuclear deterrence is complicated further by the proliferation of conventional military technologies that may undermine traditional modes of escalation management, and as a consequence, nuclear stability. Much attention has already been given to the possible effects of several such technologies, to include stealthy unattended ground sensors, uninhabited aerial vehicles, micro-satellites, and ballistic missile defenses. Comparatively little attention, however, has been given to the possible implications of autonomous systems and artificial intelligence for nuclear stability.[95]

As James Acton perceptively notes, the "emerging interactions between nuclear and nonnuclear weapons ... may prove to be a defining risk of the current nuclear age."[96]

Un-usability and Its Consequences

The third trend is *global public opinion*. While the major nuclear powers are modernizing their forces,

89 Edward Geist and Andrew J. Lohn, *How Might Artificial Intelligence Affect the Risk of Nuclear War?* (Santa Monica, CA: RAND Corp., 2018), 1, https://www.rand.org/pubs/perspectives/PE296.html.

90 Beyza Unal and Patricia Lewis, *Cybersecurity of Nuclear Weapons Systems Threats, Vulnerabilities and Consequences*, Chatham House, January 2018, https://www.chathamhouse.org/sites/default/files/publications/research/2018-01-11-cybersecurity-nuclear-weapons-unal-lewis-final.pdf.

91 Joshua Rovner, "Two Kinds of Catastrophe: Nuclear Escalation and Protracted War in Asia," *Journal of Strategic Studies* 40, no. 5 (2017), http://dx.doi.org/10.1080/01402390.2017.1293532.

92 Caitlin Talmadge, "Would China Go Nuclear? Assessing the Risk of Chinese Nuclear Escalation in a Conventional War with the United States," *International Security* 40, no. 4 (Spring 2017): 90, https://doi.org/10.1162/ISEC_a_00274.

93 Michael Kofman, "Searching for Strategy in Washington's Competition with Russia," *War on the Rocks*, Jan. 30, 2018, https://warontherocks.com/2018/01/searching-strategy-washingtons-competition-russia/.

94 Andrew F. Krepinevich, Jr., "The Eroding Balance of Terror: The Decline of Deterrence," *Foreign Affairs* 98, no. 1 (January/February 2019): 66.

95 Michael C. Horowitz, Paul Scharre, and Alex Velez-Green, *A Stable Nuclear Future? The Impact of Automation, Autonomy, and Artificial Intelligence*, (Philadelphia: University of Pennsylvania, 2017).

96 James M. Acton, "Technology, Doctrine, and the Risk of Nuclear War," *American Academy of Arts and Sciences*, 2018, https://www.amacad.org/content/publications/pubContent.aspx?d=43140.

much of the rest of the world has been clamoring for a reduction — indeed elimination — of nuclear weapons. As Nina Tannenwald explained in her magisterial study, *The Nuclear Taboo*, outside of the nuclear powers, "nuclear deterrence has not been viewed as a legitimate practice for most of the other states of the world."[97]

This is not new. Since the start of the nuclear age, many non-state actors and governments have lobbied fiercely for nuclear reductions and disarmament. Nearly three decades after the Cold War ended, however, much of the non-nuclear world questions why more progress has not been made toward ridding the world of the bomb. As Heather Williams, Patricia Lewis, and Sasan Aghlani make clear, "civil society groups and the majority of states have not yet given up on nuclear disarmament."[98] Pope Francis has declared that "Nuclear deterrence and the threat of mutually assured destruction cannot be the basis for an ethics of fraternity and peaceful coexistence among peoples and states."[99] In 2017, the U.N. General Assembly passed a treaty prohibiting nuclear weapons. This emerged in large part from the popular global campaign to highlight the humanitarian impact of nuclear weapons. Conversations about nuclear weapons take a much different form in Sydney, Rio de Janeiro, Cape Town, or Vienna than they do in Washington, D.C.

It is hard to assess how and to what extent emerging global norms will shape U.S. policies in the years to come. Tannenwald has identified the power of the nuclear taboo on state behavior, and John Mueller has highlighted the rise of powerful norms on issues such as slavery and dueling that could eventually affect not simply nuclear use but also nuclear possession. Norms and public opinion may not be determinative, but they also cannot be ignored. Tannenwald's work suggests that even in states with nuclear weapons "national leaders do take the notion of world opinion seriously."[100] There may come a time when the majority of the world sees merely *possessing* nuclear weapons, let alone using them, as wrongheaded and immoral.

This relates to a fourth trend: the consequences for American grand strategy of the decreasing credibility of threats of nuclear use that undergird

97 Tannenwald, The Nuclear Taboo, 19.

98 Heather Williams, Patricia Lewis, and Sasan Aghlani, "The Humanitarian Impacts of Nuclear Weapons Initiative: The 'Big Tent' in Disarmament," Chatham House, March 2015, 17, https://www.chathamhouse.org/sites/default/files/field/field_document/20150331nuclear.pdf.

99 Quote from Williams, Lewis, and Aghlani, "The Humanitarian Impacts of Nuclear Weapons Initiative", 13.

100 Tannenwald, *The Nuclear Taboo*, 49.

nuclear deterrence. Short of a "bolt from the blue" nuclear attack by an adversary — and possibly even then — how does one evaluate and assess the credibility of U.S. threats to use nuclear weapons? The probability of an invasion of the United States has not increased. The credibility issues surrounding U.S. nuclear guarantees to allies — a deep challenge even during the Cold War — may increase over time. Tannenwald captures this dynamic well:

> Even though US leaders came to believe that nuclear weapons should not really be used, they were not willing to give up nuclear *deterrence*. But they were caught in the paradox recognized early on by nuclear strategists: making deterrence credible (especially in the face of the threat of mutual assured destruction) required convincing the adversary that the United States would actually use such weapons. As such threats became less credible over time for both deterrence and normative reasons, more numerous and more elaborate strategies were sought in an effort to bolster credibility.[101]

There is conflicting evidence about Americans' willingness to support the use of nuclear weapons. A report chaired by the former commander of America's strategic nuclear forces posited that "There is no conceivable situation in the contemporary world" where it would be in either Russia's or the United States' "national security interest to initiate a nuclear attack against the other side."[102] Important studies suggest that Americans would support nuclear use under certain circumstances,[103] while other evidence suggests that in simulated crises it has always been difficult to get approval to use nuclear weapons.[104] If elite wargames designed and played by Thomas Schelling, Henry Kissinger, and others in the 1960s found it extremely difficult to get players to initiate a nuclear war, even when the games were rigged to make nuclear use easier, how likely are scholars today to get anyone to think about using nuclear weapons? That nuclear use is becoming increasingly unthinkable is obviously a good thing. If the bomb is unusable, however, an American grand strategy that relies heavily upon nuclear weapons to achieve many of its key missions may be increasingly untenable.

Collectively, these trends should make understanding the role of nuclear weapons in U.S. grand strategy even more difficult in the years to come — and more critical.

V. Resisting the Revolution, or Revolution à la Carte

Why is a grand-strategic lens the best way to understand nuclear weapons and their consequences, especially in the case of the United States? And how best to understand the role and purpose of nuclear weapons in American grand strategy?

There are two criticisms of using a grand-strategic approach to America's nuclear weapons policies. First, some are skeptical of the concept of grand strategy, arguing that it falsely conveys a picture of policy coherence.[105] This lack of coherence marks U.S. policy in particular.[106] Second, as discussed above, many believe the transformative power of nuclear weapons reduces and even eliminates the choices that leaders and states can make. The power of nuclear deterrence and the reality of mutual vulnerability remove many of the grand-strategic options and maneuvers available to states in nuclear competition, tying the hands of leaders.

While there is some merit to these critiques, they are not ultimately convincing. Although it is unable to overcome all of the methodological, linguistic, and normative challenges surrounding nuclear behavior, grand strategy does recognize an obvious, but often overlooked, point: that nuclear weapons are, first and foremost, tools for states to accomplish their goals in the world. These goals, and the capabilities to achieve them, vary significantly across time, countries, leaders, and circumstance. A grand-strategic frame best captures such variance, as well as the radical uncertainty, risk profiles, trade-offs, moral challenges, and unintended

101 Tannenwald, *The Nuclear Taboo*, 370.

102 Gen. (Ret.) James Cartwright, chair, "Global Zero U.S. Nuclear Policy Report: Modernizing U.S. Nuclear Strategy, Force Structure and Posture," Global Zero, May 2012, 2, https://www.princeton.edu/sgs/faculty-staff/bruce-blair/gz_us_nuclear_policy_report.pdf.

103 Daryl G. Press, Scott D. Sagan, and Benjamin A. Valentino, "Atomic Aversion: Experimental Evidence on Taboos, Traditions, and the Non-Use of Nuclear Weapons," *American Political Science Review* 107, no. 1 (February 2013): 188-206, https://doi.org/10.1017/S0003055412000597.

104 Reid Pauly, "Elite Aversion to the Use of Nuclear Weapons: Evidence from Wargames," *International Security* (forthcoming).

105 For a summary of this critique of grand strategy, see Francis J. Gavin's review of Hal Brands, *What Good is Grand Strategy: Power and Purpose in American Statecraft from Harry S. Truman to George W. Bush* for H-Diplo, Oct. 17, 2014, https://issforum.org/roundtables/7-2-what-good-is-grand-strategy#Review_by_Francis_J_Gavin_MIT.

106 Walter A. McDougall, "Can the United States Do Grand Strategy," *Telegram: Foreign Policy Research Institute,* April 13, 2010, https://www.fpri.org/article/2010/04/can-the-united-states-do-grand-strategy/.

consequences that policymakers face when deciding about an unknowable future.[107] Grand strategy recognizes the "crucible of uncertainty and risk" where decisions are made.[108]

What insights might a grand-strategic lens provide about the role of nuclear weapons in U.S. policies?

Considered broadly, the most important observation is that the United States never fully accepted the consequences of the nuclear revolution. In fact, the United States has, from the start of the nuclear age, worked eagerly to resist and overcome many of the revolutionary consequences of the bomb. It has done so with one overriding goal: to escape vulnerability — to the extent possible — and to obtain and maintain the greatest freedom of action it could to pursue its grand-strategic interests in the world.[109]

This should not surprise anyone. Since 1945, the United States has been the leading power in the international system, at times possessing conventional military, economic, and cultural-ideological capabilities far in excess of any other state. Creating strategic stability, maintaining the international status quo, and avoiding war were not the only goals of American grand strategy since 1945, nor were they always the most important objectives. Many times, the United States wanted to *avoid being deterred* and constrained by the bomb.[110]

Considered broadly, the most important observation is that the United States never fully accepted the consequences of the nuclear revolution.

Nuclear deterrence, remember, looks one way to a status quo, medium-size state that lacks global ambitions and whose primary concern is to avoid being invaded, conquered, or intimidated. It looks different to the most powerful state in the system, one facing no risk of invasion or conquest and whose conventional military and economic strength, absent nuclear deterrence, would allow it great freedom of action (and far less vulnerability) in the world. It is natural that the United States would seek to resist deterrence and get around the constrictions the bomb effectively places on its freedom of action.

It was not always obvious, however, how this extremely ambitious goal could be achieved. American policymakers faced fateful choices, and few actions were pre-ordained. In the years after World War II, for example, American leaders could have invested their enormous political capital in pursuing nuclear disarmament or international control of the bomb.[111] At the other extreme, the United States might have launched preventive attacks against the Soviet Union and its nascent nuclear capabilities, while threatening to do the same to any other country that attempted to develop nuclear weapons.[112] Both options were at least discussed and ultimately dismissed. In later years, American leaders could have developed policies that relied less on extended nuclear deterrence by building up conventional forces that matched those of the Soviet Union in Central Europe. Or U.S. policymakers might have encouraged Western European and Asian allies to acquire and develop their own nuclear capabilities, which would have guaranteed their security without an expensive American military commitment that exposed the United States to attack. During the 1970s and 1980s, the United States could have abandoned arms-control efforts and engaged in a quantitative arms race with the Soviet Union; or American presidents might have avoided massive

107 Francis J. Gavin and James B. Steinberg, "Mind the Gap: Why Policymakers and Scholars Ignore Each Other, and What Should Be Done About It?" *Carnegie Reporter* 6, no. 4 (Spring 2012).

108 Steve Coll, "Comment: Table Talk," *New Yorker*, Feb. 6, 2012, https://www.newyorker.com/talk/comment/2012/02/06/120206taco_talk_coll.

109 Matthew Kroenig argues that nuclear states seek freedom of action in *Exporting the Bomb: Technology Transfers and the Spread of Nuclear Weapons* (Ithaca, NY: Cornell University Press, 2010). For an excellent overview of how U.S. grand strategy has, since the earliest days of the republic, unilaterally gone on the offensive in an effort to eliminate vulnerability, see John Lewis Gaddis, *Surprise, Security, and the American Experience* (Cambridge, MA: Harvard University Press, 2005).

110 As Richard K. Betts has pointed out, what may be good for the "system" — stability — may not be what the United States prefers. "If nuclear spread enhances stability, this is not entirely good news for the United States, since it has been accustomed to attacking small countries with impunity when it felt justified and provoked." See Betts, "Universal Deterrence or Conceptual Collapse? Liberal Pessimism and Utopian Realism," in *The Coming Crisis: Nuclear Proliferation, U.S. Interests, and World Order*, ed. Victor A. Utgoff (Cambridge, MA: MIT Press, 2000), 65.

111 "The Acheson-Lilienthal & Baruch Plans, 1946," State Department Office of the Historian, https://history.state.gov/milestones/1945-1952/baruch-plans.

112 "If we were ruthlessly realistic, we would not permit any foreign power with which we are not firmly allied, and in which we do not have absolute confidence, to make or possess atomic weapons. If such a country started to make atomic weapons we would destroy its capacity to make them before it had progressed far enough to threaten us." Memo from Gen. Leslie Groves, wartime commander of the Manhattan Project, in January 1946, cited in Marc Trachtenberg, "A Wasting Asset: American Strategy and the Shifting Nuclear Balance, 1949–1954," *International Security* 3, no. 3 (Winter 1988/1989): 5, https://www.jstor.org/stable/2538735.

investments in qualitative improvements in nuclear capabilities and simply embraced parity and mutual vulnerability. These were plausible options available to U.S. presidents for how nuclear weapons would be incorporated into grand strategy. How were these choices made, and how should the alternatives be evaluated? This question should be the focus of renewed research by historians and international relations scholars attempting to understand and evaluate America's choices with the bomb.

While one purpose of America's grand strategy is to overcome the constraints of nuclear deterrence, this goal was pursued in ways that often appear to be in tension, even contradiction, with each other. At times, U.S. leaders pursued what might be labeled "nuclear activism" — the idea that nuclear weapons are crucial instruments of statecraft and that advantages in capabilities versus adversaries were both achievable and would translate into important policy outcomes in the world. This can be seen in America's persistent and expensive efforts over the past eight decades to develop and deploy sophisticated nuclear systems in forward-leaning strategies on behalf of expansive grand missions like extended deterrence. It can also be seen in the extraordinary U.S. efforts to prevent other states from acquiring nuclear weapons.

At other times, the U.S. government advocated forms of "nuclear abstinence." Strategic stability, mutual vulnerability, and both vertical and horizontal arms control were actively encouraged. The United States went further at points, denigrating the political utility of nuclear weapons and suggesting that the burdens, costs, and dangers of the bomb were not worth it and that the world might be better off free of all nuclear weapons. For much of its nuclear history, however, the United States has put forward both nuclear activism *and* abstinence, as it does when it seeks strategic nuclear advantages in order to limit the spread of nuclear weapons to its friends and allies. What explains this apparent contradiction?

Perhaps the best way to understand these tensions and contradictions — seeking both nuclear primacy and non-proliferation, embracing the first use of nuclear weapons while advocating a world free of them — is to imagine American policymaking as akin to the choice of a switch-hitter in baseball, deciding whether to bat right-handed or left-handed. In the end, it simply chooses the side that offers the best chance for success, defined as reducing U.S. vulnerability and increasing its freedom of action in the world.

Sometimes, the choice of whether to bat left or right is obvious, whereas, at other times it has not always been clear which side — nuclear activism or abstinence — would provide the best outcomes for the United States. On the one hand, nuclear weapons provided American leaders with certain advantages. The United States developed nuclear weapons first, and for most of the nuclear age it has possessed superiority, often enormous superiority, in qualitative capabilities — if not always quantity — over any of its competitors, an advantage that is likely to persist. Nuclear weapons have, arguably, allowed the United States to pursue strategies that may have otherwise been too difficult or expensive, such as the defense of Western Europe against the Soviet Union's large and close armies after World War II. On the other hand, the risks of a nuclearized environment are terrifying. In an international system based on deterrence, the bomb could be used by others to constrain the United States and dilute the effect of other forms of American power. As Jervis pointed out, "One could argue that it is only nuclear weapons that stand between the US and world domination, at least as far as the use and threat of force are concerned."[113]

The United States, obviously, does not reject every aspect of the nuclear revolution. After almost a half-century of murderous conflict and world war during the first half of the 20th century, the stabilizing and peace-inducing qualities of nuclear deterrence were no doubt welcome, including by American leaders. Rather, American policymakers often reject and try to overcome those aspects of nuclear weapons power that they don't like, while maintaining those that advance their interests. Through nuclear activism and abstinence and everything in between, the United States takes an *à la carte* view of the nuclear revolution.

Did these choices make for wise grand strategy? As explained above, it is difficult to identify and assess the causal effects of nuclear weapons on important outcomes in American foreign policy and world politics. Answering these and similar questions requires engaging counterfactual reasoning while at the same time making assumptions about the purpose and effects of nuclear weapons.[114] These

113 Robert Jervis, "Foreword," in *Global Nuclear Disarmament: Strategic, Political, and Regional Perspectives*, ed. Nik Hynek and Michal Smetana (London: Routledge, 2016), https://www.researchgate.net/publication/304989752_Global_Nuclear_Disarmament_Strategic_Political_and_Regional_Perspectives_-_FOREWORD_by_Robert_Jervis.

114 For the importance of counterfactuals for hypothesis testing, see James D. Fearon, "Counterfactuals and Hypothesis Testing in Political Science," *World Politics* 43, no. 2 (January 1991): 169–95, https://doi.org/10.2307/2010470; Francis J. Gavin, "What If? The Historian and the Counterfactual," *Security Studies* 24, no. 3 (2015): 425–30, https://doi.org/10.1080/09636412.2015.1070610.

conjectures are almost impossible to test and verify. Perhaps great-power war would have decreased, if not disappeared, in a non-nuclear world, driven out by the increased lethality of war, demographics and interdependence, or shifting norms.[115] Maybe in a non-nuclear world, Berlin's political status would have been easily resolved or would have been the cause of a third world war.[116] Perhaps it was the expense of the arms race that accelerated Soviet decline, or perhaps the communist state would have collapsed from its internal rot regardless of what nuclear weapons system or strategies the United States did or did not deploy. In a postwar world with a less engaged, more restrained United States, more independent nuclear-weapons states may have emerged, with uncertain consequences.

The nuclear revolution — and America's responses to it — also may have transformed other elements of U.S. grand strategy in ways that are underappreciated. The power of nuclear deterrence and the dangers of escalation in the nuclear age may have shifted by who, how, and for how long the United States prepares to fight with conventional weapons. American leaders have been obsessed with demonstrating resolve and credibility since 1945, including pursuing military action in areas of the world where it was difficult to identify vital U.S. interests. Would the United States invest blood and treasure in Southeast Asia, for example, in a world without nuclear weapons? Would it still have fought two costly wars in Iraq? Even where nuclear weapons are not explicitly engaged, they cast a long shadow over grand-strategic decisions.

Even with all these caveats, and recognizing numerous self-inflicted wounds and disastrous military interventions, one can imagine grand-strategic choices surrounding nuclear weapons with far worse outcomes. After all, the United States prevailed in its Cold War struggle against the Soviet Union without a nuclear exchange or great-power war. It maintains extraordinary power and influence in a world where the streak on nuclear non-use has continued and where, despite dire predictions to the contrary, the number of nuclear-weapons states remains in the single digits. It is not hard to construct plausible alternative histories with far graver outcomes. That said, it is right to ask whether the United States' heavy reliance on the bomb in its grand strategy has outlived its utility.

Conclusion

The cover of a recent *Foreign Affairs* asked, "Do nuclear weapons matter?" As the introduction to the issue explained, "[T]hey are purchased, deployed, and discussed on separate tracks from the rest of the foreign policy agenda, and they are largely ignored, with little apparent consequence."[117] This essay makes clear that this lack of scrutiny courts trouble. There is much we do not know about the purpose and effects of America's nuclear posture, and much of what we think we know deserves rigorous interrogation. Without a doubt, many other pressing and significant issues confront American policymakers, world leaders, and scholars. Nevertheless, no discussion or debate about United States grand strategy — to say nothing of the future prospects for and the shape of world order — can proceed without coming to terms with the nuclear question. As Beatrice Fihn pointed out, "if there's nuclear war, there's no other agenda to talk about."[118]

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What is the future role of nuclear weapons in American grand strategy? Significant changes in technology, geopolitics, and global public opinion present American decision-makers with crucial questions. Should the United States continue to rely so heavily on nuclear weapons to underwrite grand-strategic missions beyond defending the homeland? Will the United States be forced to overcome its "credibility gap" by continuing to

115 The most convincing version of this argument was made by John Mueller, *Retreat from Doomsday: The Obsolescence of Major War* (New York: Basic Books, 1989).

116 I explore these possibilities in *Nuclear Statecraft*, 57–74.

117 Gideon Rose, "Introduction," *Foreign Affairs* 97, no. 6, (November/December 2018), https://www.foreignaffairs.com/articles/2018-10-15/do-nuclear-weapons-matter.

118 Joshua Keating, "The 'Toxic Masculinity' of Nuclear Weapons: An interview with Beatrice Fihn, executive director of the Nobel Peace Prize–winning International Campaign to Abolish Nuclear Weapons," *Slate,* Nov. 12, 2018, https://slate.com/news-and-politics/2018/11/ican-beatrice-fihn-nuclear-weapons-prohibition-treaty-interview.html.

massively invest in capabilities and postures, nuclear and non-nuclear, that decrease American vulnerability to nuclear attack, while increasing U.S. abilities to preempt threats? Or should the United States encourage nuclear abstinence in an effort to remove the constraining effects on its own freedom of action while inhibiting new, independent nuclear programs? Will other capabilities — conventional, space, or cyber — augment or replace the role of nuclear weapons? In all likelihood, the answer will continue to be "all of the above," as American grand strategy retains its confusing, frustrating balance between relying heavily on nuclear deterrence while trying mightily to overcome its constraints.

In shaking our complacency about American grand strategy and the bomb, we need a vigorous debate and discussion that interrogates many of our deeply held assumptions and convictions. For example, perhaps it is worth considering whether a grand strategy that seeks a world with fewer nuclear weapons, or even none at all, might advance U.S. interests the most. Can the United States find a way to retain the advantages that nuclear weapons have provided in the past, while limiting and even eliminating the challenges of a grand strategy centered upon the bomb in the future? As farfetched as that may seem, the United States has long reveled in opposing constraints imposed from the outside, while pushing its own revolutionary ideas on the world. Few could have predicted that the United States would have resisted the nuclear revolution as successfully as it has. Might a far-sighted United States grand strategy accomplish what is often seen as both impossible and irresponsible: eliminating the role of nuclear weapons in international relations, while advancing American interests in the world?

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