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JUST LIKE YESTERDAY? NEW CRITIQUES OF THE NUCLEAR REVOLUTION

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Four recent books offer compelling political and strategic explanations for why states pursue expansive nuclear and foreign policies. They provide new insights on an enduring question: What are the implications of nuclear weapons for international competition and conflict? Their answers directly challenge the influential theory of the nuclear revolution, which posits that mutual deterrence reduces pressure for competition and the likelihood for war between nuclear-armed states. The revolution skeptics suggest a much grimmer future. This review outlines their claims and argues that portions of their arguments nevertheless point to dynamics that can constrain competition and conflict. First, the books reinforce the nuclear revolution's emphasis on inadvertent escalation as a brake on war in mutual vulnerability. Second, the competitive pressures they identify do not equally affect all nuclear states. Where pressures are modest, competition will be less intense.

Review of:

Mark S. Bell, *Nuclear Reactions: How Nuclear-Armed States Behave* (Ithaca, NY: Cornell University Press, 2021)

Francis J. Gavin, *Nuclear Weapons and American Grand Strategy* (Washington, DC: Brookings Institution Press, 2020)

Brendan Rittenhouse Green, *The Revolution that Failed: Nuclear Competition, Arms Control, and the Cold War* (Cambridge: Cambridge University Press, 2020)

Keir A. Lieber and Daryl G. Press, *The Myth of the Nuclear Revolution: Power Politics in the Atomic Age* (Ithaca, NY: Cornell University Press, 2020)

The past year has witnessed renewed public attention to nuclear weapons. Russia's invasion of Ukraine in February 2022 was accompanied by veiled nuclear threats. Russian President Vladimir Putin declared early in the conflict that "whoever tries to impede us, let alone create threats for our country and its people, must know that the Russian response will be immediate and lead to the consequences you have never seen in history."[1] Later in 2022, the U.S. Department of Defense reported that China "continued to accelerate the modernization, diversification, and expansion of its nuclear forces" and would "likely field a stockpile of about 1500 warheads" by 2035.[2] This constituted an upward revision from estimates made as recently as 2020.[3] These developments raise a fundamental question: What are the implications of nuclear weapons for international competition and conflict?

1 Quoted in Richard K. Betts, "Thinking About the Unthinkable in Ukraine: What Happens if Putin Goes Nuclear?" *Foreign Affairs,* July 4, 2022, https://www.foreignaffairs.com/articles/russian-federation/2022-07-04/thinking-about-unthinkable-ukraine. See also Caitlin Talmadge, "The Ukraine Crisis Is Now a Nuclear Crisis," *Washington Post,* Feb. 27, 2022, https://www.washingtonpost.com/politics/2022/02/27/ukraine-crisis-is-now-nuclear-crisis/; and Nina Tannenwald, "The Bomb in the Background: What the War in Ukraine Has Revealed About Nuclear Weapons," *Foreign Affairs,* Feb. 24, 2023, https://www.foreignaffairs.com/ukraine/bomb-background-nuclear-weapons; and Jeffrey Lewis and Aaron Stein, "Who Is Deterring Whom? The Place of Nuclear Weapons in Modern War," *War on the Rocks,* June 16, 2022, https://warontherocks.com/2022/06/who-is-deterring-whom-the-place-of-nuclear-weapons-in-modern-war/.

2 *Military and Security Developments Involving the People's Republic of China, 2022,* U.S. Department of Defense, Nov. 29, 2022, i, ix, https://www.defense.gov/CMPR/. See also Andrew F. Krepinevich, Jr., "The New Nuclear Age: How China's Growing Nuclear Arsenal Threatens Deterrence," *Foreign Affairs* 101, no. 3 (May/June 2022), https://www.foreignaffairs.com/articles/china/2022-04-19/new-nuclear-age.

3 *Military and Security Developments Involving the People's Republic of China, 2020,* U.S. Department of Defense, Sept. 1, 2020, ix, https://media.defense.gov/2020/Sep/01/2002488689/-1/-1/1/2020-DOD-CHINA-MILITARY-POWER-REPORT-FINAL.PDF.

The question is hardly novel. At the dawn of the nuclear era, many feared that, absent a ban or international control, the world would quickly succumb to the horrors of nuclear war.[4] Instead, nuclear strikes have not occurred since 1945, and conventional war between nuclear-armed states has been exceedingly rare.[5] This record would seem to vindicate early analysts who highlighted the weapons' deterrent effects. Jacob Viner speculated in November 1945 that the "universal recognition" that war might result in nuclear strikes "may make statesmen and people determined to avoid war."[6]

Scholars subsequently sought to develop the underpinnings and implications of the nuclear peace. This culminated in a series of works in the late Cold War era that extended the basic insights of nuclear deterrence to develop a theory of the nuclear revolution.[7] The underlying premise was that nuclear weapons made military victory between nuclear-armed states impossible. From there, additional implications follow. Security becomes more abundant, competition less likely. Arms racing is relegated to the dustbin of history. The pursuit of allies and strategic territory is less important. For some proponents, even managed nuclear proliferation is not particularly dangerous.[8] New nuclear-armed states face the same constraints and will thus behave similarly to those that came before them. In sum, nuclear weapons had revolutionary effects.

Mark Bell, Francis Gavin, Brendan Green, and Keir Lieber and Daryl Press all challenge core tenets of the nuclear revolution in books they have published since 2020.[9] The common puzzle that these revolution skeptics identify is the fact that nuclear-armed states — particularly the United States — don't behave the way that the nuclear revolution would predict. Competition continues apace in the nuclear era.

These four books are impressive achievements. Their arguments are clear, mixing an appreciation of theory with close attention to history and technical detail. Green develops a novel framework combining technological, operational, and domestic political dynamics to explain why and how states compete under nuclear stalemate. He assesses his argument with extensive analysis of declassified documents from the Nixon, Ford, and Carter administrations. The historical evidence he presents is itself a major scholarly contribution. Lieber and Press utilize qualitative analysis of nuclear postures with detailed technical modeling. In doing so, they argue that states struggle to reach nuclear stalemate, maintain stalemate if they do manage to achieve that condition, and face deterrence challenges even under stalemate. Bell constructs a typology of foreign policy behaviors that nuclear weapons facilitate. He supports his argument through detailed case studies of British, South African, and U.S. foreign policy after the acquisition of nuclear weapons, as well as brief examinations of China, France, India, Israel, and Pakistan. Gavin explores specific historical events, the evolution of strategic thought, and recent scholarship in semi-independent chapters to question many long-standing assumptions about the nuclear age. He shows that nuclear weapons have mattered greatly for U.S. grand strategy, but not necessarily in the ways that the nuclear revolution theory expects.

The authors advance political and strategic explanations for nuclear-armed state behavior.

4 Keir A. Lieber and Daryl G. Press, *The Myth of the Nuclear Revolution: Power Politics in the Atomic Age* (Ithaca, NY: Cornell University Press), 129. For contemporary discussions, see Jacob Viner, "The Implications of the Atomic Bomb for International Relations," *Proceedings of the American Philosophical Society* 90, no. 1 (January 1946): 53–58, https://www.jstor.org/stable/3301039; and Stefan P. Possony, "The Atomic Bomb: Political Hopes and Realities," *Review of Politics* 8, no. 3 (April 1946): 147–67, https://www.jstor.org/stable/1403980.

5 This is not to say that the human costs have not been profound. See, for example, Shampa Biswas, *Nuclear Desire: Power and the Postcolonial Nuclear Order* (Minneapolis: University of Minnesota Press, 2014), chap. 4.

6 Viner, "The Implications of the Atomic Bomb for International Relations," 55. See also Matthew Kroenig, "The History of Proliferation Optimism: Does It Have a Future?" *Journal of Strategic Studies* 38, nos. 1–2 (2015): 100–101, https://doi.org/10.1080/01402390.2014.893508.

7 Exemplars include Robert Jervis, *The Illogic of American Nuclear Strategy* (Ithaca, NY: Cornell University Press, 1984); Robert Jervis, *The Meaning of the Nuclear Revolution: Statecraft and the Prospect of Armageddon* (Ithaca, NY: Cornell University Press, 1989); Charles L. Glaser, *Analyzing Strategic Nuclear Policy* (Princeton, NJ: Princeton University Press, 1990); Stephen van Evera, *Causes of War: Power and the Roots of Conflict* (Ithaca, NY: Cornell University Press, 1999), chap. 8; and Kenneth N. Waltz, "Nuclear Myths and Political Realities," *American Political Science Review,* 84, no. 3 (September 1990): 731–45, https://www.jstor.org/stable/1962764.

8 Kenneth N. Waltz, "The Spread of Nuclear Weapons: More May Be Better," *Adelphi Papers* 21, no. 171 (1981): 1–32, https://doi.org/10.1080/05679328108457394.

9 Mark S. Bell, *Nuclear Reactions: How Nuclear-Armed States Behave* (Ithaca, NY: Cornell University Press, 2021); Francis J. Gavin, *Nuclear Weapons and American Grand Strategy* (Washington, DC: Brookings Institution Press, 2020); Brendan Rittenhouse Green, *The Revolution that Failed: Nuclear Competition, Arms Control, and the Cold War* (Cambridge: Cambridge University Press, 2020); and Lieber and Press, *The Myth of the Nuclear Revolution.* Green builds on his and Austin Long's pathbreaking work in places, but overall Green's analysis offers the most new material. 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): 606–41, https://doi.org/10.1080/09636412.2017.1331639; and Austin Long and Brendan Rittenhouse Green, "Stalking the Secure Second Strike: Intelligence, Counterforce, and Nuclear Strategy," *Journal of Strategic Studies* 38, nos. 1–2 (2015): 38–73, https://doi.org/10.1080/01402390.2014.958150. Portions of the arguments made by Bell, Gavin, and Lieber and Press are found in their earlier works, but combining them provides a whole greater than the sum of their parts. The authors join other recent works that explicitly critique aspects of the nuclear revolution. See, for example, Matthew Kroenig, *The Logic of American Nuclear Strategy* (Oxford: Oxford University Press, 2018).

In doing so, they challenge many of the nuclear revolution's claims about the pacifying effects of nuclear stalemate, but from a very different direction than the scholars labeled as "nuclear pessimists" in the 1990s and early 2000s.[10] The new revolution skeptics are in some ways more pessimistic than those nuclear pessimists. Nuclear-weapon states face powerful incentives to compete with one another and engage in traditional power politics. The authors thus provide important insights into the current international environment.

In this essay, I examine these four books with a focus on their implications for war between nuclear-armed states. The revolution skeptics concede that nuclear and major conventional war between nuclear-armed states is indeed unlikely, as the nuclear revolution claims. Yet, at the same time, their critiques cast considerable doubt on that claim. This raises the question: Can the nuclear peace be salvaged? I argue that the books highlight two major dynamics that can help to shed light on this question. First, portions of the revolution skeptics' accounts reinforce the nuclear revolution's emphasis on the fear of inadvertent escalation as a constraint on fighting in nuclear stalemate. Though preliminary, the discussion suggests that, where those fears endure, the prospects for war are likely to remain low. Second, the political and strategic factors that the revolution skeptics highlight do not push all nuclear-armed states toward competition. The implications of technological trends, the conventional military balance, and the sources of U.S. grand strategy can cut in different directions.

This article proceeds in five sections. First, I discuss the nuclear revolution itself. Second, I outline the skeptics' critiques of the revolution. In the third section, I demonstrate that portions of their arguments call into question the nuclear peace claim. In section four, I explore the limits on competition that follow from their analyses. I conclude by discussing enduring questions of the nuclear era.

Smile and Grin at the Change All Around

What is the nuclear revolution? The breadth of the nuclear strategy literature means that there are subtle differences in terminology and the precise contours of the nuclear revolution. And, as Green highlights, "the 'theory of the nuclear revolution' did not emerge as a theory at all, but rather as a set of powerful concepts and tools for articulating proposed changes to American nuclear policy."[11] In this section, I present a synthesis of the core nuclear revolution claims. I draw heavily from the skeptics' accounts, which are thoroughly documented and consistent across the books. They provide a fair representation of the nuclear revolution's central components. I note when there are disagreements.

The taproot of the nuclear revolution is the impossibility of military victory when both sides have a secure second-strike nuclear arsenal. Nuclear weapons are incredibly destructive, but many pre-nuclear conflicts were devastating, particularly for the losing side.[12] The distinction is that, when both sides have the ability to retaliate with nuclear weapons following an opponent's first strike, neither side can win a nuclear war. Nuclear weapons — because they are small, destructive, and easy to deliver — create stalemate, "the condition in which military victory is impossible," according to Lieber and Press.[13] Gavin agrees: "The consensus on the core ideas surrounding … the 'nuclear revolution' is that a full-scale nuclear war is not winnable, especially after a state achieves … the ability to unleash unacceptable destruction on an adversary even after absorbing a nuclear first strike."[14] For Green, the nuclear revolution's "most fundamental concept is nuclear stalemate." The "absolutely critical argument here is that, past a certain threshold of destruction, no participant in a war can hope for an appreciably 'better' outcome than its adversary."[15] Moreover, this condition is durable. Once mutual vulnerability is achieved, it is nearly impossible for one side to gain an advantage again.[16]

10 Scott D. Sagan, *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons* (Princeton, NJ: Princeton University Press, 1993); Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: An Enduring Debate* (New York: W.W. Norton, 2013), chaps. 2, 4–7 [sections authored by Sagan]; Peter D. Feaver, "Optimists, Pessimists, and Theories of Nuclear Proliferation Management: Debate," *Security Studies* 4, no. 4 (1995): 754–77, https://doi.org/10.1080/09636419509347602; and Peter D. Feaver, "Neoptimists and the Enduring Problem of Nuclear Proliferation," *Security Studies* 6, no. 4 (Summer 1997): 93–125, https://doi.org/10.1080/09636419708429323.

11 Green, *The Revolution that Failed*, 9; Lieber and Press, *The Myth of the Nuclear Revolution*, 3–5, 125; Gavin, *Nuclear Weapons and American Grand*, 214; and Bell, *Nuclear Reactions*, 3–4.

12 Lieber and Press, *The Myth of the Nuclear Revolution*, 12–13; and Thomas C. Schelling, *Arms and Influence* (New Haven, CT: Yale University Press, 1966), 18–23.

13 Lieber and Press, *The Myth of the Nuclear Revolution*, 31.

14 Gavin, *Nuclear Weapons and American Grand Strategy*, 127, 131, 195–96, quote at 131; and Bell, *Nuclear Reactions*, 3.

15 Green, *The Revolution that Failed*, chaps. 1–2. Quotes at 13–14.

16 Green, *The Revolution that Failed*, 28–31, 42; Lieber and Press, *The Myth of the Nuclear Revolution*, 27–28, 67.

Green adds two additional core concepts to the nuclear revolution. First, the "balance of resolve strongly favors the defender of the status quo."[17] The side trying to prevent change (deterrence) in disputes will typically succeed. Deterrence is commonly thought to be easier than compellence (which aims to generate change) for reasons that go beyond nuclear weapons.[18] The impossibility of military victory accentuates that tendency. As Robert Jervis put it, much of the "explanation for the bargaining advantage of the side defending the status quo applies to the prenuclear era as well. But the effect is magnified by mutual vulnerability."[19] In a recent comprehensive analysis, Todd Sechser and Matthew Fuhrmann find that nuclear weapons (as well as nuclear superiority) offer deterrence — but not compellence — benefits, in large part because defenders enjoy higher resolve.[20] In a conventional world, greater capabilities might offset greater resolve. But if capabilities no longer allow for victory, resolve is all that is left.[21]

The second core component of the nuclear revolution that Green identifies is drawn from Thomas Schelling's notion that bargaining in the nuclear shadow occurs through competitive risk-taking.[22] States cannot credibly threaten to use nuclear weapons if carrying out the threat invites massive retaliation. They can take steps that raise the danger that nuclear use will occur by chance. The side with greater resolve will be more willing to run risks and prevail as a result.

Competition in risk-taking is a core concept of the nuclear age, but it is better viewed as one possible consequence of military stalemate for two reasons. First, it is the condition of mutual vulnerability that makes issuing credible threats difficult and leads to a focus on resolve. As Green writes, "the intimidating character of general nuclear war" means that the "threat of nuclear attack is hard to believe."[23] Schelling was concerned with how to make threats credible when it no longer made sense to execute threats, a situation resulting from stalemate.[24] Second, incorporating the risk-taking logic as a necessary component of the nuclear revolution introduces tensions within the theory. If both sides engage in risk-taking behavior simultaneously, the likelihood of war increases.[25] Schelling even contemplated conventional war as a means to "raise the risk of larger war."[26] This runs directly counter to the claim that mutual vulnerability reduces conflict. In addition, if the balance of resolve favors the defender, it is unclear why the defender would need to engage in risky behavior at all or why a challenger's efforts to do so would be effective. For the nuclear revolution, what matters is that both sides can inflict devastation on the other, which makes risk-taking dangerous and less likely to occur over time.[27]

Several effects follow from military stalemate, reinforced by the advantages of defending the *status quo*. The prime prediction is that nuclear and major conventional war between states with survivable nuclear forces will be unlikely.[28] This is distinct from a narrower claim that nuclear deterrence only dissuades nuclear strikes or a broader claim that nuclear weapon states avoid fighting in general (e.g., against non-nuclear opponents). For the nuclear peace, the potential for conventional war between nuclear-armed states to escalate and the ability of the losing side to inflict massive devastation make fighting mutual suicide. Both sides are thus predicted to exhibit caution. The nuclear peace claim is not limited to the nuclear revolution. Over time, analysts have focused on different

17 Green, *The Revolution that Failed,* 12.

18 Tami Davis Biddle, "Coercion Theory: A Basic Introduction for Practitioners," *Texas National Security Review* 3, no. 2 (Spring 2020): 102–103, http://dx.doi.org/10.26153/tsw/8864; Robert J. Art and Kelly M. Greenhill "Coercion: An Analytical Overview," in *Coercion: The Power to Hurt in International Politics,* ed. Kelly M. Greenhill and Peter Krause (Oxford: Oxford University Press, 2018), 18–19.

19 Jervis, *The Meaning of the Nuclear Revolution,* 32.

20 Their analysis extends beyond mutual vulnerability, but it is consistent with the nuclear revolution on this point. Todd S. Sechser and Matthew Fuhrmann, *Nuclear Weapons and Coercive Diplomacy* (Cambridge: Cambridge University Press, 2017), 46–51, 121–29, 140, 255–56. For a critique, see Kroenig, *The Logic of American Nuclear Strategy.*

21 Francis J. Gavin, *Nuclear Statecraft: History and Strategy in America's Atomic Age* (Ithaca, NY: Cornell University Press, 2012), 60.

22 Green, *The Revolution that Failed,* 11–12. Thomas C. Schelling, *The Strategy of Conflict* (1960; repr., Cambridge, MA: Harvard University Press, 1980), esp. chap. 8; and Schelling, *Arms and Influence*, esp. chap. 3.

23 Green, *The Revolution that Failed,* 12.

24 Marc Trachtenberg, *History and Strategy* (Princeton, NJ: Princeton University Press, 1991), 16–17; and Sechser and Fuhrmann, *Nuclear Weapons and Coercive Diplomacy*, 39.

25 Gavin, *Nuclear Weapons and American Grand Strategy*, 16, 29–32; and Marc Trachtenberg, "Waltzing to Armageddon," *National Interest,* no. 69 (Fall 2002): 148–49.

26 Quoted in Green, *The Revolution that Failed,* 12. Schelling, *The Strategy of Conflict,* 190–94.

27 Jervis, *The Meaning of the Nuclear Revolution,* 35–42.

28 Lieber and Press, *The Myth of the Nuclear Revolution*, 17–18; Green, *The Revolution that Failed,* 1-2, 251; Gavin, *Nuclear Weapons and American Grand Strategy*, 131–32, 159–60, 181–82, 196–98; and Bell, *Nuclear Reactions*, 3–4, 168.

nuclear arsenal requirements — ranging from joint existence to deliverability to stalemate — that are necessary for the nuclear peace to operate. Yet, the basic notion that nuclear-armed states are unlikely to fight one another is widely posited. It originated with Jacob Viner and Bernard Brodie at the dawn of the nuclear age, runs through all versions of the nuclear revolution, is examined in recent statistical analyses of nuclear weapons and conflict, and is familiar to post-Cold War U.S. national security policymakers.[29]

For the nuclear revolution, the implications of mutual vulnerability for world politics go much further. As Green succinctly puts it, the nuclear revolution "drains all of the competition out of the international system."[30] The "logic of deterrence suggests not only that countries armed with nuclear weapons can no longer fight each other but also that they can abandon all sorts of other competitive behaviors that have long defined world history," argue Lieber and Press.[31] Gavin highlights that 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."[32] Bell agrees and argues that the nuclear revolution's logic goes beyond explaining interactions between nuclear-armed states. According to the nuclear revolution, "States with secure second-strike capabilities simply do not need to engage in provocative or belligerent behavior to secure territory, resources, or alliances or improve the conventional balance of power."[33]

The impossibility of military victory reduces arms racing, incentives to launch a preventive war, and the danger of other states acquiring nuclear weapons. Arms racing is unnecessary because possessing superior conventional or nuclear capabilities does not allow for military victory.[34] States need not launch preventive attacks out of a fear that an opponent can translate faster growth into military advantage. Leaders can even take a relaxed view toward proliferation. This is not to say that the nuclear revolution argues that states will (or should) support others' efforts to acquire nuclear weapons. "Few went as far as [Kenneth] Waltz to actually welcome or encourage the spread of nuclear weapons," Gavin points out. "But there was a general consensus that the spread was not the end of the world."[35] Fighting to prevent nuclear proliferation is thus rarely necessary.

Military stalemate also makes alliances, control (or denial) of strategic territory, and relative gains less important for nuclear-armed states.[36] Allies will not shift the balance in a military confrontation between such states. Allies and strategic territory may be useful if a state cannot strike its rival. However, the advent of intercontinental platforms removed this need for the superpowers, while regional nuclear adversaries (e.g., India and Pakistan) do not require forward-based systems in order to reach their targets. States therefore need not compete for allies or be pulled into unwanted confrontations. Political and economic agreements should be easier to come by because states can pursue deals that leave them absolutely better off, even if the opponent does relatively better. A slightly larger gain by one side will not tip the balance and allow that state to translate the gains into a meaningful advantage.

Crises will be less frequent as well. Victory will tend to go to the side that displays greater resolve, which will favor the defender of the *status quo*. As such, states should learn that initiating a crisis is unlikely to bring success. As Green summarizes, "crises will be very rare, since a challenge to the status quo is close to irrational."[37] The reduction of multiple sources of friction — from arms racing to competition for allies to relative gains concerns — also leads to fewer incentives for nuclear-weapon states to challenge one another in the first place.

29 Viner, "The Implications of the Atomic Bomb for International Relations"; Bernard Brodie, ed, *The Absolute Weapon: Atomic Power and World Order* (New York: Harcourt, Brace and Co., 1946); Victor Asal and Kyle Beardsley, "Proliferation and International Crisis Behavior," *Journal of Peace Research* 44, no. 2 (2007): 139–55, https://doi.org/10.1177/0022343307075118; Mark S. Bell and Nicholas L. Miller, "Questioning the Effects of Nuclear Weapons on Conflict," *Journal of Conflict Resolution* 59, no. 1 (February 2015): 74–92, https://doi.org/10.1177/0022002713499718; and Paul C. Avey, "MAD and Taboo: U.S. Expert Views on Nuclear Deterrence, Coercion, and Non-Use Norms," *Foreign Policy Analysis* 17, no. 2 (April 2021): 1–14, https://doi.org/10.1093/fpa/oraa019.

30 Green, *The Revolution that Failed*, 1.

31 Lieber and Press, *The Myth of the Nuclear Revolution*, 10.

32 Gavin, *Nuclear Weapons and American Grand Strategy*, 194–96, 225, quote at 194.

33 Bell, *Nuclear Reactions*, 3.

34 Green, *The Revolution that Failed*, 14; Lieber and Press, *The Myth of the Nuclear Revolution*, 19–21; and Bell, *Nuclear Reactions*, 4.

35 Gavin, *Nuclear Weapons and American Grand Strategy*, 24–25, 84, 131, 159-160, 194–95, quote at 159; Lieber and Press, *The Myth of the Nuclear Revolution*, 3–4; and Bell, *Nuclear Reactions*, 169–70.

36 Lieber and Press, *The Myth of the Nuclear Revolution*, 18–19, 21–24; and Bell, *Nuclear Reactions*, 3–4.

37 Green, *The Revolution that Failed*, 14.

History Ain't Changed

The revolution skeptics all motivate their work in whole or in part with the observation that the nuclear revolution does not capture how nuclear-armed states actually behave. Lieber and Press note that "the foreign policies of the major powers during the nuclear age remain strikingly similar to the policies of the past."[38] For Green, there is an "obvious problem" with the nuclear revolution: "the Cold War superpowers don't appear to have believed it. The nuclear competition during the second half of the Cold War poses a massive anomaly for the theory."[39] Gavin concludes that "the nuclear revolution school has failed to explain critical aspects of U.S. nuclear politics, including nuclear strategy and nonproliferation."[40] Bell argues that "there is considerable variation in how states have changed their foreign policies after acquiring nuclear weapons. The theory of the nuclear revolution cannot explain this variation."[41] The authors concede one point: Major war between nuclear-armed states is less likely.[42] The pacific effects of nuclear stalemate go no further. Interstate competition continues apace.

As the skeptics note, many proponents and earlier critics of the nuclear revolution recognized this divergence between theory and reality.[43] The revolution skeptics reject previous explanations for the discrepancy that are rooted in bureaucratic politics or misguided thinking.[44] They do not advance explanations of nuclear irrelevancy, norms, or strategic culture to account for enduring competition in the nuclear era.[45]

Rather, the revolution skeptics identify a political-strategic rationale that is driving nuclear state behavior. These four books do not put forth a single explanation, because they seek to explain different nuclear and foreign policy decisions. Their arguments overlap, but each emphasizes different factors, which are rooted in technology, relative power, or political interests. At times one claim may sit uneasily with another, and some are not relevant to all nuclear-armed states. The common thread is that states have good political and strategic reasons to pursue policies that are often at odds with the nuclear revolution's expectations.

The point is that changes in technology may allow one side to win, if the political stakes are high enough. Mutual vulnerability is not a constant.

First, innovation may overcome mutual vulnerability. As Green puts it, during the Cold War, the "survivability of weapons systems varied over time, by type, and across the superpowers."[46] Lieber and Press agree (almost verbatim): "[T]he survivability of nuclear arsenals has varied over time." They identify many of the same late-Cold War dynamics and add that "the foundations of stalemate are being eroded today by vast improvements in weapons accuracy, sensing technology, data processing, communication, and artificial intelligence."[47] These improvements enhance both nuclear and conventional platforms, increasing confidence that strikes can destroy adversary nuclear forces. Exploiting perennial command-and-control vulnerabilities can provide time for other "counterforce systems

38 Lieber and Press, *The Myth of the Nuclear Revolution*, 4.

39 Green, *The Revolution that Failed*, 2. See also Feaver, "Optimists, Pessimists, and Theories of Nuclear Proliferation Management," 755.

40 Gavin, *Nuclear Weapons and American Grand Strategy*, 192.

41 Bell, *Nuclear Reactions*, 4.

42 Lieber and Press, *The Myth of the Nuclear Revolution*, 2–3, 5, 10, 17–18, 24–25, 32–33, 65, 121, 129–30; Gavin, *Nuclear Weapons and American Grand Strategy*, 9, 102, 127, 131–32, 166, 185, 192,196–98, 204; Bell, *Nuclear Reactions*, 3–4, 168; and Green, *The Revolution that Failed*, 1–2, 251.

43 Revolution proponents often highlighted that their arguments were prescriptive rather than predictive. Yet, prescription was rooted in what proponents argued was an underlying strategic reality that policymakers needed to recognize. In addition to the revolution skeptics, see also Scott D. Sagan, "Nuclear Revelations About the Nuclear Revolution," *Texas National Security Review*, June 14, 2021, 15–16, https://tnsr.org/roundtable/book-review-roundtable-the-revolution-that-failed/.

44 Lieber and Press, *The Myth of the Nuclear Revolution*, 4–5, 125; Green 15–21 66–86; Gavin, *Nuclear Weapons and American Grand Strategy*, 154, 201. Bell incorporates aspects of bureaucratic politics and psychology, but for him political and material factors drive foreign policy decisions. Bell, *Nuclear Reactions*, chap. 1.

45 For example, John Mueller, "The Essential Irrelevance of Nuclear Weapons: Stability in the Postwar World," *International Security* 13, no. 2 (Fall 1988): 55–79, https://doi.org/10.2307/2538971; Nina Tannenwald, *The Nuclear Taboo: The United States and the Non-Use of Nuclear Weapons Since 1945* (Cambridge: Cambridge University Press, 2007); and Jeannie L. Johnson, Kerry M. Kartchner, and Jeffrey A. Larsen, *Strategic Culture and Weapons of Mass Destruction: Culturally Based Insights Into Comparative National Security Policymaking* (New York: Palgrave Macmillan, 2009).

46 Green, *The Revolution that Failed*, 28–47, 253–54, quote at 29.

47 Lieber and Press, *The Myth of the Nuclear Revolution*, chap. 3, quotes at 8, 123.

to finish their deadly work," Green notes. Defenses may be up to the task of blocking a partial and disorganized retaliatory strike.[48] Green and Lieber and Press do not claim that a disarming or damage-limitation strike would be easy or appealing.[49] The point is that changes in technology may allow one side to win, if the political stakes are high enough. Mutual vulnerability is not a constant.

Second, small or unsophisticated nuclear arsenals may not deter nuclear strikes during a war. For Lieber and Press, an assured retaliatory capability that "cannot be destroyed in any conceivable disarming strike" is necessary to ward off nuclear attack.[50] This is a difficult threshold to achieve and requires policies to counter qualitative and quantitative developments that might undermine survivability. A minimum deterrent that may not survive a first strike will be a prime target if fighting erupts. An opponent will have motive to launch a nuclear first strike to remove the nuclear danger, and opportunity because the arsenal is vulnerable. This type of strike is very dangerous. During peacetime, those dangers are sufficient to deter strikes. Once war breaks out, though, perceptions and risk calculations shift. Thus, Lieber and Press argue that the minimal Soviet nuclear deterrent of the 1950s "was a double-edged sword: it benefited the Soviets in peacetime by making U.S. aggression less likely, but it vastly increased the damage the Soviets would suffer in the event of war." This logic applies to China's historically small nuclear arsenal as well, which the country is now expanding.[51]

Third, the nature of the *status quo* and which side is behaving defensively is often uncertain. The problems are well known. "What one considers an innocent deterrent," Richard Betts points out, "the other may see as a pernicious compellent."[52] A state may need to initiate a challenge in order to defend the current system. Robert Art and Kelly Greenhill highlight that "compellent actions are often undertaken in a crisis by a coercer in order to shore up its deterrent posture."[53] A single crisis can involve multiple issues, so the behavior of each participant may be in defense of only a part of the *status quo*. Third-party involvement can further muddle which side is acting defensively. This concern has grown in recent years as analysts point to the challenges of managing crises involving multiple nuclear-armed states.[54] Finally, each actor may believe that it has more resolve and expect its opponent to back down first. Gavin and Green, drawing heavily from Marc Trachtenberg's magisterial account, both use the 1958–1962 superpower crises as examples of these dynamics.[55] States would be ill advised to rely heavily upon bargaining advantages inherent in defending the *status quo* during crises.

Fourth, utilizing nuclear threats to ward off conventional attack is difficult and the conflict-dampening effects modest. Leaders in nuclear states might view marginal improvements in the nuclear balance as meaningful, or they may not accept the implications of nuclear stalemate.[56] They could press harder during disputes as a result. To the extent that mutual vulnerability elevates concerns about resolve, that can create incentives for risk-taking behavior.[57] The stability-instability paradox looms in mutual vulnerability. Once both sides have robust nuclear arsenals, each can use its nuclear weapons as a shield while it pursues confrontation short of strategic nuclear strikes against the other. Stability at the strategic nuclear level permits, and may even increase, conflict at lower levels.[58] Glenn Snyder — who is nearly universally cited as the first to outline the concept — noted that what constitutes lower levels of conflict can be quite severe. "The reasoning is that if neither side has a 'full first-strike capability,' and both know it, they will be less inhibited about initiating conventional war, and about the limited use of nuclear weapons, than if the strategic balance was

48 Green, *The Revolution that Failed,* 39–42, quote at 39.

49 Green, *The Revolution that Failed,* 43–44; and Lieber and Press, *Myth of the Nuclear Revolution,* chap. 3.

50 Lieber and Press, *The Myth of the Nuclear Revolution*, 31–65, 121–22, quote at 38.

51 Lieber and Press, *The Myth of the Nuclear Revolution,* 20, 33, 127–28, quote at 33.

52 Richard K. Betts, *Nuclear Blackmail and Nuclear Balance,* (Washington, DC: Brookings 1987), 6. See also Green, *The Revolution that Failed,* 21–23. Gavin, *Nuclear Weapons and American Grand Strategy,* 10, 63–64, 163–64.

53 Art and Greenhill, "Coercion," 6.

54 For example, Caitlin Talmadge, "Multipolar Deterrence in the Emerging Nuclear Era," in *The Fragile Balance of Terror: Deterrence in the New Nuclear Age,* ed. Vipin Narang and Scott D. Sagan, (Ithaca, NY: Cornell University Press, 2022), 13–38; and Rebecca Hersman, "Wormhole Escalation in the New Nuclear Age," *Texas National Security Review* 3, no. 3 (Summer 2020): 104–07, http://dx.doi.org/10.26153/tsw/10220.

55 Green, *The Revolution that Failed,* 21–22; Gavin, *Nuclear Weapons and American Grand Strategy,* 9–10, 29–32, 55–65, 138–39, 164. Marc Trachtenberg, *A Constructed Peace: The Making of the European Settlement, 1945-1963* (Princeton, NJ: Princeton University Press, 1999).

56 Green, *The Revolution that Failed,* 23–26, 44–46.

57 Gavin, *Nuclear Weapons and American Grand Strategy,* 28–32.

58 Lieber and Press, *The Myth of the Nuclear Revolution*, chap. 4.

unstable."[59] Beyond mutual vulnerability, there are multiple examples of nonnuclear-weapon states attacking nuclear-armed opponents.[60]

Fifth, states have a variety of political goals. The unique attributes of nuclear weapons facilitate states in pursuing those goals. "Nuclear weapons may improve a state's security," Bell argues, "but in doing so, they grant states greater freedom to pursue their goals in international politics rather than tamping down their ambitions."[61] For Bell, the precise behavior that states engage in depends on the degree of the threat, their alliances, and their relative power trajectories. Others have pointed to Russia's invasion of Ukraine as an example of nuclear weapons emboldening a state to initiate military aggression by providing a deterrent shield against direct outside military intervention.[62]

Sixth, gaining a competitive advantage may provide strategic benefits relative to rivals outside of crises.[63] For Green, "being more effective at generating military power in a given aspect of the military balance than the adversary," which he calls efficient competition, "enhances general deterrence, diverts enemy resources, and can force important political adjustments in its grand strategy."[64] Rivals may no longer contest an area, initiate crises, undertake arms buildups, or, in terms of nonproliferation, pursue nuclear weapons. Indeed, Gavin suggests that a large, capable U.S. nuclear force "might also be able to dissuade potential nuclear states from building forces it could make obsolete."[65]

Seventh, investing in nuclear capabilities offers advantages in relations with allies. "A patron's peacetime nuclear competition," notes Green, can "enhance the credibility of its extended deterrence promises to its partners, thereby reducing friction in alliance management, increasing cohesion, and preventing allied defection or foreign policy independence."[66] For Bell, "nuclear weapons may reduce the costs associated with … actions to increase the strength of an existing alliance or alliance partner."[67] A more robust nuclear policy than is necessary for homeland defense can make extended nuclear deterrent commitments appear more credible. "If the United States had accepted nuclear parity with the Soviet Union," writes Gavin, few allies "would have believed its promise to defend them while risking their own nuclear annihilation."[68] A credible nuclear guarantee can, in turn, aid nonproliferation goals by convincing allies that they can forego acquiring nuclear weapons.

Finally, and building from previous points, the effectiveness of nuclear deterrence creates an incentive for nuclear-armed states to prevent new countries from acquiring nuclear weapons. Mutual vulnerability might make the system less war prone by deterring nuclear-armed states from fighting one another. But states do not act on behalf of the system. Nuclear-armed adversaries and allies will be better positioned to pursue goals that may be inimical to U.S. interests. The "United States had a deep strategic reason to limit nuclear proliferation," Gavin writes, "not for moral reasons, not even because of the fear of nuclear war, but because nuclear deterrence limits U.S.

59 Glenn H. Snyder, "The Balance of Power and the Balance of Terror," in *The Balance of Power*, ed. Paul Seabury (San Francisco, CA: Chandler 1965), 199.

60 Lieber and Press, *The Myth of the Nuclear Revolution*, 17–18; and Paul C. Avey, *Tempting Fate: Why Nonnuclear States Confront Nuclear Opponents* (Ithaca, NY: Cornell University Press, 2019).

61 Bell, *Nuclear Reactions,* 9–35, 168, quote at 10. Though on militarized dispute initiation, see Kyungwon Suh, "Does the Bomb Really Embolden? Revisiting the Statistical Evidence for the Nuclear Emboldenment Thesis," *Journal of Conflict Resolution* (October 2022): 1–28, https://doi.org/10.1177/00220027221132474.

62 For example, Franziska Stark and Ulrich Kuhn, "Nuclear Injustice: How Russia's Invasion of Ukraine Shows the Staggering Human Cost of Deterrence," *Bulletin of Atomic Scientists*, Oct. 26, 2022, https://thebulletin.org/2022/10/nuclear-injustice-how-russias-invasion-of-ukraine-shows-the-staggering-human-cost-of-deterrence/; Keith B. Payne, "Deterrence Lessons from Russia's Invasion of Ukraine: One Year After," National Institute for Public Policy Information Series, No. 548, Feb. 27, 2023, https://nipp.org/wp-content/uploads/2023/02/IS-548.pdf; *2022 Nuclear Posture Review*, U.S. Department of Defense, Oct. 27, 2022, 1–2, https://www.defense.gov/National-Defense-Strategy/; and Tannenwald, "The Bomb in the Background."

63 These are discrete from compellence success or prevailing in crises and disputes, where debates tend to focus on the role of nuclear superiority with mixed results. See Sechser and Fuhrmann, *Nuclear Weapons and Coercive Diplomacy*; Kroenig, *The Logic of American Nuclear Strategy*; and David C. Logan, "The Nuclear Balance Is What States Make of It," *International Security* 46, No. 4 (Spring 2022): 172–215, https://doi.org/10.1162/isec_a_00434.

64 Green, *The Revolution that Failed*, 48–52, quote at 48. See also Kroenig, *The Logic of American Nuclear Strategy*, chap. 5; and Sechser and Fuhrmann, *Nuclear Weapons and Coercive Diplomacy*, 256.

65 Gavin, *Nuclear Weapons and American Grand Strategy*, 95. Though see Kroenig, *The Logic of American Nuclear Strategy*, chap. 8.

66 Green, *The Revolution that Failed*, 52. Green presents alliance cohesion as a benefit in and of itself, but his discussion is consistent with alliances being instrumental to the nuclear patron's security.

67 Bell, *Nuclear Reactions*, 17.

68 Gavin, *Nuclear Weapons and American Grand Strategy*, 95. See also Bell, *Nuclear Reactions*, 144–45; and Kroenig, *The Logic of American Nuclear Strategy*, 4.

freedom to act as it sees fit in the world."[69] Bell adds that "it is US policymakers' recognition of the benefits that nuclear weapons offer to states that has led the United States to seek to prevent proliferation."[70] More broadly, as Matthew Kroenig argues, states with expansive interests or that can project conventional power into other regions will be reluctant to see nuclear weapons spread.[71]

In a self-help system, the factors discussed above generate pressures for competitive and/or expansive nuclear and foreign policies. States must pay close attention to the military balance, working to gain advantages or, at the least, guarding against falling behind. Technological developments mean that a survivable arsenal one day may not be so the next. Leaders must also worry about misperceiving the actual military-technical balance, necessitating investments in their country's nuclear capabilities as a hedge against such uncertainty. A state's vulnerable nuclear arsenal invites massive strikes, should a fight occur. A contested *status quo* can make a favorable military balance a source of leverage in crises. In addition, bargaining may, in fact, resemble competitions in risk-taking, weakening overall stability. The danger of conventional attack means that nuclear postures need to go beyond an ability to survive a nuclear strike. States must also invest in capabilities and guard against rivals that might utilize nuclear weapons opportunistically to pursue oppositional goals. Generating capable nuclear forces can lead rivals to adjust their policies and provide influence with allies. Nuclear-armed states will be wary of new nuclear-armed opponents. Nonproliferation goals can create a need for an array of diplomatic, economic, cyber, and conventional capabilities to facilitate extended deterrence, compellence, and/or brute force policies.

We'll Be Fighting in the Streets

The nuclear revolution emerges from these four books bruised. But its skeptics nevertheless concede that the nuclear revolution's basic peace claim remains intact. Lieber and Press are the most bullish on this point. As they put it, "nuclear weapons have had a huge impact on international relations by helping to prevent great power war," adding that "no two nuclear-armed states have fought a major war against each other."[72] The nuclear revolution "certainly got its major claim or prediction correct: great-power wars of conquest have largely disappeared from the global landscape," writes Gavin.[73] Bell highlights that the "theory of the nuclear revolution offers a powerful explanation for the absence of great power war in the nuclear era."[74] Green acknowledges that the nuclear revolution is consistent with "the absence of nuclear war, [and] great power peace."[75] And yet, they do little to demonstrate this. In fact, their analyses provide reasons to doubt the nuclear peace, at times pointing in an even more pessimistic direction than the nuclear pessimists of previous decades.

Earlier skeptics of the nuclear peace identified multiple reasons why nuclear deterrence might fail. Cognitive biases and domestic politics can undermine credible threats. Civil-military pathologies may incentivize preventive war strikes and prevent states from constructing secure second-strike forces. Particularly concerning for pessimists was the prospect of complex nuclear systems raising the risks of accidents and unintentional nuclear strikes.[76] Yet, as Trachtenberg noted, many of these challenges were, at least in principle, correctible. The underlying implication was that "if the weapons *were* designed and deployed the right way, then a nuclear world really would be better than a non-nuclear world. ...

69 Gavin, *Nuclear Weapons and American Grand Strategy*, 75–108, 161–63, 227–28, quote at 162.

70 Bell, *Nuclear Reactions*, 170.

71 Matthew Kroenig, "Force of Friendship? Explaining Great Power Nonproliferation Policy," *Security Studies* 23, no. 1 (2014): 1–32, https://doi.org/10.1080/09636412.2014.870863.

72 Lieber and Press, *The Myth of the Nuclear Revolution,* 2–3, 5, 10, 17, 18, 24–25, 32–33, 65, 121, 129–30, quotes at 2, 17.

73 Gavin, *Nuclear Weapons and American Grand Strategy*, 9, 102, 131–32, 166, 185, 192, 196–98, 204, quote at 131–32.

74 Bell, *Nuclear Reactions*, 4, 168, quote at 168.

75 Green, *The Revolution that Failed*, 1–2, 251, quote at 251.

76 Richard N. Lebow and Janice Gross Stein, "Beyond Deterrence," *Journal of Social Issues* 43, no. 4 (1987): 5–71, https://doi.org/10.1111/j.1540-4560.1987.tb00252.x; Feaver, "Neoptimists and the Enduring Problem of Nuclear Proliferation," 93, 123; Derek D. Smith, "Deterrence and Counterproliferation in an Age of Weapons of Mass Destruction," *Security Studies* 12, no. 4 (2003): 162–64, https://doi.org/10.1080/09636410390447671. Sagan in Sagan and Waltz, *The Spread of Nuclear Weapons*, chaps. 2, 4–7 [sections authored by Sagan]; Sagan, *The Limits of Safety*. Lieber and Press's discussion of preventive strikes is discrete from the pessimist argument because they separate peacetime from wartime deterrence and identify a strategic rather than organizational logic.

Nuclear deterrence, in that case, really could serve as the basis of a very stable international order."[77]

The new revolution skeptics' critique paints a decidedly gloomier picture. For these scholars, addressing the concerns raised by nuclear pessimists would do little to ameliorate the sources of potential conflict. States would continue to face pressures to invest in nuclear arsenals and compete with one another under the nuclear shadow. Intense competition could generate friction, making political disputes more difficult to resolve. Technological developments may provide one state with the ability to eliminate an opponent's nuclear arsenal. The conflict dampening effects of stalemate may be modest. Whether in an environment of mutual vulnerability or not, traditional sources of disputes that arise from competing interests can still lead to conflict.[78] The revolution skeptics suggest three additional reasons to doubt the nuclear revolution's peace claim.

First, if the nuclear revolution misses on so many of its other predictions, as these four books argue, why should there be confidence that mutual vulnerability will promote peace? Perhaps nuclear deterrence should be rethought as well. Alternative explanations for reduced conflict rooted in polarity, changing norms, shifting discourse, international institutions, interdependence, and so on might better account for the absence of war between nuclear-armed states.[79] Indeed, statistical analyses that control for common factors influencing conflict find mixed evidence on the propensity of nuclear-armed states to fight one another.[80]

Second, issues surrounding nuclear weapons have contributed to or exacerbated many crises between nuclear-armed states. "The most significant and dangerous crises of the Cold War were generated by the very existence of nuclear weapons," writes Gavin.[81] These include the superpower crises of 1958–1962 and U.S.-Soviet tensions in the late 1970s and early 1980s. The 1998 India-Pakistan crisis revolved around nuclear weapons tests. Bell argues that a more robust nuclear posture emboldened Pakistani behavior that led to the 1999 Kargil War.[82] U.S. nonproliferation concerns contributed to multiple 21st-century disputes with Iraq (despite its inactive nuclear program), Iran, and North Korea. True, most of these did not escalate to war, some occurred outside situations of nuclear stalemate, and many took place between states with deeper disagreements, making a crisis likely at some point. Yet, fighting did sometimes occur, and the potential was there in the other cases. Moreover, the nuclear revolution argues that states need not worry much about vertical or horizontal proliferation. Finally, whether other crises might have occurred or not, many of those that did were driven by nuclear-related developments.

Third, arms control can have multiple purposes, including seeking competitive advantage.[83] This runs counter to a common view that arms control is a cooperative and stabilizing endeavor.[84] Arms control in some situations may undermine stalemate, incentivize expansive nuclear and foreign policies, and do little to reduce competition. One implication from Lieber and Press's analysis is that agreements that limit platform numbers benefit the United States. Major U.S. nuclear force reductions may be problematic, but small rival forces are vulnerable to accuracy and sensory advances consistently exploited by the United States.[85] Gavin argues that much of America's nonproliferation policy has been about locking

77 Trachtenberg, "Waltzing to Armageddon," 147, emphasis in original. See also Gavin, *Nuclear Weapons and American Grand Strategy*, 25, 46–47.

78 Bell, *Nuclear Reactions,* 170.

79 Green, *The Revolution That Failed*, 2; Gavin, *Nuclear Weapons and American Grand Strategy*, 16–17, 132, 181–83; and Feaver, "Optimists, Pessimists, and Theories of Proliferation," 755–57.

80 Bell and Miller, "Questioning the Effects of Nuclear Weapons on Conflict"; Asal and Beardsley, "Proliferation and International Crisis Behavior"; Vipin Narang, *Nuclear Strategy in the Modern Era: Regional Powers and International Conflict* (Princeton, NJ: Princeton University Press, 2014), chap. 9.

81 Gavin, *Nuclear Weapons and American Grand Strategy*, 9, 128–29, quote at 9.

82 Bell, *Nuclear Reactions*, 149. See also Narang, *Nuclear Strategy in the Modern Era*, 270; Sechser and Fuhrmann, *Nuclear Weapons and Coercive Diplomacy*, 147; and S. Paul Kapur, "Ten Years of Instability in a Nuclear South Asia," *International Security* 33, no. 2 (Fall 2008): 71–94, https://www.jstor.org/stable/40207132.

83 John D. Maurer, "The Purposes of Arms Control," *Texas National Security Review* 2, no. 1 (November 2018): 9–27, http://dx.doi.org/10.26153/tsw/870; James Cameron, "What History Can Teach," *Daedalus* 149, no. 2 (Spring 2020): 116–32; and Timothy W. Crawford and Khang X. Vu, "Arms Control as Wedge Strategy: How Arms Limitation Deals Divide Alliances," *International Security* 46, no. 2 (Fall 2021): 91–129, https://doi.org/10.1162/isec_a_00420.

84 For example, Jeffrey A. Larsen, "An Introduction to Arms Control and Cooperative Security," in *Arms Control and Cooperative Security,* ed. Jeffrey A. Larsen and James J. Wirtz (Boulder, CO: Lynne Rienner Publishers, 2009), 1–20; and Maurer, "The Purposes of Arms Control," 10–16.

85 Lieber and Press, *The Myth of the Nuclear Revolution*, 127, 130.

in U.S. freedom of maneuver in the world.[86] This includes support for institutional arrangements such as the Nuclear Nonproliferation Treaty, the expansive U.S. alliance system, a robust U.S. nuclear arsenal, and coercive nonproliferation measures.[87] Green demonstrates that the United States consistently sought to use the Strategic Arms Limitation Talks to enhance its comparative advantages in qualitative systems while constraining the Soviet advantage in quantitative capacity. Presidents Richard Nixon, Gerald Ford, and Jimmy Carter also used arms control to ward off domestic pressures to rein in competition.[88]

And yet, the potential for fighting does not lead the revolution skeptics to call for major nuclear reductions. Green expresses unease with the implications from his argument. Ultimately, he is too much of a realist (in the literal sense) and concludes that, so long as the United States remains committed to an expansive grand strategy, some nuclear modernization makes sense.[89] Lieber and Press explicitly argue against nuclear abolition, echoing arguments that the world cannot uninvent nuclear weapons. Although cuts to arsenal sizes may have made sense in the past, as technology develops further reductions could be dangerous because they could create first-strike incentives.[90] Gavin's analysis suggests that nonproliferation depends in part on the United States remaining committed globally. That, in turn, necessitates a robust U.S. nuclear posture.[91] Bell concludes that some states will find political utility in nuclear weapons, and they will develop forces and doctrine to meet their goals. Reductions and disarmament are unlikely absent political changes, regardless of their desirability.[92] Finally, all of the skeptics concede, to varying degrees, that nuclear weapons do reduce conflict, which is a caution against disarmament. As this section has argued, however, the revolution skeptics provide reasons to doubt the peace claim.

A Change, It Had to Come

The prospects for peace between nuclear-armed states is thus very much in doubt based on the critiques of these revolution skeptics. However, there are two dynamics that may continue to constrain competition and conflict, though neither may be particularly comforting in the current international environment. First is the role that inadvertent escalation plays in the nuclear revolution logic. The revolution skeptics question these claims at times, but portions of their analyses reinforce the nuclear revolution on this point. Mutual vulnerability may not ameliorate interstate competition, but even a more limited effect of reducing the prospects for major war between nuclear states represents an important shift in international politics. Second, the books point to a variety of competitive pressures on states. For some nuclear-armed states, those pressures may be intense and lead to competition. For others, however, the incentives can be modest, reducing the likelihood that states will pursue assertive nuclear or foreign policies.

Inadvertent Escalation and the Nuclear Peace

The danger of inadvertent escalation is critical for nuclear revolution proponents in explaining the absence of conflict in nuclear stalemate. The fear that events may spiral out of control induces leaders to behave cautiously. Elements of the revolution skeptics' arguments about nuclear-state competition and the delicate nuclear balance strengthens the grounds for the nuclear revolution on this point. This provisional discussion also sheds light on the dynamics in conflicts involving nuclear-armed states. When fears of inadvertent escalation are lower, conflict is more likely. Low fears of inadvertent escalation are particularly likely when only one side in a dispute has nuclear weapons, making it important to be cautious when applying evidence from those situations to mutual vulnerability.

Inadvertent or unintentional nuclear escalation refers to the inability of senior leaders to control

86 Gavin, *Nuclear Weapons and American Grand Strategy*, 39–41, 86.

87 This approach may not be sustainable in a shifting international and domestic environment.

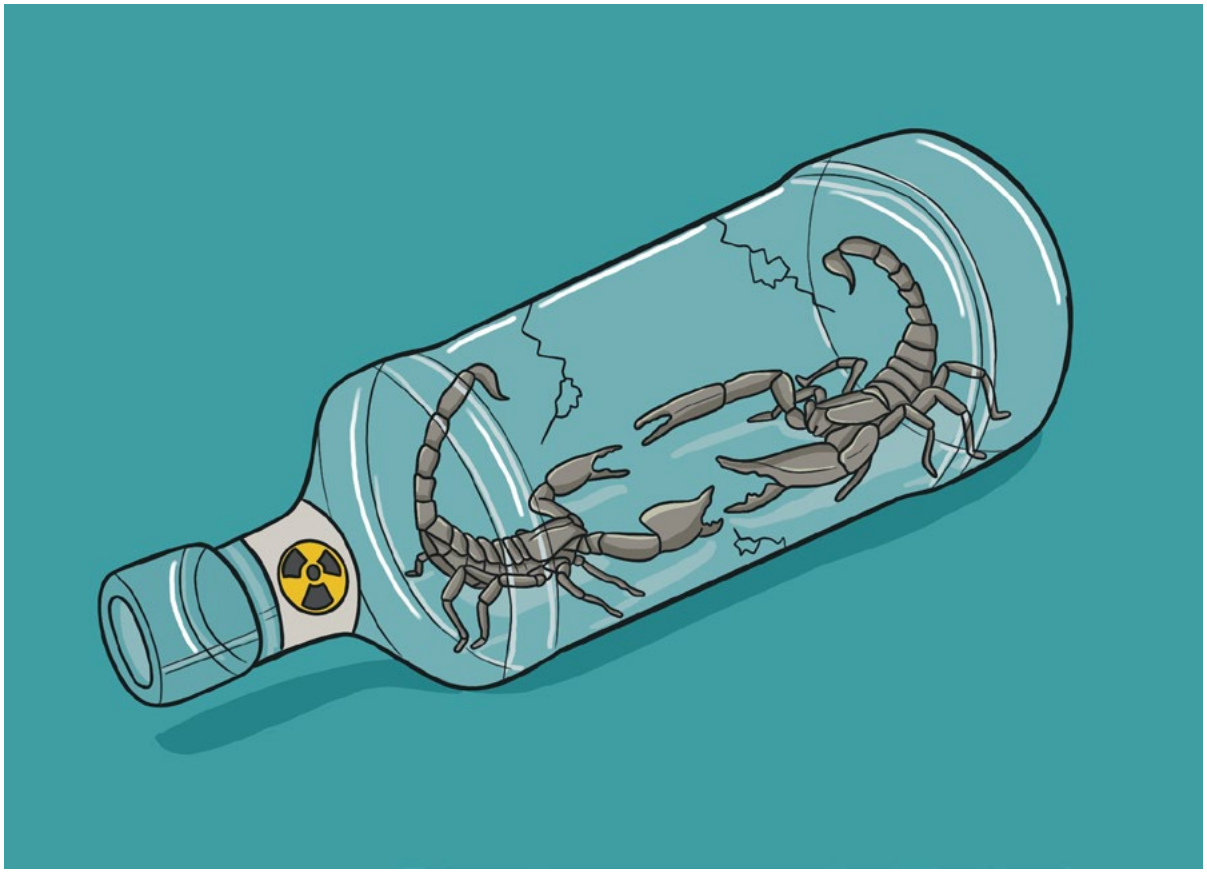
88 Green, *The Revolution that Failed*, 248–50; Bell, *Nuclear Reactions*, 144. See also James Cameron, *The Double Game: The Demise of America's First Missile Defense System and the Rise of Strategic Arms Limitation* (Oxford: Oxford University Press, 2018), chaps. 4–5.

89 Green, *The Revolution that Failed*, 259–64.

90 Lieber and Press, *The Myth of the Nuclear Revolution*, 127–31.

91 Gavin has recently emphasized non-nuclear capabilities for U.S. alliance assurances and reconsidering nonproliferation policy. Francis J. Gavin, "Time to Rethink America's Nuclear Strategy," *Foreign Affairs*, Sept. 5, 2022, https://www.foreignaffairs.com/united-states/time-rethink-america-nuclear-strategy.

92 Bell, *Nuclear Reactions*, 172–73.



events to avoid nuclear use. It includes, to borrow from Herman Kahn, the possibility that escalation might occur "almost unintentionally as a result of mechanical or human error, false alarm, self-fulfilling prophecy, or unauthorized behavior."[93] Some steps may be deliberate. But the key is that senior leaders did not intend nuclear strikes, or that some misperception resulted in nuclear escalation that they otherwise would not have undertaken. This conceptualization largely includes Barry Posen's discussion of inadvertent escalation resulting from conventional operations that unintentionally degrade the survivability of an opponent's nuclear arsenal.[94] Nuclear use that subsequently occurs because the target took steps that increased the risks of accident or an unauthorized launch, or succumbed to psychological stress or false alarms, constitutes inadvertent escalation as I use the term here.[95]

Deliberate or intentional nuclear escalation occurs when authorized leaders order nuclear use based on generally accurate information.[96] The likelihood of intentional escalation is typically viewed as a function of the stakes and military incentives in a dispute.[97] If nuclear war appears imminent, a preemptive strike that holds out the hope of limiting some damage might appear as the least bad option. Leaders may deliberately escalate to ward off the destruction of the state or regime.

93 Herman Kahn, *Thinking About the Unthinkable,* (New York: Horizon Press, 1962), 40. The specific quote references inadvertent war, but Kahn links this to escalation on 48. See also Schelling, *The Strategy of Conflict*, 188; Robert Powell, *Nuclear Deterrence Theory: The Search for Credibility* (New York: Cambridge University Press, 1990), 18.

94 Barry R. Posen, *Inadvertent Escalation: Conventional War and Nuclear Risks,* (Ithaca, NY: Cornell University Press, 1991), 1; Caitlin Talmadge, "Would China Go Nuclear: Assessing the Risk of Chinese Nuclear Escalation in a Conventional War with the United States," *International Security*, 41, no. 4 (Spring 2017): 50–92, https://doi.org/10.1162/ISEC_a_00274; and James Johnson, "Inadvertent Escalation in the Age of Intelligence Machines: A New Model for Nuclear Risk in the Digital Age," *European Journal of International Security* 7, no. 3 (August 2022): 340–41, https://doi.org/10.1017/eis.2021.23.

95 It is not inadvertent escalation if a state intended for nonnuclear strikes to erode the opponent's nuclear second-strike capability and the target executed nuclear strikes. I thank an anonymous reviewer for raising this point.

96 This definition draws from Rebecca Davis Gibbons and Matthew Kroenig, "Reconceptualizing Nuclear Risks: Bringing Deliberate Escalation Back In," *Comparative Strategy* 35, no. 5 (2016): 407–22, https://doi.org/10.1080/01495933.2016.1240995; Jasen J. Castillo, "Deliberate Escalation: Nuclear Strategies to Deter or to Stop Conventional Attacks," in *Coercion,* ed. Greenhill and Krause, 291–311; and Johnson, "Inadvertent Escalation in the Age of Intelligence Machines," 340.

97 Posen, *Inadvertent Escalation*, 1.

There are also incentives to use nuclear weapons to counter a major conventional attack or try to compel an end to hostilities on acceptable terms.[98] The latter encompass what Lieber and Press label "coercive nuclear escalation" strategies — limited nuclear threats, demonstrations, or strikes — used to offset the possibility of conventional defeat.[99] Common examples include Russia's escalate to deescalate (or escalate to win) approach as well as elements of the U.S. flexible response strategy during the Cold War.

Scholars and analysts frequently highlight the dangers of inadvertent escalation for deterrence. For instance, during the last years of the Cold War, Paul Bracken relayed that there was "a fairly widespread belief that the main danger of nuclear war today arises from accidental or inadvertent actions that get out of control."[100] Scott Sagan argues that one of the requirements of rational deterrence theory for "stable nuclear deterrence" is that "nuclear arsenals must not be prone to accidental or unauthorized nuclear use." He convincingly shows that arsenals are susceptible to such dangers.[101] More recently, Rebecca Hersman identifies the traditional imagery of nuclear escalation as "progressing (more or less) stepwise, with clear thresholds between behavior that would elicit a conventional or nuclear response." Today, a combination of political and technological developments means that "holes may suddenly open in the fabric of deterrence through which competing states could inadvertently enter and suddenly traverse between sub-conventional and strategic levels of conflict in accelerated and decidedly non-linear ways."[102]

For the nuclear revolution, eliminating the danger of inadvertent escalation would undermine mutual deterrence. Of course, if the danger were too high, disaster could readily occur. But, if states were unitary, rational actors with perfect control over nuclear forces, it would invite conflict. Limited nuclear strikes against isolated targets might be credible, but no party to a dispute would believe that strikes would go further because it would be suicidal. The basic stability-instability paradox outlined above — amplified in the U.S. case by extended deterrence challenges — would create a space for conventional war or even limited nuclear strikes. This is not just a scholarly construct. Long before Snyder's essay, President Dwight D. Eisenhower noted during a May 1958 National Security Council meeting that "someone had remarked that mutual deterrence was an umbrella under which small wars could be fought without starting a global war — small wars even in the NATO area."[103] Eisenhower was skeptical. But the fact that the issue rose to the president's level shows that such arguments were being prominently discussed. Beyond the United States, former Chinese leader Deng Xiaoping once cautioned "not [to] ignore conventional war. Because with nuclear weapons, if you have them, I will have them. If you have more, I will have more and perhaps no one will dare to use them. Conventional war is possible."[104]

Proponents of the nuclear revolution argue that the fear of events spiraling out of control is critical to avoiding war. This is not to say that there is no role for deliberate escalation. For example, states may view the stakes as so high that fighting would invite calculated nuclear strikes. It is also not to claim that nuclear states will avoid diplomatic, economic, cyber, and low-level conventional military challenges short of war against one another. The point is that, even if neither side would deliberately escalate, fears of inadvertent escalation nevertheless serve as a brake on fighting. "Because escalation can occur although no one wants it to," Jervis

98 Colin S. Gray and Keith Payne, "Victory Is Possible," *Foreign Policy*, no. 39 (Summer 1980): 25–27, https://doi.org/10.2307/1148409; Gibbons and Kroenig, "Reconceptualizing Nuclear Risks," 410–12; Kroenig, *The Logic of American Nuclear Strategy*, esp. chap. 2; Narang, *Nuclear Strategy in the Modern Era*, 19–20; Castillo, "Deliberate Escalation," 302–08; Mark S. Bell and Julia MacDonald, "How to Think About Nuclear Crises," *Texas National Security Review* 2, no. 2 (February 2019): 44–45, http://dx.doi.org/10.26153/tsw/1944.

99 Lieber and Press, *The Myth of the Nuclear Revolution*, chap. 4, quote at 104.

100 Paul Bracken, "Do We Really Want to Eliminate the Chance of Accidental War?" *Defense Analysis,* 4, no. 1 (1988): 82, https://doi.org/10.1080/07430178808405330.

101 Sagan in Sagan and Waltz, *The Spread of Nuclear Weapons*, 44–47, 67–78, quote at 45. See Sagan, *The Limits of Safety*, chap. 6; Peter D. Feaver, *Guarding the Guardians: Civilian Control of Nuclear Weapons in the United States* (Ithaca, NY: Cornell University Press, 1992), esp. 12–26; Bruce G. Blair, *The Logic of Accidental Nuclear War* (Washington, DC: Brookings Institution, 1993); Stephen L. Quakenbush, "Deterrence Theory: Where Do We Stand?" *Review of International Studies* 37, no. 2 (April 2011): 743, 747, https://www.jstor.org/stable/23024618; Eric Schlosser, *Command and Control: Nuclear Weapons, the Damascus Accident, and the Illusion of Safety* (New York: Penguin Press, 2013); and Gibbons and Kroenig, "Reconceptualizing Nuclear Risks," 407, 417.

102 Hersman, "Wormhole Escalation in the New Nuclear Age," 93. Note also Rose McDermott's observation that "Although classic deterrence theory assumes a unified rational actor in charge of a given state, empirically this has not been the case." Rose McDermott, "Psychology, Leaders, and New Deterrence Dilemmas," in *The Fragile Balance of Terror,* ed. Narang and Sagan, 39.

103 "Memorandum of Discussion at the 364th Meeting of the National Security Council," May 1, 1958, Foreign Relations of the United States 1958-60, National Security Policy; Arms Control and Disarmament, Vol. III, Doc. 23, https://history.state.gov/historicaldocuments/frus1958-60v03/d23.

104 Quoted in Fiona S. Cunningham and M. Taylor Fravel, "Dangerous Confidence? Chinese Views on Nuclear Escalation," *International Security*, 44, no. 2 (Fall 2019): 96–97, https://doi.org/10.1162/isec_a_00359.

argued, "mutual second-strike capability does not make the world safe for major provocations and limited wars."[105] Similarly, Charles Glaser wrote that mutually assured destruction "does not make the world safe for conventional war," in part because "a large conventional war could escalate in numerous unpredictable ways, both planned and inadvertent, to full-scale strategic nuclear war."[106] As Trachtenberg noted, this is "not a world of certainty, or predictability and of near-perfect rationality, where the level of violence could be easily controlled, although deterrence theory is often caricatured in this way."[107] Although Trachtenberg was discussing earlier strategists, the point is applicable to the nuclear revolution. For much of deterrence thinking, and particularly the notion that nuclear weapons deter conventional conflict in stalemate, there is a critical role for a process that is at odds with rational, step-wise escalation.

This conception of inadvertent escalation overlaps with, but is not equivalent to, Schelling's notion of competition in risk-taking. The two are, of course, related. A threat that leaves something to chance relies on some irreducible autonomous risk. And revolution proponents incorporate the concept into their analyses at times. There is, nevertheless, a distinction. States do not need to deliberately create risk in an effort to outdo one another in signaling resolve in order to generate inadvertent escalation dangers.[108] As I discuss below, there is an increased likelihood of inadvertent escalation built into the dynamics of a crisis. To borrow from Schelling, it is not necessary to rock a boat to induce a fear of drowning if the boat is already in choppy seas.[109] This allows the inadvertent escalation mechanism to mitigate the tensions outlined earlier between risk-taking behavior and mutual vulnerability reducing conflict.

It is necessary to address at least two problems that arise for nuclear revolution claims built on a foundation of inadvertent escalation. The first concern is that the mechanism posits that leaders lack complete control over their own institutions, occasionally end up in serious confrontations, but then will recognize the danger and possess enough control to avoid fighting. This is a high bar.[110] Green adds that a foundation built on the danger of inadvertent escalation is hardly conducive to peace: "[I]f the risk of spasmodic escalation is based on something irrational, then why will that irrationality not threaten peacetime deterrence?" Alternatively, an opponent may convince themselves that escalation is controllable and not proceed cautiously as a result.[111]

These tensions can be ameliorated if one understands the danger of unintentional escalation as varying across space and time rather than as a constant. To begin with, objective dangers are likely to shift as fighting approaches or begins. Military organizations will activate complicated operating procedures.[112] During the Cuban Missile Crisis, the United States and the Soviet Union took steps to ready military forces while other actions — such as a U.S. intercontinental ballistic missile test — were taken as a result of pre-existing plans.[113] Today, the majority of China's nuclear force has a restrained peacetime operating posture. Yet, evidence suggests that during a crisis the Chinese government may place additional nuclear forces on alert, deploy road-mobile missiles, and quickly mate warheads

105 Jervis, *The Meaning of the Nuclear Revolution,* 21; Robert Jervis, "Why Nuclear Superiority Doesn't Matter," *Political Science Quarterly* 94, no. 4 (1980): 620, https://www.jstor.org/stable/2149629; Bracken, "Do We Really Want to Eliminate the Chance of Accidental War?" 85; Waltz in Sagan and Waltz, *Spread of Nuclear Weapons,* 100–01. Though Waltz was occasionally unclear on this, see page 20. See also Blair, *The Logic of Accidental Nuclear War*, 5; Bell and Miller, "Questioning the Effects of Nuclear Weapons," 77; Marc Trachtenberg, "Robert Jervis and the Nuclear Question," in *Psychology, Strategy, and Conflict: Perceptions of Insecurity in International Relations,* ed. James W. Davis (London: Routledge, 2013), 104–09; and Lawrence Freedman, "A Book of Its Time and for Today," *Texas National Security Review*, April 30, 2020, 49–50, https://tnsr.org/roundtable/book-review-roundtable-the-meaning-of-the-nuclear-revolution-30-years-later/.

106 Glaser, *Analyzing Strategic Nuclear Policy,* 139; and Glaser L. Glaser and Steve Fetter, "Should the United States Reject MAD? Damage Limitation and U.S. Nuclear Strategy Toward China," *International Security* 41, no. 1 (Summer 2016): 95–98, https://doi.org/10.1162/ISEC_a_00248.

107 Trachtenberg, *History and Strategy*, 17.

108 Schelling recognized this. The distinction here is with deliberately creating or manipulating risk. Schelling, *The Strategy of Conflict*, 190.

109 Schelling, *Arms and Influence*, 91; and Schelling, *The Strategy of Conflict*, 196.

110 For a similar point, see Patrick M. Morgan, *Deterrence Now* (Cambridge: Cambridge University Press, 2003), 56.

111 Green, *The Revolution that Failed*, 23–26, 44–46, quote at 25.

112 Jervis, *The Meaning of the Nuclear Revolution*, 82–94; Scott D. Sagan, *Moving Targets: Nuclear Strategy and National Security* (Princeton, NJ: Princeton University Press, 1989), chap. 4; Blair, *The Logic of Accidental Nuclear War*, 1–37, 108–11; and Bradley A. Thayer, "The Risk of Nuclear Inadvertence: A Review Essay," *Security Studies* 3, no. 3 (Spring 1994): 439–45, 460–61, https://doi.org/10.1080/09636419409347557.

113 There were deliberate steps taken to signal resolve. It was not simply a contest in risk taking, though, as some actions were taken to ready forces for military reasons, other incidents occurred independently of signaling efforts, and leaders on both sides sought to mitigate dangers. Trachtenberg, *History and Strategy*, 238–44, 258–59; Sechser and Fuhrmann, *Nuclear Weapons and Coercive Diplomacy*, 200–09; Sagan, *The Limits of Safety*, chaps. 2–3; Blair, *The Logic of Accidental Nuclear War*, 23–25; Michael Dobbs, *One Minute to Midnight: Kennedy, Khrushchev, and Castro on the Brink of War* (New York: Alfred A. Knopf, 2008), 269–71; Thomas R. Johnson, *United States Cryptologic History,* Series VI, The NSA Period, Volume 5, Book 22 (National Security Agency, 1995, declassified 2007), 330–31; and Steven J. Zaloga, *The Kremlin's Nuclear Sword: The Rise and Fall of Russia's Strategic Nuclear Forces, 1945–2000* (Washington, DC: Smithsonian Institute Press, 2002), 86–87.

to delivery platforms.[114] Complex systems can be managed to reduce risks. People fly safely every day despite the complexities involved in air travel. Such systems evolve over time, though, often with significant failures early in development. Nuclear systems put into motion during a crisis or conflict can interact in new and unanticipated ways — with little experience or opportunities for realistic trial and error beforehand, leaders may struggle to identify and ward off hazards.[115] Fog, friction, and psychological stress present in any crisis exacerbate these problems. Digital and cyber developments, which improve control and situational awareness in some areas while simultaneously introducing new sources of complexity, are unlikely to eliminate these dangers.[116]

By making nuclear weapons more usable or survivable, there is necessarily less assurance that those weapons will never be used absent a deliberate decision by senior leaders.[117] The danger of lower-level authorities using nuclear weapons, false alarms generating a nuclear response, and miscalculation would all increase. In disputes with multiple nuclear actors, the dangers would increase further. The nuclear organizations of each state are interdependent; an error in one could lead to an error in the other. A launch of one or two weapons can quickly spiral. Should fighting start or one side launch a limited nuclear strike, the dynamics become even more uncertain and escalation more difficult to manage. Thus President Joe Biden's October 2022 observation that "once you use a nuclear weapon, the mistakes that can be made, the, miscalculations? ... No one can be sure what would happen, and it could end in Armageddon."[118] Any side winning on the battlefield would be doing so only at the forbearance of the opponent from escalating further, which it might not be able to fully control as fighting unfolds.

The fear of inadvertent escalation can vary as well. This helps to explain why senior officials do not simply reason backwards from what a war might look like and avoid disputes in the first place. Leaders may sometimes believe that they can frustrate a rival without bringing the two sides into direct conflict. That is, by sharply limiting their involvement in a dispute or conflict involving the opponent and another state(s), they can avoid taking steps that increase the dangers of inadvertent escalation. One example might be America's support for Ukraine in the current war with Russia. More generally, the fear of inadvertent escalation will be lower for many leaders during peacetime than when war is on the horizon. Top decision-makers whose attention is divided between numerous issues are unlikely to know the various pathways to unintentional nuclear use until faced with such a prospect during a confrontation. This is not to say that leaders will be handcuffed by plans and unwillingly carried into war, or that wars arise by accident.[119] It is rather that, during peacetime, many leaders will not know operational details and will be ignorant of the full implications of preexisting procedures and new directives.[120] As those details become apparent, fears of inadvertent escalation are likely to rise. Returning to the Cuban Missile Crisis example, U.S. leaders were consistently surprised to learn the effects of their orders and faced unexpected developments. "There's always some sonofabitch who doesn't get the word," lamented President John F. Kennedy after learning an American U-2 aircraft had accidentally wandered into Soviet territory.[121]

Understanding inadvertent escalation as a variable, rather than a constant, is in line with arguments made by the nuclear revolution skeptics. Nuclear weapons do not eliminate political disputes and there are political and strategic reasons to continue competition under the nuclear shadow. As the specter of war grows, the dangers of

114 U.S. Department of Defense, *Military and Security Developments Involving the People's Republic of China, 2022*, 95; Ashley J. Tellis, *Striking Asymmetries: Nuclear Transitions in South Asia,* (Washington, DC: Carnegie Endowment for International Peace, 2022), 34; and Fiona S. Cunningham and M. Taylor Fravel, "Assuring Assured Retaliation: China's Nuclear Posture and the Future of U.S.-China Strategic Stability," *International Security* 40, no. 2 (2015): 37–38, https://doi.org/10.1162/ISEC_a_00215.

115 These points draw from Sagan, *The Limits of Safety*, esp. chaps. 1, 6. Sagan views some accidents in complex systems as inevitable, but his analysis points to added difficulties during a crisis or conflict. For instance, pages 41, 44, 259. See also Sagan, *Moving Targets,* 143-45; and Thayer, "The Risk of Nuclear Inadvertence," 460-61.

116 Johnson, "Inadvertent Escalation in the Age of Intelligence Machines;" Herbert Lin, "Cyber Risk Across the U.S. Nuclear Enterprise," *Texas National Security Review* 4, no. 3 (Summer 2021): 108–20, http://dx.doi.org/10.26153/tsw/13986.

117 Feaver, *Guarding the Guardians*; Sagan, *Moving Targets*, chap. 4.

118 Biden was responding to general questions about Russia using tactical nuclear weapons. The logic would be intensified in a direct U.S.-Russian conflict. Jake Tapper Interview with President Joe Biden, *CNN*, Oct. 11, 2022, https://transcripts.cnn.com/show/cton/date/2022-10-11/segment/01.

119 Trachtenberg, *History and Strategy*, chap. 2

120 Betts, *Nuclear Blackmail and Nuclear Balance*, 19; Posen, *Inadvertent Escalation*, 16–19; Feaver, *Guarding the Guardians*, 25–26; and Fred Kaplan, *The Bomb: Presidents, Generals, and the Secret History of Nuclear War* (New York: Simon and Schuster, 2020), esp. chap. 8.

121 Dobbs, *One Minute to Midnight*, 269–72, quote at 270. See also Feaver, *Guarding the Guardians*, 251; and Sagan, *The Limits of Safety*, chaps. 2–3.

inadvertent escalation become more apparent, which, in turn, pushes leaders away from fighting.

The second major problem with relying on inadvertent escalation as a key mechanism for the nuclear peace is that it is unclear why leaders in nuclear stalemate would take any steps to make the weapons more usable. One possibility would be in order to launch a preemptive strike to marginally reduce the damage that an opponent's nuclear arsenal could inflict. Yet, according to the logic of the nuclear revolution, stalemate should rule out preemption because retaliation would still inflict more devastation than nearly any conceivable political goal warrants.[122]

Direct disputes between nuclear-armed states incentivize readying nuclear forces, even if a preemptive strike does not make sense. The revolution skeptics provide support on this point by identifying multiple reasons why states might implement policies that raise the likelihood of inadvertent escalation and call leader attention on both sides to the dangers. First, states may simply seek to enhance their arsenal's survivability. Such caution would be warranted if states were utilizing nuclear weapons opportunistically in support of assertive foreign policies.[123] A delicate nuclear balance would also make some prudence the order of the day during a crisis.[124] A weaker state may need to place forces on alert to avoid presenting a tempting target for a disarming nuclear strike. Relatedly, a crisis might cause a leader to doubt whether their arsenal is truly survivable. They may worry that an adversary is pressing or standing firm because there has been some unnoticed but meaningful shift to the nuclear balance. Second, leaders may fear that the other side has a different understanding of nuclear deterrence or is following parochial military concerns.[125] Third, some states may believe that they need flexible nuclear options to oppose or offset the danger of conventional attacks.[126] Finally, leaders might accept the notion that some action is necessary to signal resolve — even if it is designed to be reversible and not overly risky — which confronts them with the prospect that events may spiral beyond their control.

The unintentional escalation logic applies to confrontations involving multiple nuclear actors as well. In that case, the uncertainty in escalation dynamics remains or even increases, inducing caution. In addition, as Bell reminds us, the world has lived with multiple nuclear-armed states since the mid-1950s.[127] True, there are important differences between earlier eras and today that point toward a more competitive contemporary environment.[128] Yet, it is worth noting that, during the Cold War, the non-superpowers retained their agency, opportunistically leveraged their nuclear arsenals, and often frustrated both the United States and Soviet Union. U.S. and Soviet strategies had to consider more than just the other side's weapons.[129] Crises in the past were shaped by multiple nuclear actors and remained limited between the nuclear-armed states.[130]

If fears of inadvertent escalation act as a brake on war, then, when those fears subside, conflict is more likely. This observation can contribute to an explanation for the war between nuclear-armed India and Pakistan in 1999. The Kargil War is the one case that the widely used Correlates of War dataset identifies as a war between two nuclear-armed opponents.[131] It thus stands as a major exception to the nuclear revolution and nuclear deterrence arguments more broadly. As Bell and

122 Trachtenberg, "Robert Jervis and the Nuclear Question," 107; Green, *The Revolution that Failed*, 24; and Glaser, *Analyzing Strategic Nuclear Policy*, 245.

123 Bell, *Nuclear Reactions*.

124 Green, *The Revolution that Failed*; Lieber and Press, *The Myth of the Nuclear Revolution*.

125 Green, *The Revolution that Failed*, 25–26, 44–46

126 Lieber and Press, *The Myth of the Nuclear Revolution*, chap. 4. On asymmetric postures creating risks for both deliberate and inadvertent escalation, see Narang, *Nuclear Strategy in the Modern Era*, 235–36.

127 Britain's arsenal was (and is) tightly linked to the United States, but the United Kingdom has retained the ability to independently execute nuclear strikes. Bell, *Nuclear Reactions*, 75–76.

128 Talmadge, "Multipolar Deterrence in the Emerging Nuclear Era."

129 Consideration of multiple nuclear weapon states influenced arms control as well. For example, Green, *The Revolution that Failed*, 139; Crawford and Vu, "Arms Control as Wedge Strategy," 123; and Susan Colbourn, *Euromissiles: The Nuclear Weapons that Nearly Destroyed NATO* (Ithaca, NY: Cornell University Press, 2022).

130 Asal and Beardsley, "Proliferation and International Crisis Behavior."

131 "COW War Data, 1816–2007," The Correlates of War Project Interstate War Data, Version 4.0, https://correlatesofwar.org/data-sets/COW-war. Correlates of War does not code the Soviet Union as having been at war with the United States during the Korean War and excludes the 1969 Sino-Soviet fighting along the Ussuri River. In the former, Soviet air and air defense forces were involved in the war, but they operated under major constraints and it is not clear that the Soviet Union had a deliverable nuclear capability against the United States. In the latter, fighting was very limited, with battlefield deaths likely below 100. Austin Carson, *Secret Wars: Covert Conflict in International Politics* (Princeton, NJ: Princeton University Press, 2018), chap. 5; Lieber and Press, *The Myth of the Nuclear Revolution*, 44–45; and Dan Reiter, Allan C. Stam, and Michael C. Horowitz, "A Deeper Look at Interstate War Data: Interstate War Data Version 1.1," *Research and Politics* 3, no. 4 (October–December 2016): 1–3, https://doi.org/10.1177/2053168016683840.

WHEN ONLY ONE SIDE IN A WAR HAS NUCLEAR WEAPONS, THE NUCLEAR BALANCE IS FAR LESS DELICATE.

Julia MacDonald demonstrate, the dangers of inadvertent escalation between India and Pakistan were low due to the location of fighting, India's command-and-control arrangements, and clear red lines and means of communication.[132] With such modest dangers, war occurred between India and Pakistan.[133] There is some evidence that fears of nuclear escalation contributed to keeping the conflict from expanding further, though. Pakistan gave little thought to a larger fight and ultimately agreed to withdraw its forces. Pakistan's decision to concede was more likely driven by its diplomatic isolation and India's conventional success than by fears of nuclear escalation. India determined very early in the conflict not to press too forcefully. Fear of nuclear use likely played a role in that decision. This fear included concerns about deliberate nuclear use. But part of it also stemmed from Pakistan's delegative command-and-control posture, which raised the prospect of inadvertent escalation if India broadened the conflict. In other words, India was restrained in the area where inadvertent escalation risks were most likely to manifest themselves. Finally, after fighting began, sources suggest that Pakistan increased the readiness of elements of its nuclear forces and some reports indicate that India did as well.[134]

Incorporating inadvertent escalation into analyses can also provide insight into nonnuclear state aggression against nuclear opponents. One reason Lieber and Press doubt the role of inadvertent escalation in mitigating war in nuclear stalemate is the fact that nonnuclear states have initiated major conflicts against nuclear-armed states.[135] If the prospect of events spiraling out of control deters conflict, why did those wars occur? When only one side in a war has nuclear weapons, the nuclear balance is far less delicate. This reduces pressures to ready nuclear weapons to ensure the survival of one's arsenal. There is no need to prepare forces for a disarming strike — the opponent has no nuclear capabilities to eliminate. Because only one side has nuclear weapons, false alarms are less dangerous, and there is no interdependence between nuclear arsenals. This is not to claim that nonnuclear weapon states will ignore their opponent's nuclear arsenal. The nonnuclear state may still fear deliberate nuclear strikes. A nonnuclear state must avoid conventional actions that threaten its opponent's nuclear arsenal. Targeting nuclear forces would introduce risks of inadvertent escalation. Conventionally weak nonnuclear weapon states (relative to their nuclear opponent) can limit their political aims and the means with which they prosecute a conflict. By constraining its behavior, the nonnuclear state can create situations in which deliberate nuclear escalation is undesirable for strategic and normative reasons. For its part, the nuclear state may seek to avoid nuclear use that destroys valuable territory, complicates conventional operations, incentivizes nuclear proliferation, or violates the nuclear taboo.[136]

The Intensity of Competition

The revolution skeptics identify several factors that are rooted in technological change, relative power, and political interests that incentivize states to adopt expansive nuclear and foreign policies. Those policies can, in turn, spur competition. Competition does not necessitate conflict. But all else being equal, it will take longer and/or be more difficult for states that are competing intensely with one another to achieve agreements and resolve disputes. Lingering disagreements can lead to conflict. These factors create varying pressures for different states at different times. In some cases, a state may adopt more restrained policies as a result. A full account of the net implications for competition along each dimension is beyond the scope of this essay. An exploratory sketch of one component of each factor — technological developments that affect arsenal survivability (technological change), the role of the conventional military balance (relative power), and the generalizability of the U.S. experience (political interests) — points to the utility of further examination of these items.

First, technological trajectories relating to arsenal survivability are likely to spur competition while leaders continue to face incentives to behave

132 Bell and MacDonald, "How to Think About Nuclear Crises," 50–54.

133 This argument is compatible with claims that the stability-instability paradox explains this war. As noted, the fear of unintentional escalation is important in the nuclear revolution logic in overcoming that paradox. Where such fears are muted, there is a space for conventional conflict.

134 Bell, *Nuclear Reactions*, 149; Narang, *Nuclear Strategy in the Modern Era*, 270–73; Sechser and Fuhrmann, *Nuclear Weapons and Coercive Diplomacy*, 147–53; Sumit Ganguly, "Nuclear Stability in South Asia," *International Security* 33, no. 2 (Fall 2008): 45–70, https://www.jstor.org/stable/40207131; and Bruce Riedel, "American Diplomacy and the 1999 Kargil Summit at Blair House," in *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, ed. Peter R. Lavoy (Cambridge: Cambridge University Press, 2009), 130–43.

135 Lieber and Press, *The Myth of the Nuclear Revolution*, 17–18, 98–100.

136 Tannenwald, *Nuclear Taboo*; T.V. Paul, *The Tradition of Non-Use of Nuclear Weapons* (Stanford, CA: Stanford University Press, 2009), chap. 7; Sechser and Fuhrmann, *Nuclear Weapons and Coercive Diplomacy*, 47–51; Daryl G. Press, Scott D. Sagan, and Benjamin J. 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://www.jstor.org/stable/23357763; and Avey, *Tempting Fate*.

cautiously in direct disputes. Green and Lieber and Press, along with many others, highlight technological developments that undermine the survivability of nuclear arsenals or their enabling components, which, in turn, will spur competition.[137] Shifts in the ability of states to guarantee nuclear retaliation may also create windows of opportunity for fighting. Some responses may be stabilizing, though. Writing before the scope of China's nuclear modernization became apparent, Lieber and Press expected "that China will continue to add significant nuclear capabilities ... to its arsenal, as well as bolster its command-and-control capabilities."[138] This complicates U.S. policy and could spur arms racing. But their argument also indicates that it could reduce incentives for the United States to launch a preemptive counterforce strike in an intense crisis or limited war.[139] In addition, a weaker state facing an opponent with a damage limitation capability has incentives to ready its nuclear forces if fighting appears likely, not in order to launch a deliberate strike, but to maximize survivability.[140] Such action could generate inadvertent escalation risks, which are likely to induce caution, as discussed in the previous section. More broadly, Christopher Clary highlights that locating and targeting mobile forces remains difficult in most nuclear relationships even with today's technological advances. Clever adversaries can also take steps to enhance survivability.[141]

Second, the pressures to compete and to adopt expansive policies will vary depending on the conventional military situation that individual states face. For Lieber and Press, states confronted with large conventional challenges to their critical interests face pressure to adopt coercive nuclear escalation doctrines. Those doctrines necessitate that states "build larger arsenals, more diverse forces, and redundant-command-and-control systems." That posture necessarily relies on a willingness to utilize nuclear weapons first in a fight. Absent large conventional challenges, states are less likely to adopt coercive doctrines.[142] Bell argues that states confronted with large territorial threats will tend to escalate or refuse to back down against the opponent. Such threats are more likely when faced with a conventionally superior opponent. One would expect more competition as a result. Depending on circumstances, states not facing such a threat may bolster weaker allies or stand firm against rivals. Those policies can have mixed effects, making confrontation more likely in some cases and less likely in others.[143] In his discussion of nuclear nonproliferation, Gavin argues that conventionally capable states have an incentive to oppose new nuclear arsenals, including with coercive economic and military tools and by building a large nuclear arsenal.[144] States that lack a strong conventional ability may adopt less assertive nonproliferation policies.

Third, how generalizable are the political interests driving U.S. nuclear policy? American behavior features prominently in each of the books. Most nuclear-armed states have adopted comparatively modest nuclear-related policies. "The main insights of nuclear deterrence theory," Gavin writes, "explain the nuclear statecraft of other states far better than that of the United States."[145] For instance, British and French nuclear policies are more in line with the expectations of the nuclear revolution, even as those countries modernize their forces.[146] Elsewhere, nuclear postures designed to catalyze outside support or assure retaliation in an effort to deter nuclear strikes are difficult to label as overly competitive.[147]

It is true that nuclear states are producing more robust nuclear capabilities. China is rapidly expanding its nuclear arsenal. But, as of this writing, the country appears to be adhering to its long-standing assured retaliation posture with greater capabilities and readiness providing the assured component.[148]

137 Lieber and Press, *The Myth of the Nuclear Revolution*, chap. 3; and Green, *The Revolution that Failed*, 253–54.

138 Lieber and Press, *The Myth of the Nuclear Revolution*, 127.

139 This logic is consistent with general views of crisis stability. See, for example, Glaser, *Analyzing Strategic Nuclear Policy,* 44–49; and U.S. Department of Defense, *Military and Security Developments Involving the People's Republic of China, 2022*, 158.

140 Kroenig, *The Logic of American Nuclear Strategy*, 137–41. Lieber and Press note that small or vulnerable arsenals can induce caution that mitigate the onset of war, Lieber and Press, *The Myth of the Nuclear Revolution*, 32–33.

141 Christopher Clary, "Survivability in the New Era of Counterforce," in *The Fragile Balance of Terror*, ed. Narang and Sagan, 154–81.

142 Lieber and Press, *The Myth of the Nuclear Revolution*, chap. 4, quote at 105. See also Narang, *Nuclear Strategy in the Modern Era.*

143 Bell, *Nuclear Reactions*, 13–27.

144 Gavin, *Nuclear Weapons and American Grand Strategy*, 84–88, 95. See also Kroenig, "Force or Friendship?"

145 Gavin, *Nuclear Weapons and American Grand Strategy*, 144.

146 Avery Goldstein, *Deterrence and Security in the 21st Century: China, Britain, France, and the Enduring Legacy of the Nuclear Revolution* (Stanford, CA: Stanford University Press, 2000).

147 Narang, *Nuclear Strategy in the Modern Era.*

148 Green, *The Revolution that Failed*, 252–59; Narang, *Nuclear Strategy in the Modern Era*, chap. 5; Cunningham and Fravel, "Assuring Assured Retaliation"; Cunningham and Fravel, "Dangerous Confidence?"; U.S. Department of Defense, *Military and Security Developments Involving the People's Republic of China, 2022*, 64–65, 94–100, 158–59; and Tellis, *Striking Asymmetries*, chap. 1.

Even while noting China's restraint, the revolution skeptics' arguments expect China to utilize its nuclear arsenal to expand its influence in international politics, compete intensely with the United States, or adopt coercive nuclear escalation policies.[149] Beijing's policy influences India, and India and Pakistan continue to compete intensely. North Korea's nuclear capabilities are expanding and the country may adopt a nuclear posture that envisions the early use of nuclear weapons in a conflict.[150] And active points of contention — such as over Kashmir, Taiwan, or Ukraine — between states increase pressures for competition and raise the likelihood of conflict.

There does, nevertheless, seem to be something unique about America's nuclear policy. No other nuclear state has offered as expansive a nuclear umbrella or invested as much diplomatic, military, and economic capital to constrain nuclear proliferation to other states.[151] For several reasons, the United States deployed nuclear weapons on foreign territory earlier and more extensively than others.[152] Bell notes that the United States is not alone in having pursued an expansive foreign policy after acquiring nuclear weapons. But the difference in scale compared with other states that he identifies as having done so, such as India, is often large.[153] Other nuclear-armed states have mimicked aspects of America's nuclear forces and doctrine. Yet, only the Soviet Union/Russia has resembled them in size and scope. For a variety of reasons, U.S. planners may have legitimately worried that Soviet leaders rejected key tenets of the theory of mutually assured destruction.[154] Soviet officials might be forgiven for thinking the same thing about America. The United States planned massive strikes against vulnerable Soviet nuclear forces early in the Cold War and then consistently sought to overcome the Soviet deterrent in the late Cold War. Whenever a gap or window of vulnerability emerged, it seemed to favor the United States.[155] U.S. leaders also created a global alliance system that surrounded the Soviet Union. This is not to endorse Soviet behavior, but the view could not have been comforting from Moscow. More recently, U.S. policy statements sometimes suggest that the United States is lagging in nuclear developments.[156] However, this downplays a host of advances in America's nuclear and non-nuclear capabilities that have vastly improved U.S. counterforce in the last 30 years.[157] Indeed, these developments likely incentivized elements of Russian and Chinese nuclear force modernization, which then had downstream effects on other nuclear states, such as India and Pakistan.[158]

The United States has pursued these policies despite enjoying the most conventionally secure homeland among the nuclear-armed states.[159] This is somewhat at odds with the notion that states facing larger conventional threats are more likely to adopt robust nuclear-related policies. True, America

149 Respectively, Bell, *Nuclear Reactions*, 159–60; Green, *Revolution that Failed*, 253–59; Lieber and Press, *The Myth of the Nuclear Revolution*, 108–09, 117. The authors note that Chinese behavior at the time of their writing was at odds with their frameworks, which expected more competitive policies. To the extent that China moves toward such policies, this is consistent with their expectations, though factors outside of their frameworks may be necessary to account for the timing.

150 Green, *The Revolution that Failed*, 252–59; Tellis, *Striking Asymmetries*; Narang, *Nuclear Strategy in the Modern Era*; Christopher Clary and Vipin Narang, "India's Counterforce Temptations: Strategic Dilemmas, Doctrine, and Capabilities," *International Security* 43, no. 3 (Winter 2018/19): 7–52, https://doi.org/10.1162/isec_a_00340; and Ankit Panda and Vipin Narang, "North Korea's ICBM: A New Missile and a New Era," *War on the Rocks*, July 6, 2017, https://warontherocks.com/2017/07/north-koreas-icbm-a-new-missile-and-a-new-era/.

151 Gavin, *Nuclear Weapons and American Grand Strategy*, 61, 75–108. See also Or Rabinowitz and Nicholas L. Miller, "Keeping the Bombs in the Basement: U.S. Nonproliferation Policy Toward Israel, South Africa, and Pakistan," *International Security* 40, no. 1 (Summer 2015): 47–86, https://doi.org/10.1162/ISEC_a_00207; Rupal N. Mehta, *Delaying Doomsday: The Politics of Nuclear Reversal* (Oxford: Oxford University Press, 2020); Alexander Lanoszka, *Atomic Assurance: The Alliance Politics of Nuclear Proliferation* (Ithaca, NY: Cornell University Press, 2018); Nicholas L. Miller, *Stopping the Bomb: The Sources and Effectiveness of U.S. Nonproliferation Policy* (Ithaca, NY: Cornell University Press, 2018); and Rebecca Davis Gibbons, *The Hegemon's Toolkit: US Leadership and the Politics of the Nuclear Nonproliferation Regime* (Ithaca, NY: Cornell University Press, 2022).

152 Matthew Fuhrmann and Todd S. Sechser, "Nuclear Strategy, Nonproliferation, and the Causes of Foreign Nuclear Deployments," *Journal of Conflict Resolution* 58, no. 3 (April 2014): 455–80, https://doi.org/10.1177/0022002713509055.

153 Bell distinguishes between expansion to pursue new interests and the more belligerent pursuit of existing interests. In his analysis, the United States has engaged in both at different points in time. Bell, *Nuclear Reactions*, chaps. 1, 4–5.

154 Green, *The Revolution that Failed*, esp. 44–46. Though see Logan, "The Nuclear Balance Is What States Make of It," 208.

155 In addition to the revolution skeptics, see Green and Long, "The MAD Who Wasn't There"; Long and Green, "Stalking the Secure Second Strike"; and Pavel Podvig, "The Window of Vulnerability That Wasn't: Soviet Military Buildup in the 1970s—A Research Note," *International Security* 33, no. 1 (Summer 2000): 118–38, https://www.jstor.org/stable/40207103.

156 See, for example, *Nuclear Posture Review*, U.S. Department of Defense, February 2018, esp. 7–8, https://media.defense.gov/2018/Feb/02/2001872886/-1/-1/1/2018-NUCLEAR-POSTURE-REVIEW-FINAL-REPORT.PDF; and U.S. Department of Defense, *2022 Nuclear Posture Review*, esp. 2.

157 In addition to the works reviewed here, see Hans M. Kristensen and Matt Korda, "United States Nuclear Forces, 2020," *Bulletin of Atomic Scientists* 76, no. 1 (2020): 46–60, https://doi.org/10.1080/00963402.2019.1701286.

158 Green, *The Revolution that Failed*, 254; Lieber and Press, *The Myth of the Nuclear Revolution*, 20–21; Clary, "Survivability in the New Era of Counterforce," 155; and U.S. Department of Defense, *Military and Security Developments Involving the People's Republic of China 2022*, 159.

159 Gavin, *Nuclear Weapons and American Grand Strategy*, 128.

faces conventional inferiority at times and in specific locations. But this unfavorable conventional asymmetry occurs far from U.S. shores. This is fundamentally different from the challenges that other nuclear-armed states face.

What are we to make of this? The answer has major implications for anticipating the nuclear policies that other states are likely to pursue. Gavin and Green both argue that U.S. nuclear policy should be understood within a broader grand-strategic framework and all the authors stress the importance of a state's core political goals in driving their nuclear and foreign policies.[160] Since World War II, the United States has had, for better or for worse, expansive foreign policy goals. These have contributed to perceptions in Washington that a robust nuclear force posture and strong nonproliferation policies were necessary.

The issue then becomes one of understanding the source of that grand strategy. Offensive realism suggests one possibility: A regional hegemon has strong incentives to push for nuclear hegemony to offset the only plausible sources of danger to its survival.[161] If correct, any state in America's position would behave largely as America has. There have simply been few powers with the means to do so. If China continues to grow, it may follow in America's footsteps. An alternative explanation is that nonproliferation became an end in itself. If this hypothesis is correct, then states that do not adopt nonproliferation as a core goal will have one less incentive for adopting an expansive grand strategy and robust nuclear posture. Finally, America's grand strategy may be the product of a particular strategic culture. The U.S. liberal tradition has created a profound sense of insecurity for Americans living within an illiberal world. That insecurity, combined with a faith in the universal nature of U.S. values, has, at times, pushed the United States toward an activist grand strategy.[162] This presents a more idiosyncratic explanation for U.S. behavior and thus how other states are likely to act. There are certainly other accounts of U.S. grand strategy that can be explored with an eye to their influence on nuclear policy and generalizability to other states.

We Don't Get Fooled Again

The revolution skeptics provide compelling political and strategic explanations for the behavior of nuclear-armed states. Nuclear stalemate shapes, but does not eliminate, power politics. States incorporate nuclear arsenals into their pursuit of age-old foreign policy goals. Nuclear weapons can also create new objectives, such as nonproliferation, or they can allow states to expand their horizons. This incentivizes pursuing alliances and strategic territory, the types of policies that states and other political units (e.g., empires, city-states) have worried about throughout history. And yet, nuclear-armed states have managed to avoid major war against one another. Russia's invasion of Ukraine is testing this nuclear peace, raising the prospects of war with the United States. So far, though, U.S. and Russian leaders have displayed caution about directly fighting one another. To the extent that nuclear stalemate explains that outcome, as well as a broader nuclear peace, the world is not just like yesterday.

Multiple questions arise from this discussion. I have argued that the revolution skeptics' analyses, despite calling into question many of the tenets of the nuclear revolution, actually reinforce the claim that fear of inadvertent nuclear escalation is an obstacle to war. It is unsettling that reducing the prospects for war rests, in part, upon the potential for events to spiral out of control. This also leads to the troubling conclusion that if nuclear use is controllable, or leaders perceive that it is, then fighting becomes more likely. I also speculated that inadvertent escalation fears are not synonymous with competitions in risk-taking, vary depending on the nuclear balance, and endure in crises involving multiple nuclear actors. The discussion is admittedly preliminary. Is the danger of inadvertent escalation in fact critical to avoiding war between nuclear states under stalemate? If so, is there an "optimum instability" in an evolving technological and geopolitical environment, given that high risks can result in disaster?[163]

Turning to broader competition, how prevalent are trends that incentivize confrontation? I highlighted three items — technological trends, the

160 Gavin, *Nuclear Weapons and American Grand Strategy*, chapter 9; Green, *The Revolution that Failed*, 259–64; Lieber and Press, *The Myth of the Nuclear Revolution*, 126; Bell, *Nuclear Reactions*, 6–8, 20–21, 168.

161 Gavin, *Nuclear Weapons and American Grand Strategy*, 106; Green, *The Revolution that Failed*, 30n.; and John J. Mearsheimer, *The Tragedy of Great Power Politics* (New York: W.W. Norton, 2001), 128–30.

162 Colin Dueck, *Reluctant Crusaders: Power, Culture, and Change in American Grand Strategy* (Princeton, NJ: Princeton University Press, 2006); and Michael C. Desch, "America's Liberal Illiberalism: The Ideological Origins of Overreaction in U.S. Foreign Policy," *International Security* 32, no. 3 (Winter 2007/08): 7–43, https://www.jstor.org/stable/30130517.

163 Joshua Rovner, "Give Instability a Chance?" *War on the Rocks*, July 28, 2020, https://warontherocks.com/2020/07/give-instability-a-chance/.

conventional balance, and the lessons of U.S. policy — that arise from the books discussed here that can help to inform assessments of the severity of competition between nuclear-armed states. This list is hardly exhaustive. One issue not explored in detail by the revolution skeptics is the role that broader nonproliferation efforts and the nuclear taboo may play in nuclear state policy and competition between nuclear states.[164] Future studies could assess how nonstate actors and norms interact to accentuate or moderate competition.

Despite decades of nuclear history, it is perhaps unsurprising that the implications of nuclear weapons remain contested. During the Cold War, analysts developed ever more impressive models of nuclear conflict. These colored judgments of the policies of the superpowers and often neglected developments elsewhere. The important nuclear optimist-pessimist debate stalled in the early 2000s. The world seemingly moved on to other issues. Publications on weapons of mass destruction-related issues in top international relations journals waned, reaching a nadir in the early 2010s.[165] Research that did appear tended to focus on nonproliferation, with little attention given to nuclear strategy.[166] There was a sense that we understood the major contours of the nuclear world. Gavin relates the story of senior scholars telling him precisely that, and this author has had a similar experience.[167] Alternatively, some might argue that the past holds few lessons for contemporary challenges. Bell, Gavin, Green, Lieber and Press, and a range of other scholars have shown both views to be wanting. Research on the consequences of nuclear proliferation has increased in the last decade, taking advantage of an array of new material, techniques, and initiatives promoting scholarship on nuclear issues. To understand what is and is not new about the contemporary nuclear moment and to devise effective policies, it is necessary to continuously interrogate the theory and history of the first 75 years of the nuclear era.

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164 For example, Tannenwald, *The Nuclear Taboo*; Paul, *The Tradition of Non-Use of Nuclear Weapons*; Maria Rost Rublee, *Nonproliferation Norms: Why States Choose Nuclear Restraint* (Athens: University of Georgia Press, 2010); Rebecca Davis Gibbons, "The Humanitarian Turn in Nuclear Disarmament and the Treaty on the Prohibition of Nuclear Weapons," *The Nonproliferation Review* 25, no. 1-2 (2018): 11–36, https://doi.org/10.1080/10736700.2018.1486960; Michael Smetana and Carmen Wunderlich, eds., "Non-Use of Nuclear Weapons in World Politics: Towards the Third Generation of "Nuclear Taboo' Research," *International Studies Review* 23, no. 3 (September 2021): 1072–99, https://doi.org/10.1093/isr/viab002.

165 Paul C. Avey and Michael C. Desch, "The Bumpy Road to a 'Science' of Nuclear Strategy," in *Bridging the Theory-Practice Divide in International Relations*, ed. Daniel Maliniak, et al. (Washington, DC: Georgetown University Press, 2020), 205–24.

166 Gibbons and Kroenig, "Reconceptualizing Nuclear Risks," 407.

167 Gavin, *Nuclear Weapons and American Grand Strategy*, 149.