



BOOK REVIEW ROUNDTABLE:

The Revolution that Failed

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1. Introduction: The Gap Between Theory and Practice

Thomas G. Mahnken

Brendan Rittenhouse Green's *The Revolution that Failed: Nuclear Competition, Arms Control, and the Cold War* makes an important contribution to our understanding of the history of the nuclear competition that took place between the United States and the Soviet Union during the Cold War.¹ The book calls into question the extent to which Cold War-era theories, many of which argued that the existence of a mutually assured destruction (MAD) would stabilize the Soviet-American nuclear relationship, actually influenced American policymakers in practice. Indeed, Green documents in rich detail the disconnect between the theory of MAD and the way that U.S. policymakers actually behaved between 1969 and 1979.

As Green shows, American policymakers did not share theorists' belief that the advent of nuclear weapons had transformed international relations. Nor were they convinced that the United States and Soviet Union had, by the 1970s, reached a condition of nuclear stalemate, a claim that lay at the heart of the notion of MAD. It turns out that it was far from obvious to policymakers confronted with the task of deterring the Soviet Union that nuclear deterrence was robust.² To the contrary, most U.S. decision-makers, as well as influential scholars like Albert Wohlstetter, believed that the balance of terror was "delicate."³ They worried a great deal about the survivability of U.S. nuclear forces, as well as the robustness and reliability of nuclear command, control, and communication systems, and they were less than sanguine about Soviet intentions and capabilities. With that in mind, they did not believe that nuclear stalemate was a given, and they took seriously Soviet views that a nuclear war could be fought and won.

¹ Brendan Rittenhouse Green, *The Revolution that Failed: Nuclear Competition, Arms Control, and the Cold War* (Cambridge: Cambridge University Press, 2020).

² Green, *The Revolution that Failed*, 29.

³ Albert Wohlstetter, "The Delicate Balance of Terror," *Foreign Affairs* 37, no. 2 (January 1959): 211-34, <https://www.foreignaffairs.com/articles/1959-01-01/delicate-balance-terror>.

As a result — contrary to the predictions and prescriptions of nuclear theorists, who held that the advent of nuclear weapons had transformed international politics — the United States found itself competing fiercely with the Soviet Union in the nuclear realm, as in many others. American policymakers clearly believed that nuclear weapons retained political and strategic utility, whether or not nuclear theory predicted or prescribed that they should. As a consequence, the significant qualitative and quantitative changes to the American and Soviet nuclear arsenals that occurred during the 1970s should be seen as a reflection of that competition, rather than as a deviation from the theory of MAD.

The other reviewers in this roundtable — Jasen Castillo, Scott Sagan, and Jayita Sarkar — all find considerable merit in Green’s arguments. Each, in their own way, characterizes *The Revolution that Failed* as an important contribution to our understanding of the Cold War competition between the United States and the Soviet Union. The fact that Green’s research caused Castillo to reevaluate his own beliefs about nuclear weapons and strategic stability theory speaks to the power of his arguments.

All three reviewers also focus on the relationship between ideas and practice in U.S. Cold War nuclear strategy. Castillo specifically points to the career of Paul Nitze as an example of top policymakers’ skepticism of the theory of MAD. Sagan notes that some counterforce, or “nuclear war-fighting,” capabilities might indirectly enhance operational forms of nuclear stability, even in the absence of a conscious effort to achieve such a condition. Sarkar calls for giving greater attention to the role that “defense intellectuals” played in creating and disseminating theories about the effects of nuclear weapons. In this respect, Green’s book, and the responses to it, all focus on a defining feature of the field of strategic studies: Because war is the ultimate test of military effectiveness, and because wars are both occasional and unique, theory must play a central role in the study of military affairs.⁴

⁴ Thomas G. Mahnken, “Introduction,” in *Learning the Lessons of Modern War*, ed. Thomas G. Mahnken (Stanford, CA: Stanford University Press, 2020), 1.

Finally, the reviewers suggest ways to broaden and expand the framework presented in *The Revolution that Failed*. Castillo sees value in testing Green's argument against events that took place during both the early and late Cold War periods. Sagan argues that greater weight should be given to organizational and bureaucratic forces. And Sarkar calls for greater consideration of the role of the defense industry in shaping the U.S. nuclear arsenal during the Cold War.

Nuclear Competition in the 21st Century

The nuclear landscape of the early 21st century is much different from the one that Soviet and American soldiers and statesmen faced during the Cold War.⁵ Whereas the nuclear balance throughout the Cold War was centered on the United States and the Soviet Union, today nuclear competition is increasingly multipolar. The total inventory of nuclear warheads has been decreasing for decades, but the number of nuclear powers is increasing. Some states, such as the United States and Great Britain, appear to see decreasing political utility in nuclear weapons, whereas others, notably Russia, Pakistan, and North Korea, appear to believe that the reverse is true. And whereas the nuclear arsenals of the United States and Russia have been constrained and shaped by bilateral nuclear arms control agreements, those of other nuclear powers, such as China, have not.

Moreover, much of the Cold War arms control regime has gone away, raising questions as to what, if anything, should replace it. In the future, as in the past, the advent of new technologies, such as hypersonic delivery vehicles, will reshape nuclear arsenals and potentially nuclear employment. Perhaps most significantly, given the growing number of players and increasing dimensions of competition, future patterns of interaction among nuclear powers are likely to be even more complex than those Green describes in *The Revolution that Failed*.

⁵ Jacob Cohn, Adam Lemon, and Evan Braden Montgomery, *Assessing the Arsenals: Past, Present, and Future Capabilities* (Washington, DC: Center for Strategic and Budgetary Assessments, 2019); and Thomas G. Mahnken, et al., *Understanding Strategic Interaction in the Second Nuclear Age* (Washington, DC: Center for Strategic and Budgetary Assessments, 2019).

Given current circumstances, scholars and policymakers may be tempted to apply — consciously or unconsciously — concepts developed and used freely during the Cold War, such as “arms racing,” without fully understanding how they actually applied to the U.S.-Soviet strategic competition, let alone the extent to which they may apply under much different contemporary circumstances.⁶ The more we understand about the historical record of the Cold War, the more practice appears to diverge from theory. Green’s *The Revolution that Failed* thus contains an important note of caution that the gap between theory and practice may in fact be a yawning one. It is a book that should be read, discussed, and debated.

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2. Who and What Made the Revolution that Failed?

Jayita Sarkar

In *The Revolution that Failed*, Brendan Rittenhouse Green makes a persuasive case that the theory of the nuclear revolution, which rests on the core premise of “mutually

⁶ Thomas G. Mahnken, Joseph A. Maiolo, and David Stevenson, eds., *Arms Races in International Politics from the Nineteenth to the Twenty-First Century* (Oxford: Oxford University Press, 2016); Thomas G. Mahnken, “Arms Races and Long-Term Competition,” in *Strategy in Asia: The Past, Present, and Future of Regional Security* ed. Thomas G. Mahnken and Dan Blumenthal (Stanford, CA: Stanford University Press, 2014), 225–40.

assured destruction,” or MAD, merits a substantial update.⁷ MAD, Green writes, “drains all competition out of the international system” and predicts political and military stability between nuclear-armed adversaries.⁸ This is because nuclear-armed countries cannot compete with each other without creating the ultimate possibility of self-annihilation. By placing “strict demands on the concept of nuclear stalemate,” proponents of “Pure MAD,” as Green calls it, predict that the international system should be very stable. But, Green observes, adversarial nuclear dyads continue to engage in security competition.⁹ What, he asks, explains that puzzling behavior?

Domestic political actors — such as interest groups, military organizations, and political factions — and their coalitional influence often drive security competition between nuclear rivals.¹⁰ But this “Parochial MAD,” as Green terms it, is, in his view, at best a *post hoc* explanation. Empirically rigorous studies of Parochial MAD are, moreover, hard to come by.¹¹

With that in mind, Green seeks to lay out a new and elegant theory to explain nuclear competition. He tests that theory by studying the U.S.-Soviet rivalry and arms control efforts from 1969 to 1979. By investigating nuclear competition during superpower détente — traditionally understood as a period of reduced tensions between the United States and the Soviet Union — Green challenges the notion of MAD’s stabilizing influence on international politics since 1945.

Green concedes that the theory of nuclear revolution is “empirically powerful, logically elegant, and intuitively plausible,” but that it nonetheless fails to explain nuclear competition in peacetime.¹² In his view, one must take into account technological uncertainty, perceptual uncertainty, and comparative constitutional

⁷ Brendan Rittenhouse Green, *The Revolution That Failed: Nuclear Competition, Arms Control, and the Cold War* (Cambridge: Cambridge University Press, 2020).

⁸ Green, *The Revolution That Failed*, 1.

⁹ Green, *The Revolution That Failed*, 27.

¹⁰ Green, *The Revolution That Failed*, 15.

¹¹ Green, *The Revolution That Failed*, 20.

¹² Green, *The Revolution That Failed*, 247.

fitness to make up for the shortcomings of the theory of nuclear revolution. According to Green, technological uncertainty — measured by the survivability of a state’s nuclear triad and its strategic defenses — is a significant variable because even “small technical changes can produce dramatic uncertainties about war outcomes.”¹³ As a result, countries cannot ignore their adversaries’ efforts to build up their nuclear capabilities and, at times, to determine that they must respond in kind. Perceptual uncertainty about “whether Russia accepted the core tenets of the nuclear revolution, as commonly understood in Washington,” Green argues, further drove military competition.¹⁴ What Green terms “comparative constitutional fitness,” which refers to “how efficiently states expect to compete and cooperate,” also contributes to how states determine the costs and benefits of peacetime nuclear competition.¹⁵ Leaders, Green asserts, will naturally factor in the “internal capabilities of the state to respond effectively to external pressures” by influencing resource extraction, direction, and production when making decisions about whether and how to run an arms race in peacetime.¹⁶ Green tests these variables across four cases: nuclear competition and arms control under the Nixon administration (1969–1971); U.S. nuclear acquisition under the Nixon and Ford administrations (1971–1976); U.S. nuclear employment under the Nixon and Ford administrations (1972–1976); and the Carter administration’s nuclear force posture (1977–1979).

This book makes a valuable contribution to the security studies literature by explaining some of the shortcomings in what is perhaps its most influential theory. MAD, in the view of many scholars, allegedly kept the Cold War cold and has prevented great-power war since 1945. Even though Green is not the first person to challenge the claim that nuclear weapons tend to have a stabilizing effect on international politics or the core assumptions upon which that claim is based, he unquestionably makes significant theoretical and empirical contributions. His work is bound to shape future research on questions relating to the effects of nuclear weapons on adversarial dyads, nuclear crises, crisis bargaining, and arms control,

¹³ Green, *The Revolution That Failed*, 42.

¹⁴ Green, *The Revolution That Failed*, 44–46.

¹⁵ Green, *The Revolution That Failed*, 48.

¹⁶ Green, *The Revolution That Failed*, 55.

among others. *The Revolution that Failed* would be an excellent addition to syllabi in both graduate research seminars and undergraduate courses on international nuclear politics.

The Roles of Defense Intellectuals and Business Actors

As I read *The Revolution that Failed*, I could not help but wonder about the role of defense intellectuals and business actors in imagining, creating, and disrupting the supposedly stabilizing effects of nuclear weapons on international politics. This is important to think about for two reasons. First, the theory of the nuclear revolution merits an investigation as an idea, or even an ideology, that has emerged from a largely traditional understanding of the Cold War. This orthodox vision of the world after 1945 involved solely the two superpowers — each armed with nuclear weapons pointed at each other — that ultimately stopped short of pressing the proverbial “red button” because of MAD. This framework, however, overlooks the Cold War’s global nature, and particularly those instances in which the struggle led to significant regional military conflicts.¹⁷ Although the perspective encapsulates the stability between the great powers, it does so at the cost of ignoring the Cold War’s “killing fields.”¹⁸

Green does not critically assess the context in which the ideas that underpinned the nuclear revolution emerged, the interests of the actors who canvassed for those ideas, or the processes through which they grew in popularity. Yet, to comprehensively investigate whether the nuclear revolution failed, would it not make sense to examine why MAD became the predominant theory of international politics after the end of World War II and to explain why understanding its failure is necessary in the 21st century? The “history of security studies,” to borrow the phrasing that Green employs in his discussion of the storied past of the theory of the nuclear revolution, cannot be

¹⁷ Odd Arne Westad, *The Global Cold War: Third World Interventions and the Making of Our Time* (Cambridge: Cambridge University Press, 2007); and Lorenz M. Lüthi, *Cold Wars: Asia, the Middle East, Europe* (Cambridge: Cambridge University Press, 2020).

¹⁸ Paul Thomas Chamberlin, *The Cold War’s Killing Fields: Rethinking the Long Peace* (New York: HarperCollins, 2018).

understood without a serious engagement with the intellectual history of key individuals, such as Albert and Roberta Wohlstetter, or of the battles over social science at influential research institutions like the RAND Corporation.¹⁹

Second, the period of Green's study, 1969–1979, was a moment of transformation for American global economic power, with significant ramifications for the country's domestic political economy.²⁰ However, the four case studies in the book do not account for this change. Technological uncertainty, perceptual uncertainty, and constitutional fitness are not variables that can adequately take into account or understand the key roles that economic and business actors might have played in the story. It is, of course, possible to argue that in scenarios involving nuclear warfare, where survival of the state is at stake, economic factors may be inconsequential. This assumption, however, ignores the role played by the businesses that manufacture bombers and missiles — which more often financially benefit from the delicate nature of the nuclear balance — as well as the structure of business-government relations that influence procurement. Green seems to assume that economic and business actors are encompassed within his concept of constitutional fitness, but this downplays their actual significance.

Notwithstanding these points, *The Revolution that Failed* is an important book for security studies scholars and will remain so for years to come. After all, it makes an impassioned call to revisit one of the most influential theories of the nuclear age.

¹⁹ Green, *The Revolution That Failed*, 28. On the influence of defense intellectuals during the Cold War, see, for example, Fred M. Kaplan, *The Wizards of Armageddon* (New York: Simon & Schuster, 1983); Ron Theodore Robin, *The Cold World They Made: The Strategic Legacy of Roberta and Albert Wohlstetter* (Cambridge, MA: Harvard University Press, 2016); and Daniel Bessner, *Democracy in Exile: Hans Speier and the Rise of the Defense Intellectual* (Ithaca, NY: Cornell University Press, 2018).

²⁰ Daniel J. Sargent, *A Superpower Transformed: The Remaking of American Foreign Relations in the 1970* (New York: Oxford University Press, 2015); Judith Stein, *Pivotal Decade: How the United States Traded Factories for Finance in the Seventies* (New Haven, CT: Yale University Press, 2010); Kim Phillips-Fein, *Invisible Hands: The Businessmen's Crusade Against the New Deal* (New York: W.W. Norton, 2009); and Benjamin C. Waterhouse, *Lobbying America: The Politics of Business from Nixon to NAFTA* (Princeton, NJ: Princeton University Press, 2014).

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3. Nuclear Revelations About the Nuclear Revolution

Scott D. Sagan

Brendan Rittenhouse Green has written an important book. *The Revolution that Failed: Nuclear Competition, Arms Control, and the Cold War* raises the curtain of secrecy that has hidden the details of U.S. nuclear policymaking during a dramatic decade in the middle of the Cold War, from 1969 to 1979.²¹ Green has discovered a treasure trove of historical data based largely on declassified U.S. government documents. His painstaking analysis demonstrates that the U.S. government never fully accepted that it should, for the sake of “nuclear stability,” forgo counterforce capabilities against the Soviet Union or keep the U.S. civilian population vulnerable to a nuclear attack. Green also demonstrates in a compelling manner that the U.S. government used arms control negotiations to protect military advantages it wanted to maintain against the Soviet Union and to avoid arms racing in areas in which it felt that the United States had domestic political disadvantages.

²¹ Brendan Rittenhouse Green, *The Revolution that Failed: Nuclear Competition, Arms Control, and the Cold War* (Cambridge: Cambridge University Press, 2020).

Putting MAD in the Crosshairs

Green's first and major target is "the theory of the nuclear revolution" — or what he calls "Pure MAD" (mutually assured destruction) — which, as he puts it, posits that "once nuclear arsenals are sufficiently large and secure against a preemptive attack ... no state can hope to launch a nuclear war without being utterly destroyed in retaliation."²² If that is the case, Green asks, why was it the U.S. government's acquisition policy during this period to invest so heavily in hard-target counterforce capabilities designed to destroy Soviet intercontinental ballistic missiles (ICBMs) and submarine launched ballistic missiles (SLBMs)? Why did the U.S. government craft a nuclear employment policy "aimed at fighting a protracted nuclear war?"²³ And why did the U.S. government pursue an arms control policy aimed at limiting the size and shape of Soviet nuclear forces when MAD would suggest that, once a state has achieved a secure second-strike capability, increases in arsenal size would be pointless? Why did America not just practice unilateral restraint and let the Soviet Union waste resources on redundant, unnecessary nuclear forces?

Green's secondary target is what he calls "Parochial MAD," the theory that while U.S. political leaders may have accepted Pure MAD, U.S. military leaders — imbued with parochial bureaucratic interests in larger arsenals, larger budgets, and creating offensive counterforce doctrines to limit damage in a nuclear war — were able to hijack nuclear policy. Proponents of this theory argue that military leaders, biased by these organizational interests, were able to form alliances with domestic political actors who favored larger arsenals and more advanced ICBMs, submarines, and bombers because of their parochial economic interests. The combined parochial interests of the "military-industrial complex" produced acquisition policy, employment policy, and arms control policy that were more competitive with the Soviet Union than advocates of Pure MAD recommended at the time.

²² Green, *The Revolution That Failed*, 1.

²³ Green, *The Revolution That Failed*, 3.

In contrast, Green argues that U.S. political leaders never fully accepted the logic of Pure MAD — that there was a permanent “nuclear stalemate” — and instead, following the influential ideas of Albert Wohlstetter, thought that nuclear weapons created a “delicate balance of terror.”²⁴ In an independent and impressively detailed technological account of each leg of the nuclear triad (long-range bombers, silo-based ICBMs, and submarine-based SLBMs), Green demonstrates that U.S. leaders had rational reasons to be uncertain about the survivability of these crucial nuclear delivery platforms over time.

Moreover, U.S. leaders feared a second source of instability, which, as Green puts it, manifested itself in the “perceptual delicacy of the Cold War nuclear balance.”²⁵ U.S. intelligence agencies repeatedly warned that Soviet nuclear doctrine, observed behavior in exercises, and especially Soviet civil defense programs — which produced deep underground shelters for thousands of Soviet party officials — meant that Soviet leaders believed that a nuclear war might be winnable, or at least survivable.²⁶ He quotes a declassified 1975 National Intelligence Estimate to support this point. The Soviets, the document states, “probably expect their civil defenses to be able to preserve a political and economic cadre and to contribute to the survivability of the Soviet Union as a national entity.”²⁷

In addition, Green argues that the U.S. leadership was also concerned about whether the American democratic political system could effectively compete with the Soviet command economy in an unconstrained arms race. He builds upon the theory of “comparative constitutional fitness,” originally developed by David D’Lugo and Ronald Rogowski in their study of the Anglo-German naval race before World War I, to explain how American political authorities used arms control agreements to

²⁴ Green, *The Revolution That Failed*, 28–29; and Albert Wohlstetter, “The Delicate Balance of Terror,” *Foreign Affairs* 37, no. 2 (January 1959): 211–234, <https://www.foreignaffairs.com/articles/1959-01-01/delicate-balance-terror>.

²⁵ Green, *The Revolution That Failed*, 44.

²⁶ On the importance of U.S. leaders’ views of Soviet nuclear doctrine, Green cites my own earlier work. See Green, *The Revolution That Failed*, 30, 45; and Scott D. Sagan, *Moving Targets: Nuclear Strategy and National Security* (Princeton, NJ: Princeton University Press, 1989).

²⁷ Quoted in Green, *The Revolution That Failed*, 165.

restrict the relative size of nuclear arsenals (which they feared the Soviets could excel at) while not restricting qualitative improvements in nuclear delivery technology, such as multiple independently targetable reentry vehicles (MIRVs) or cruise missiles (in which the U.S. had advantages).²⁸ Green argues that fears about the delicate nuclear balance and a perceived American political inability to compete in a quantitative arms race explain why the United States continued to develop advanced counterforce capabilities and engaged in competitive arms control policies. Contrary to scholars who emphasize the bureaucratic and organizational influences on these outcomes, Green maintains that “the late Cold War nuclear competition occurred because American leaders chose it. They chose it because they thought it served their strategic purposes, not because it was forced on them from below.”²⁹

Green writes with verve and humor. He calls Cold War Soviet-American arms control negotiations “the *Seinfeld* of great power politics: a wildly popular show about nothing.”³⁰ He claims that the United States has a “Houdini-like aptitude for escaping Pure MAD’s predictions” that “place a straitjacket around nuclear competition.”³¹ More importantly, he writes with the insight and authority of someone who has read and digested the massive range of relevant documents that have now been declassified. In this light, Green’s book is an important contribution to the literature on the nuclear history subfield that emphasizes the importance of domestic politics in U.S.-Soviet arms control negotiations.³² It is also an important contribution to the security studies literature and is an especially helpful complement to the work that has been done on nuclear doctrine, military planning,

²⁸ David D’Lugo and Ronald Rogowski, “The Anglo-German Arms Race and Comparative Constitutional ‘Fitness,’” in *The Domestic Bases of Grand Strategy*, ed. Richard N. Rosecrance and Arthur A. Stein (Ithaca, NY: Cornell University Press, 1993), 65–95.

²⁹ Green, *The Revolution That Failed*, 8.

³⁰ Green, *The Revolution That Failed*, 4 (emphasis in original).

³¹ Green, *The Revolution That Failed*, 26.

³² See, for example, 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, 2017); and James Cameron, “What History Can Teach,” *Daedalus* 149, no. 2 (Spring 2020): 116–32, https://doi-org.stanford.idm.oclc.org/10.1162/daed_a_01793.

and deterrence theory that combines sophisticated theorizing with rich empirical study.³³

Three Critiques

Despite these twin achievements, I see three weaknesses in *The Revolution that Failed*. First, Green's analysis of U.S. nuclear employment policy overemphasizes the degree to which civilian leaders were in control of the details of nuclear targeting. Political leaders may have made their own nuclear doctrine, but they did not make it just as they pleased. The counterforce doctrine directed by "National Security Decision Memorandum 242" in 1974, which Green analyzes in detail, relied in part on having "withholds" of Soviet national command-and-control targets and major cities to encourage similar restraint on Moscow's part and to coerce Soviet leaders into ending any limited war without destroying American cities. But, as was later discovered by Gen. Lee Butler and Defense Department official Franklin Miller, the U.S. Strategic Air Command did not implement that directive:

For decades, the military authorities who controlled access to the SIOP (Single Integrated Operational Plan) target base and the protocols employed in its construction thwarted every effort by the OSD (Office of the Secretary of Defense) officials responsible for formulating nuclear weapons targeting policy to gain the insight necessary for overseeing the translation of that policy into the nuclear war plan.³⁴

It was only in the 1980s that Butler and Miller discovered that the Joint Strategic Target Planning Staff, "without informing the Joint Staff or OSD, much less the

³³ See, for example, Vipin Narang, *Nuclear Strategy in the Modern Era: Regional Powers and International Conflict* (Princeton, NJ: Princeton University Press, 2014); Nina Tannenwald, *The Nuclear Taboo: The United States and the Nonuse of Nuclear Weapons Since 1945* (New York: Cambridge University Press, 2007); and Lynn Eden, *Whole World on Fire: Organizations, Knowledge, and Nuclear Devastation* (Ithaca, NY: Cornell University Press, 2004).

³⁴ George Lee Butler and Franklin C. Miller, *Uncommon Cause: A Life at Odds with Convention, Vol. 2: The Transformative Years* (Denver, CO: Outskirts Press, 2016), 8.

White House staff ... had decided to define a ‘city’ in such a manner that had the President ordered a strike that included the cities withheld, all of those cities would nevertheless have been obliterated.”³⁵ In short, the organizational and bureaucratic forces whose influence Green rejects in his critique of “Parochial MAD” had far more behind-the-scenes influence than he acknowledges.

Second, Green’s theoretical framework misses the possibility that some counterforce or “nuclear war-fighting” capabilities might actually enhance operational forms of nuclear stability. Green’s analysis, for example, reveals that U.S. anti-submarine warfare capabilities against Soviet submarines patrolling off U.S. coasts were much more effective than the public or scholars knew in the 1970s or 1980s. But this form of counterforce capability forced the Soviet military to move its submarines back into the “bastions” near the Soviet Union, with the objective of preserving its SLBM second-strike capability. This had the benefit, however, of giving the United States greater warning time of a Soviet SLBM first strike, which provided increased confidence that America could launch strategic bombers on ground alert, as well as command-and control aircraft — including the president’s command post — on warning if necessary. The U.S. command-and-control system was far from perfect, as the history of accidents and near-accidents during the Cold War demonstrates, but U.S. anti-submarine warfare improvements in the 1970s arguably added more stability than Green acknowledges.³⁶

My third and final criticism concerns how best to critique the Pure MAD theory. Green focuses on whether the U.S. government followed the prescriptions of such prominent “MADvocates” as Kenneth Waltz, Robert Jervis, and Charles Glaser. But these scholars fully concede that the U.S. government did not follow their advice. MADvocates were promoting a *normative* theory, not a *predictive* theory. Waltz, for instance, argued that leaders displayed “decades of fuzzy thinking in high places

³⁵ Butler and Miller, *Uncommon Cause*, 9. On this issue, see also Fred Kaplan, *The Bomb: Presidents, Generals, and the Secret History of Nuclear War* (New York: Simon & Shuster, 2020), 175–97.

³⁶ On accidents, see Scott D. Sagan *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons* (Princeton, NJ: Princeton University Press, 1993).

about what deterrence is and how it works.”³⁷ Jervis, similarly, insisted that “MAD is a fact, not a policy.”³⁸ And Glaser has consistently maintained that his views about MAD (with respect to both Cold War strategy toward Russia and contemporary strategy toward China) are prescriptive, and not reflective of official Washington thinking.³⁹

A better test of MAD theory, therefore, would focus not on whether U.S. government leaders believed in MAD, but rather on whether or not the U.S. pursuit of counterforce capabilities during the Cold War increased the risk of accidental war by creating dangers of mistaken preemption, or what Thomas Schelling famously called “the reciprocal fear of surprise attack” and “the dynamics of mutual alarm.”⁴⁰ Given the fortunate fact that there has not been a nuclear war since the use of the atomic bombs against Japan in 1945, scholars will need to be creative. That task will rely in part on counterfactual reasoning, analyzing historical crises, false warning incidents, and close-calls. This approach has already produced a number of debates among scholars who have tried to assess whether nuclear deterrence produced stability or instability during the Cold War, and what effect it has on nuclear rivals today.⁴¹

Green has set a high standard for how to use declassified documents to test theories and understand government behavior during the Cold War. His insights should also influence future debates about nuclear strategy and deterrence.

³⁷ Kenneth N. Waltz, “Nuclear Myths and Political Realities,” *American Political Science Review* 84, no. 3 (September 1990): 731,

https://www.jstor.org/stable/1962764?seq=1#metadata_info_tab_contents.

³⁸ Robert Jervis, *The Meaning of the Nuclear Revolution: Statecraft and the Prospects of Armageddon* (Ithaca, NY: Cornell University Press, 1989), 74.

³⁹ Charles 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): 49–98.

⁴⁰ Thomas C. Schelling, *The Strategy of Conflict* (Cambridge, MA: Harvard University Press, 1960), 207; and Thomas C. Schelling, *Arms and Influence* (New Haven, CT: Yale University Press, 1966), 221.

⁴¹ See, for example, Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: An Enduring Debate* (New York: W.W. Norton, 2012); Sumit Ganguly and S. Paul Kapur, *India, Pakistan and the Bomb: Debating Nuclear Stability in South Asia* (New York: Columbia University Press, 2010); and Victor D. Cha and David C. Kang, *Nuclear North Korea: A Debate on Engagement Strategies* (New York: Columbia University Press, 2018).

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4. Revolutionary Thinking: Questioning the Conventional Wisdom on Nuclear Deterrence

Jasen J. Castillo

Beating up on the theory of the nuclear revolution has become a popular enterprise these days.⁴² Decades after the end of the Cold War, scholars have begun to cast doubt on the things that I learned in graduate school about nuclear weapons, especially the notion that the condition of mutually assured destruction (MAD) should promote stability among the great powers. As a former student of Charles Glaser, this, on the one hand, comes as somewhat of a shock. On the other hand, it speaks to doubts that I have long harbored about the theory of the nuclear revolution. If the theory is so powerful, then why can it not explain the Cold War arms race? Why did leaders in the United States, NATO, and the Soviet Union not

⁴² 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); Keir A. Lieber and Daryl G. Press, “The New Era of Counterforce: Technological Change and the Future of Nuclear Deterrence,” *International Security* 41, no. 4 (Spring 2017): 9–49, https://doi.org/10.1162/ISEC_a_00273; Matthew Kroenig, *The Logic of American Nuclear Strategy: Why Strategic Superiority Matters* (New York: Oxford University Press, 2018).

take comfort in MAD? Surely there must be more going on here than simply the suboptimal behavior of dunderheaded policymakers?⁴³

Brendan Rittenhouse Green has provided a very compelling answer to these questions in his creative new book, *The Revolution that Failed: Nuclear Competition, Arms Control, and the Cold War*.⁴⁴ Not only is this volume a balm for my distress, it also makes two important contributions to our understanding of nuclear deterrence during the Cold War. At the outset, Green provides a compelling strategic logic to explain why the United States and the Soviet Union pursued competitive nuclear weapons policies, including in the arena of arms control. Competition made good strategic sense because policymakers had doubts about the survivability of nuclear arsenals; the political and territorial status quo did not always seem clear or obvious; and strategists on both sides could never know for certain that their adversary believed in MAD. Put another way, both the balance of interests and the balance of power are hard to measure.⁴⁵ Complicating matters further, a country that showed that it did not believe in MAD might gain bargaining advantages in a crisis.

According to Green's intricate argument, under these conditions we should expect states to compete, and to try to do so efficiently. They should select competitive strategies that reflect their strengths and weaknesses, or, as he puts it, "constitutional fitness."⁴⁶ To that end, American policymakers could count on advantages in production and direction. These advantages translated into a

⁴³ For this sort of argument, see, for example, Charles L. Glaser, *Rational Theory of International Politics: The Logic of Competition and Cooperation* (Princeton, NJ: Princeton University Press, 2010); and Charles L. Glaser, "When Are Arms Races Dangerous? Rational Versus Suboptimal Arming," *International Security* 28, no. 4 (Spring 2004): 44-84, <https://www.jstor.org/stable/4137449>.

⁴⁴ Brendan Rittenhouse Green, *The Revolution that Failed: Nuclear Competition, Arms Control, and the Cold War* (Cambridge: Cambridge University Press, 2020).

⁴⁵ These insights build on previous work on arms competitions. For example, see Geoffrey Blainey, *The Causes of War*, 3rd ed. (New York: Free Press, 1988); Paul Kennedy, "Arms Races and the Causes of War, 1850-1945," in *Strategy and Diplomacy, 1870-1945: Eight Studies*, ed. Paul Kennedy, (London: Allen and Unwin, 1983), 165-77.

⁴⁶ Green, *The Revolution that Failed*, 7.

preference for qualitative arms races. To illustrate the causal mechanisms of his argument, Green assembles an impressive amount of archival evidence from the 1970s. In careful detail, he takes the reader through the changes in U.S. nuclear weapons policy and the strategies that American policymakers pursued for arms control during the Nixon, Ford, and Carter administrations.

If Green is right, and I think he is, his work calls into question the alleged benefits that should arise when nuclear-armed powers live under the condition of mutually assured destruction. International politics, his book posits, is not particularly stable in these circumstances. Theorists of the nuclear revolution discount the uncertainty about the survivability of nuclear arsenals that can arise with improvements in military technology. They also discount the ambiguity surrounding the political and territorial status quo. As a result, we should expect competition and crises, rather than the stable world predicted by the theory of the nuclear revolution. Green does a good job of explaining the wide-ranging implications of his argument for both international relations theory and national security policy. For example, optimists about nuclear proliferation need to exercise greater caution about the spread of nuclear weapons if they engender competition rather than peace.

This is a book that the field of security studies will need to grapple with, since it overturns much of what scholars believe about nuclear deterrence. All of us who share an interest in nuclear weapons policy should read it. As one might expect from work that undercuts the conventional wisdom about this era, Green's book will probably spark further conversation about the Cold War and nuclear deterrence in general.

After finishing this masterly work, I am left with three main thoughts. First, it seems like American policymakers got more right than wrong about the Cold War nuclear arms competition. Second, I wonder now if victory was in fact possible in a nuclear war. Finally, can Green's theory explain competition and arms control before and after the groovy 1970s?

Policymakers Largely Got It Right: Deterrence During the Cold War Was Not Easy

One fact that clearly emerges from Green's book is that policymakers seemed to correctly understand the dynamics of Cold War nuclear deterrence. This observation contradicts the consensus in the scholarly literature, which holds that the nuclear revolution made the arms race unnecessary (and not really all that dangerous).⁴⁷ According to this view, which is still widely held today, the condition of MAD should have stabilized international politics, since the requirements of nuclear deterrence were easily met and nearly impossible to overturn.⁴⁸ Because nuclear arsenals remained secure, the cost of war was too high to risk competition. The intense nuclear competition, therefore, was not caused by strategic circumstances, but rather by domestic pathologies, which prevented policymakers in both Washington and Moscow from learning to live with and love the bomb. Policymakers simply missed the boat when it came to how and why nuclear deterrence worked.⁴⁹

As Green's theory would expect, however, American policymakers correctly believed that they inhabited a far more competitive world. In their view, too much uncertainty surrounded the requirements of nuclear deterrence, including the survivability of nuclear forces. They could also not know with enough certainty if the Soviets agreed about the virtues of MAD. The costs of war would be very high if they were wrong.

⁴⁷ The key works are Bernard Brodie, ed., *The Absolute Weapon* (New York: Harcourt, Brace, 1946), 21–110; Robert Jervis, *The Illogic of American Nuclear Strategy* (Ithaca, NY: Cornell University Press, 1984); and Robert Jervis, *The Meaning of the Nuclear Revolution: Statecraft and the Prospect of Armageddon* (Ithaca, NY: Cornell University Press, 1989). For the best treatment of this argument, see Charles L. Glaser, *Analyzing Strategic Nuclear Policy* (Princeton, NJ: Princeton University Press, 1990), esp. chap. 2.

⁴⁸ Nuno P. Monteiro, *Theory of Unipolar Politics* (New York: Cambridge University Press, 2014).

⁴⁹ Not everyone in the academy agreed with the theory of the nuclear revolution. For an excellent example, see Scott D. Sagan, *Moving Targets: Nuclear Strategy and National Security* (Princeton, NJ: Princeton University Press, 1989).

To illustrate, I recall watching former Secretary of Defense Donald Rumsfeld debate proponents of the nuclear revolution about the nature of deterrence at a meeting of the Chicago Council on Foreign Relations. Rumsfeld argued that nuclear deterrence was difficult and not guaranteed, not even in MAD, if such a thing existed. Even though this forum took place over two decades ago, I remember how Rumsfeld swayed many members of the audience to his position — especially the non-specialists — by turning to his opponents and asking: “And what if you are wrong about the power of MAD?”

Perhaps the views of the defense policy luminary Paul Nitze serve as a good snapshot of the Cold War consensus among policymakers about nuclear weapons. Nitze stands out as a unique player in the defense politics of the time, due to his four decades of experience in government under both Republican and Democratic administrations. After negotiating with him, the Soviets dubbed him the “Silver Fox,” and his biographer, Strobe Talbott, referred to Nitze as the “grey eminence of nuclear diplomacy.”⁵⁰

Throughout his career, Nitze dismissed the deterrent value of MAD. The threat of mutually assured destruction, he felt, lacked the credibility to deter a Soviet attack on NATO or the United States, a concern that was widely shared within the U.S. government and by its European allies. As he explained:

To go after cities, if deterrence should fail, to my mind would be suicidal. It wasn't just a question of damage-limiting; I believed—and still do—that a counterforce doctrine and posture of sufficient scope would persuade the Soviet Union that it could not count on achieving a military victory in a nuclear exchange. This would assure effective deterrence.⁵¹

⁵⁰ Quoted in Lord Zuckerman, “The Silver Fox,” *New York Review*, Jan. 19, 1989, <https://www.nybooks.com/articles/1989/01/19/the-silver-fox/>.

⁵¹ Paul H. Nitze with Ann M. Smith and Steven L. Rearden, *From Hiroshima to Glasnost: At the Center of Decision, A Memoir* (New York: Grove Weidenfeld, 1989), 249–50.

Similarly, Nitze concluded that only superior nuclear forces would ensure international stability. The nuclear balance, in his view, influenced Soviet global ambitions. He warned,

I believe that only by maintaining this superiority of strategic and nonstrategic military forces can the United States have the optimum opportunity to use its military power short of war to support its foreign policy or be in a position to win a military victory, at the lowest level of conflict adequate to do the job, if war should, nevertheless, occur.⁵²

Prudent policymakers had to hedge and could not rely on MAD to promote peace. As Nitze reflected toward the end of the Cold War: “Although some argued that nuclear weapons would radically change the nature of warfare, responsible officials did not hold this view.”⁵³

And the Silver Fox was not alone. A wide swath of analysts and government officials largely shared his pessimism about MAD.⁵⁴ The RAND Corporation, which grew up alongside its main sponsor, the U.S. Air Force, wrestled for decades with the question of how to implement credibly a policy of extended deterrence to NATO under a delicate nuclear balance of terror.⁵⁵ Similarly, from the Office of Net Assessment the highly influential Defense Department strategist Andrew Marshall commissioned and conducted studies to investigate how the United States could

⁵² “Nominations of Paul H. Nitze and William P. Bundy,” Hearings before the Committee on Armed Services United States Senate, 88th Congress, 1st Session, 1963, 3.

⁵³ Paul H. Nitze, “The History of NATO TNF Policy: The Role of Studies, Analysis and Exercises Conference Proceedings,” Albuquerque, New Mexico: Sandia National Laboratory, Vol. 1, 1994, 30.

⁵⁴ Some policymakers disagreed. Many changed their views when they left office, such as Robert McNamara, McGeorge Bundy, and William Perry. While in office, those who viewed MAD as stable included George Kennan and Paul Warnke. See Nicholas A. Thompson, *The Hawk and the Dove: Paul Nitze, George Kennan, and the History of the Cold War* (New York: Henry Holt, 2009); and Paul C. Warnke, “Apes on a Treadmill,” *Foreign Policy*, no. 18 (Spring 1975): 12–29.

⁵⁵ Fred Kaplan, *The Wizards of Armageddon* (New York: Simon & Schuster, 1983); and Albert Wohlstetter, “The Delicate Balance of Terror,” *Foreign Affairs* 37, no. 2 (January 1959): 211–34, <https://www.foreignaffairs.com/articles/1959-01-01/delicate-balance-terror>.

most effectively compete with the Soviet Union. Marshall developed and promoted his “competitive strategies approach” in large part because he did not believe in nuclear stalemate.⁵⁶

As the Cold War progressed, U.S. policymakers became increasingly enamored with ambitious and exotic nuclear deterrence strategies. The Kennedy administration replaced its predecessor’s concept of “massive retaliation” with the notional strategy of “flexible response,” which called for the United States to develop the capacity to prevail in a limited nuclear war. If deterrence failed in Europe and the Soviet Union launched a blitzkrieg against NATO, the United States needed more options than doing nothing or throwing the nuclear kitchen sink at Moscow in response. Whatever the good intentions, these schemes seemed more like risky bets than concrete strategies, and top policymakers never expressed much confidence in them.⁵⁷ And when the Carter administration pushed its “countervailing strategy” in the late 1970s, the Joint Chiefs of Staff complained, in Janne Nolan’s words, that the United States “still did not have the forces to execute these even more elaborate civilian fantasies.”⁵⁸

In addition to the development of increasingly ambitious strategies, one additional pattern of interest emerged in U.S. Cold War nuclear weapons policy: a cycle of optimism and pessimism about the state of the nuclear competition. Sometimes American officials believed that the United States had the lead both in terms of numbers and technology. At other times, the sky was falling. Consider the debate over the vulnerability of the U.S. intercontinental ballistic missile (ICBM) force, which Green describes in rich detail in his book.⁵⁹ The Nixon administration entered into the Strategic Arms Limitation Talks (SALT I) interim agreement with the

⁵⁶ Andrew Krepinevich and Barry Watts, *The Last Warrior: Andrew Marshall and the Shaping of Modern American Defense Strategy* (New York: Basic Books, 2015), 239–40.

⁵⁷ Francis J. Gavin, *Nuclear Statecraft: History and Strategy in America’s Atomic Age* (Ithaca, NY: Cornell University Press, 2012), 30–56.

⁵⁸ Janne E. Nolan, *Guardians of the Arsenal: The Politics of Nuclear Strategy* (New York: New Republic, 1989), 139.

⁵⁹ Green, *The Revolution that Failed*, 87–120.

knowledge that U.S. advantages in multiple independently targetable reentry vehicle (MIRV) technology would give it a leg up against Soviet ICBMs. This optimism gave way to the concern in the mid-1970s that the Soviets had gotten the better end of SALT I, deploying its own MIRVs on its heavier, land-based ICBMs.⁶⁰ A similar vacillation occurred with respect to the balance of intermediate-range nuclear forces in Europe. Early in the Carter administration, U.S. officials concluded that the new Soviet SS-20 missile did not pose a threat, since NATO possessed other theater nuclear forces to counter it. But U.S. allies, West Germany in particular, convinced America that the SS-20 demanded an urgent American counter.⁶¹

What caused these oscillations between pessimism and optimism about the nuclear balance? American officials did not express confidence in MAD, as predicted by the theory of the nuclear revolution. Instead, these mood swings confirm Green's theory about a delicate nuclear competition.

However, other factors than the ones identified in *The Revolution that Failed* might have contributed to these shifting estimates. The perception of U.S. NATO allies of the credibility of the American deterrent, for example, seems to have also played an important role in shaping American policy. U.S. officials displayed great sensitivity to the concerns of Washington's allies. They still do.⁶² Consider the following counterfactuals: Would U.S. nuclear weapons policy have looked the same if the United States had not attempted to extend deterrence to Europe? Would it have looked the same if Washington had tried to extend deterrence with conventional

⁶⁰ Paul H. Nitze, "Deterring Our Deterrent," *Foreign Policy*, no. 25 (Winter 1976-1977): 195-210.

⁶¹ The role of tactical and theater nuclear weapons represents one area of the Cold War arms race that deserves more attention. These systems do not play much of a part in *The Revolution that Failed*, but U.S. allies were keenly focused on which of these weapons Washington deployed in Europe, how it postured them, and, importantly, how it planned to use them.

⁶² The desire to prevent nuclear proliferation is one reason why American policymakers remain sensitive to allies' concerns. See Francis J. Gavin, "Strategies of Inhibition: U.S. Grand Strategy, the Nuclear Revolution, and Nonproliferation," *International Security* 40, no. 1 (Summer 2015): 9-46, https://doi.org/10.1162/ISEC_a_00205.

forces, instead of relying primarily on nuclear weapons?⁶³ My hunch is that nuclear competition would have still taken place — contrary to the dictates of the theory of the nuclear revolution — but that the arms race would have developed with significantly less intensity.

Was Victory Possible?

By the late 1960s, Soviet nuclear forces began to approach parity with the American arsenal. Proponents of the nuclear revolution mark this as the moment when the superpowers began to live in a state of mutually assured destruction. Both countries possessed seemingly secure second-strike forces of such size that, no matter how well they executed a first strike, neither would escape a devastating retaliatory blow.⁶⁴ Neither country could limit damage to itself in any appreciable way, no matter what combination of offensive or defensive counterforce capabilities it threw at the problem. For proponents of the theory of the nuclear revolution, this condition would provide the foundation for an uneasy peace, if only the superpowers would embrace it.

Green convincingly demonstrates that the superpowers were buying none of it. Each made efforts to escape MAD, with the United States ultimately getting the better of the Soviets in the counterforce competition. *The Revolution that Failed* is quite good at illustrating the U.S. technological improvements that were made during the 1970s, which gave Washington the ability to significantly limit damage to itself in a nuclear exchange. Taken together with advances in communication, surveillance, and precision, America fielded an impressive array of counterforce capabilities. These would permit the United States to exploit vulnerabilities in Soviet nuclear-armed bombers and submarines. And the improved accuracy of U.S. forces would offset Soviet advantages in land-based ICBMs.

⁶³ Paul Nitze and George Kennan explored relying on conventional forces to defend Europe. See Jerald A. Combs, “The Compromise That Never Was: George Kennan, Paul Nitze, and the Issue of Conventional Deterrence in Europe, 1949–1952,” *Diplomatic History* 15, no. 3 (Summer 1991): 361–86, <https://doi.org/10.1111/j.1467-7709.1991.tb00136.x>.

⁶⁴ Glaser, *Analyzing Strategic Nuclear Policy*, 30–35.

Did these U.S. capabilities mean, to paraphrase the title of a famous article from the 1980s, that victory was possible?⁶⁵ I think that the answer is more political than technical. On the technical side, Green and others have provided persuasive evidence that the United States could have limited significant damage to itself in a nuclear exchange.⁶⁶ Given these improvements in counterforce capabilities, the United States likely could have avoided assured destruction without resorting to the absurd civilian defense schemes that were promoted by people like T.K. Jones.⁶⁷

Nonetheless, being on the receiving end of any kind of Soviet retaliatory strike seems unpleasant, to put it mildly. Cold War studies of *limited* nuclear attacks on the United States or the Soviet Union still paint a fairly destructive picture, with tens of millions of casualties on each side.⁶⁸ And if anything, these studies probably downplayed the effects of mass fires.⁶⁹ Moreover, the jury is still out on how many nuclear weapons detonations would cause a nuclear winter.⁷⁰

⁶⁵ Colin S. Gray and Keith Payne, “Victory Is Possible,” *Foreign Policy*, no. 39 (Summer 1980): 14–27.

⁶⁶ Austin Long and Brendan Rittenhouse Green, “Stalking the Secure Second Strike: Intelligence, Counterforce, and Nuclear Strategy,” *Journal of Strategic Studies* 38, no.1 (October 2015): 38–73, <https://doi.org/10.1080/01402390.2014.958150>; Brendan Rittenhouse Green and Austin Long, “The MAD Who Wasn’t There: Soviet Reactions to the Late Cold War Strategic Balance,” *Security Studies* 26, no. 4 (Fall 2017): 606–41; and Lieber and Press, *The Myth of the Nuclear Revolution*.

⁶⁷ T.K. Jones was a Defense Department official in the Reagan administration who believed that nuclear war was survivable if there were “enough shovels to go around.” For the quotation, see Robert Scheer, *With Enough Shovels: Reagan, Bush, and Nuclear War* (New York: Random House, 1982), 18.

⁶⁸ *The Effects of Nuclear War*, Office of Technology Assessment, 1979; William Daugherty, Barbara Levi, and Frank von Hippel, “The Consequences of ‘Limited’ Nuclear Attacks on the United States,” *International Security* 10, no. 4 (Spring 1986): 3–43, <https://doi.org/10.2307/2538949>; and Barbara G. Levi, Frank N. von Hippel, and William H. Daugherty, “Civilian Casualties from ‘Limited’ Nuclear Attacks on the USSR,” *International Security* 12, no. 3 (Winter 1987–1988): 168–89.

⁶⁹ Lynn Eden, *Whole World on Fire: Organizations, Knowledge, and Nuclear Weapons Devastation* (Ithaca, NY: Cornell University Press, 2004).

⁷⁰ Alexandra Witze, “How a Small Nuclear War Would Transform the Planet,” *Nature* 579 (March 2020): 485–87, <https://www.nature.com/articles/d41586-020-00794-y>.

The Revolution that Failed has persuaded me — albeit in an uneasy way — that the United States might have escaped Armageddon in a nuclear exchange with the Soviet Union. However, I do not think the country would have emerged unscathed. The United States would have been better off than proponents of the theory of the nuclear revolution have claimed, but there would have still been plenty of pain to go around. Put another way, Washington might have broken out of MAD only to find itself still in the condition of mutually assured *retaliation*. A better place, to be sure, but still not free of grave danger.

There are three implications that flow from this observation. First, the bargaining advantages that the United States gained by escaping MAD might not have been very large because the costs of war remained extremely high. As my old mentor Roger Molander used to say, “The threat of one nuclear weapon detonating over Washington, D.C. during working hours is probably enough of a deterrent to focus the mind.” Second, since America likely lives in a condition of mutually assured retaliation with many of its adversaries today — Russia included — Washington probably still does not possess much of a bargaining advantage in crises, even though it possesses superior nuclear forces.⁷¹ Finally, crisis instability poses more of a danger in a world of mutually assured retaliation. Under MAD, striking preemptively in a crisis is futile, since neither side can limit damage to itself. Striking first in conditions of mutually assured retaliation, however, might to a certain extent pay off, depending on the vulnerabilities of an adversary’s arsenal, something an opponent will also realize. If these three observations hold, then the nuclear future might prove as, or potentially more, competitive than the nuclear past that Green describes in *The Revolution that Failed*.

⁷¹ Recent work confirms this view. See, for example, Todd S. Sechser and Matthew Furchmann, *Nuclear Weapons and Coercive Diplomacy* (New York: Cambridge University Press, 2016). See also Richard K. Betts, *Nuclear Blackmail and Nuclear Balance* (Washington, D.C.: Brookings Institution, 1987).

Applying the Theory Before and After the 1970s

Future work should explore whether Green's theory can shed light on the Cold War competition before and after the 1970s. My informed hunch tells me that there is much that Green's argument can explain about the periods of history that preceded and followed that decade. For example, the Reagan administration seemed far more ruthless in its pursuit of American qualitative superiority when it began negotiations with the Soviets on the Strategic Arms Reductions Talks (START) than the Nixon and Ford administrations did during the the SALT process. Washington's desire to reach an agreement that reduced Moscow's superiority in land-based ICBMs matches the expectation of Green's theory.⁷²

By contrast, there are two earlier Cold War episodes that I have trouble reconciling with the book's argument. Secretary of Defense Robert McNamara eschewed intense competition as his tenure progressed over the course of the 1960s, such that the United States almost seemed to be taking a hiatus from the arms race and to be looking to embrace MAD instead.⁷³ At the other end of the spectrum, the Gaither Report of 1957 stoked hysteria about the nuclear balance by suggesting that the United States lacked the ability to compete in the long run with the Soviet Union.⁷⁴ This handwringing seems misplaced, given that we now know that the United States had serious advantages in nuclear weapons capabilities going into the 1960s.

Perhaps that is the beauty of Green's argument. The Cold War nuclear balance was delicate both before and after the 1970s. For this reason, it is not especially surprising that policymakers rode an emotional rollercoaster. Such a finding is important for today's policymakers, who have recently rediscovered — with too much enthusiasm — great-power competition. *The Revolution that Failed* should remind us that when it comes to nuclear weapons, such competitions are difficult and dangerous.

⁷² Strobe Talbott, *Deadly Gambits* (New York: Alfred A. Knopf, 1984), 212–32.

⁷³ Robert S. McNamara, *The Essence of Security: Reflections in Office* (New York: Harper and Row, 1968).

⁷⁴ On the Gaither Report, see Kaplan, *The Wizards of Armageddon*, 141–42.

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5. Author Response: The Meaning of the Nuclear Counterrevolution

By Brendan Rittenhouse Green

Once states have nuclear forces capable of blowing up the world many times over, why improve them? More pointedly, why did the Cold War superpowers, and especially the United States, launch a frenzied nuclear arms race in the second part of the Cold War, even though both sides had secure second-strike forces?

These are the questions I try to answer in my recent book, *The Revolution that Failed: Nuclear Competition, Arms Control, and the Cold War*. I do so by assessing the merits of the theory of the nuclear revolution, or mutually assured destruction (MAD), and by offering alternative theoretical propositions of my own.

I shall respond to the *TNSR* reviews of the book in three parts. First, I give a summary of the book's central arguments. Second, I offer some reasons to care about those arguments, in the form of policy implications and in a response to Thomas Mahnken's policy-focused introduction. Third, I respond to the criticisms raised by the other reviewers, Jayita Sarkar, Scott Sagan, and Jasen Castillo.

You MAD, Bro? The Nuclear Revolution Revisited

The “pure” version of MAD argues that once nuclear arsenals are sufficiently large and secure against preemptive attack no state can hope to avoid utter destruction in an unrestricted nuclear war. At this point, the nuclear balance is stalemated: It is no longer possible for one state to be stronger than the other, and additional nuclear expenditures do not produce additional political benefits. Instead, political bargaining advantage comes from the balance of resolve, which is said to favor the side defending the status quo. As a result, “Pure MAD” predicts that crises and wars will become politically useless and should thus disappear, arms races will mostly serve to set large piles of money on fire, and arms control will become easy, since a mutual agreement to stop the financial bonfires should not be hard to obtain.

Of course, the late Cold War arms race proved these predictions wrong. Advocates of Pure MAD usually argue that its predictions failed because “parochial” forces — congressional politics, electoral coalitions, and bureaucratic interests — compelled statesmen to accept an arms race they did not want: call this notion “Parochial MAD.” I say MAD’s predictions failed because more or less rational policymakers wanted an arms race, which was more often resisted by parochial forces than accelerated by them.

Policymakers wanted nuclear competition because Pure MAD has three theoretical problems. First, the international status quo is often ambiguous rather than clear. Imagine the status of Berlin during the Cold War, or Taiwan today. Two states can both believe they have the defender’s bargaining advantage, which makes a crisis or war much more likely — and its outcome far more uncertain — than Pure MAD admits. Second, nuclear stalemate is not permanently entrenched, as Pure MAD supposes. Technology makes the nuclear balance malleable, and the prospect of crises and wars brought on by the ambiguity of the status quo gives states a peacetime incentive to try to break out of nuclear stalemate. Third, crisis bargaining can perversely favor pernicious beliefs about the nuclear balance. A state correctly believing in nuclear stalemate has strong reasons to avoid risks or even back down

during a crisis or war, while a state incorrectly believing it holds a military advantage has every reason to take risks and hold firm. This gives states incentives to monitor each other's beliefs and to manipulate each other's perceptions, often through nuclear doctrine.

Together these factors paint a picture of what I call a "Delicate Nuclear Balance," the upshot of which is that we should expect to see nuclear competition under a wide variety of circumstances. States will live in fear of a difficult crisis where the balance of resolve is uncertain, and they will search for some kind of military advantage — be it real or perceived — that could grant them the bargaining leverage to prevent the crisis or to escape it alive and with their values intact. Furthermore, I argue that nuclear competition can produce peacetime benefits *even if states never escape nuclear stalemate*. Nuclear competition can prevent crises by bolstering general deterrence, enhance alliance cohesion by reassuring allies, divert adversary defense resources into areas of competition where they are less efficient, and even lead an adversary toward tacit diplomatic adjustments.

Why Care? The Policy Implications of a Delicate Nuclear Balance

What relevance does this argument have for policy? Here I think Mahnken's introduction to the roundtable is spot on: "[T]heory must play a central role in the study of military affairs." The Delicate Nuclear Balance is a theoretical model of nuclear competition and cooperation that can be applied today. Mahnken is also correct, of course, that a theory tested on the Cold War era may miss aspects of the world now facing the United States. But of the factors he cites, only the effects of nuclear multipolarity are absent from my model, and this factor, if anything, only reinforces the book's central prediction: that we should expect a world of increasing nuclear competition and diminished arms control effectiveness.⁷⁵

⁷⁵ On the effects of nuclear multipolarity, see Caitlin Talmadge, "Deterrence in the Emerging Nuclear Era," in *The Fragile Balance of Terror: Deterrence in the New Nuclear Age*, ed. Scott Sagan and Vipin Narang, 2021 (draft manuscript, under review).

For this reason, my first policy prescription is, essentially, “strap in.” In the conclusion of the book, I assess the three other contemporary causal forces that Mahnken cites: the increasing technical dimensions of nuclear competition; changing nuclear doctrines abroad; and arms control prospects.⁷⁶ Each of these factors increases the central drivers of competition in my theory, namely, technical uncertainty about the state of the nuclear balance and perceptual uncertainty about how states view it. Nuclear competition is coming, and as its demands increase, it will increasingly intrude on other policy areas.

To policymakers and analysts who favor a robust nuclear force posture and accept the resulting competition, I would make two recommendations. First, technical competition is preferable to perceptual competition. The United States, by most accounts, retains a considerable edge in technology. Real advantages in the nuclear balance are easy for both sides to see. Perceptual competition, on the other hand, is basically a competition in storytelling, an amorphous task whose results are perpetually uncertain. During the Cold War, American qualitative nuclear innovations had a real political impact on Moscow, whereas perceptual competition led to a byzantine set of nuclear warfighting doctrines that were only thinly connected to technological reality.⁷⁷

This point suggests that developments like China’s DF-26 intermediate-range ballistic missile are genuinely unsettling. The DF-26’s maneuvering warhead and apparent ability to hot-swap conventional and nuclear munitions in the field suggests that China’s doctrine could be evolving toward concepts that emphasize the battlefield use of nuclear weapons. U.S. policymakers should avoid responding

⁷⁶ Brendan Rittenhouse Green, *The Revolution that Failed: Nuclear Competition, Arms Control, and the Cold War* (New York: Cambridge University Press, 2020), 252–59.

⁷⁷ On the impact of American arms racing on Soviet policy, see Brendan Rittenhouse Green and Austin Long, “The MAD Who Wasn’t There: Soviet Reactions to the Late Cold War Nuclear Balance,” *Security Studies* 26, no. 4 (October 2, 2017): 606–41, <https://doi.org/10.1080/09636412.2017.1331639>. On the doctrinal competition during the Cold War, see Green, *The Revolution that Failed*, 156–74, 210–31.

in kind with doctrines that give undue emphasis to a nuclear-conventional battlefield, from which the great perceptual competition of the late Cold War arose.⁷⁸

Second, the biggest impacts on America's nuclear capabilities often come from small technical improvements to existing forces, rather than smashing technological breakthroughs. The most important improvements to U.S. counterforce capabilities during the later Cold War competition were the rising accuracy of ballistic missiles and the quieting of submarines, both of which were driven by the incremental improvement of mature technologies.⁷⁹ More recently, the new fuses on the W76 warhead have had an enormous impact on its efficacy against fixed targets.⁸⁰ These examples suggest that the big ticket items in the modernization debate may be of less importance than, say, improvements in space-based capabilities for tracking mobile intercontinental ballistic missiles (ICBMs) or innovations in shallow-water anti-submarine warfare capabilities for hunting adversary ballistic missile submarines.⁸¹

I also have two recommendations for policymakers and analysts who would prefer to avoid a new nuclear arms race. The first is to start thinking of ways to jettison political commitments, because nuclear superiority is basically baked into America's present grand strategy. Simplifying greatly, that strategy rests on defending forward positions very close to adversary territory. Unlike the Cold War competition, when

⁷⁸ On the DF-26's capabilities, see Austin Long, "Myths or Moving Targets? Continuity and Change in China's Nuclear Forces," *War on the Rocks*, Dec. 4, 2020, <http://warontherocks.com/2020/12/myths-or-moving-targets-continuity-and-change-in-chinas-nuclear-forces/>.

⁷⁹ On ballistic missile accuracy, see Donald Mackenzie, *Inventing Accuracy: A Historical Sociology of Nuclear Missile Guidance* (Cambridge, MA: The MIT Press, 1993). On submarine quieting, see Owen R. Cote, Jr., *The Third Battle: Innovation in the U.S. Navy's Silent Cold War Struggle with Soviet Submarines*, vol. 16, Naval War College Newport Papers (Newport, RI: Naval War College Press, 2003), 41-52.

⁸⁰ Keir A. Lieber and Daryl G. Press, "The New Era of Counterforce: Technological Change and the Future of Nuclear Deterrence," *International Security* 41, no. 4 (Spring 2017): 23-24, https://doi.org/10.1162/ISEC_a_00273.

⁸¹ Lieber and Press, "The New Era of Counterforce," 38-41. On shallow water anti-submarine warfare, see, for example, Owen R. Cote, "Assessing the Undersea Balance Between the U.S. and China" (MIT Security Studies Program Working Paper, Cambridge, MA, February 2011), 10.

Washington could plausibly assert that it had no less of an interest in Western Europe than did Moscow, American adversaries will likely have a greater stake in most of the key areas under dispute in a crisis or conventional war today. They will be competing over their own region, whereas Washington's interests will look more like "a quarrel in a far-away country between people of whom we know nothing."⁸² To counteract an unfavorable balance of resolve, the United States must rely on a favorable military balance. And, ultimately, military superiority means nuclear superiority, since a determined adversary can use its nuclear forces to turn a conventional military clash into a high-stakes bargaining contest.

It is no accident, then, that Charles Glaser, one of the foremost academic advocates of MAD, is also the chief supporter of cutting Taiwan loose.⁸³ Similarly, the leading exponent of reducing American commitments abroad, Barry Posen, believes that "[t]here is no plausible combination of U.S. offensive and defensive systems that can alter" nuclear stalemate, and that "extended deterrence is a risky business, and the United States ought to have been glad to shed such commitments after the Cold War."⁸⁴ In short, the need to defend allies and partners is what generates the demand for robust nuclear forces. Holding off on a new arms race probably requires retrenchment.

If policymakers are nevertheless inclined to hold the line on both current commitments and nuclear improvements, then I would recommend pushing back on

⁸² This quote comes, of course, from Neville Chamberlain's famous speech to the British public prior to the Munich agreement. See Neville Chamberlain, "Chamberlain Addresses the Nation on Peace Negotiations," BBC Archive, Sept. 27, 1938, <https://www.bbc.co.uk/archive/chamberlain-addresses-the-nation-on-his-negotiations-for-peace/zjrjgwx>.

⁸³ See, for example, Charles 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): 49–98, https://doi.org/10.1162/ISEC_a_00248; and Charles Glaser, "Washington Is Avoiding the Tough Questions on Taiwan and China," *Foreign Affairs Online*, April 28, 2021, <https://www.foreignaffairs.com/articles/asia/2021-04-28/washington-avoiding-tough-questions-taiwan-and-china>.

⁸⁴ Barry R. Posen, *Restraint: A New Foundation for U.S. Grand Strategy* (Ithaca, NY: Cornell University Press, 2014), 71, 76.

the ever-present American obsession with force size. Part of this is an arms control issue. During the Cold War and after, arms controllers often prioritized treaties that limited total force size over those that restricted counterforce technology.

Policymakers today would do well to shift their focus, especially in light of the fact that China appears violently opposed to agreements that would lock it into its present modest force structure.⁸⁵

But the point applies to other nuclear developments as well. The recent revelation of more than 100 new Chinese missile silos provides a case in point. Thus far, several analysts have made considerable efforts to downplay the size of the force that China might base in these holes, speculating that they may ultimately constitute a “shell game” system, holding only a few missiles, much like the original basing plan for the MX ICBM during the Cold War.⁸⁶ Putting aside the fantastic expense and substantial technical challenge that system posed for Washington, I suspect a better response is: “Who cares how many missiles China fields? The American deterrent is secure.” It would not be all that surprising if Beijing eventually decided to fill all the holes. Having treated such a modest increase in force size as a problem will not help those who want to prevent an arms race.

Reviewers

At any rate, those are my arguments. I am very grateful to the editors of the *Texas National Security Review* for putting the book up in lights and to the reviewers for making the time and effort to read and provide incisive commentary on it. I do not

⁸⁵ Henrik Stålhane Hiim and Magnus Langset Trøan, “Hardening Chinese Realpolitik in the 21st Century: The Evolution of Beijing’s Thinking about Arms Control,” *Journal of Contemporary China*, May 24, 2021, 1–15, <https://doi.org/10.1080/10670564.2021.1926095>.

⁸⁶ See, for example, the analysts quoted in Joby Warrick, “China Is building More than 100 New Missile Silos in Its Western Desert, Analysts Say,” *Washington Post*, June 30, 2021, https://www.washingtonpost.com/national-security/china-nuclear-missile-silos/2021/06/30/ofa8debc-d9c2-11eb-bb9e-70fda8c37057_story.html. See also James Acton’s comments in “China’s New Missile Silos,” *The Warcast*, July 1, 2021 <https://warontherocks.com/episode/warcast/25210/chinas-new-missile-silos/>.

think that an author can hope for better treatment than the care, thoughtfulness, and insight displayed by Mankhen, Sarkar, Sagan, and Castillo.

Sarkar wonders “about the role of defense intellectuals and business actors in imagining, creating, and disrupting” MAD’s stabilizing effects. She asks whether the theory of the nuclear revolution can be fully understood apart from the broader ideological context of Cold War orthodoxy, the influence of defense intellectuals, the transformation of American global economic power during the 1970s, and the financial interests of the defense industry.

I heartily concur that a full historical understanding and evaluation of MAD “as an idea, or even ideology” would require a wide-ranging approach. To attempt such an evaluation was beyond my meager skills in a single book. I had to settle instead for evaluating MAD as a social scientific theory. I did look for evidence of defense industrial influence on the preferences of the executive branch and Congress as part of my evaluation of Parochial MAD, but I did not find much.⁸⁷ But other scholars looking at different sources might uncover some evidence. Overall, the kind of historical-ideational analysis Sarkar commends is most welcome.

Sagan makes three criticisms. First, he argues that my account of nuclear doctrine overemphasizes the role of civilians relative to the military, citing evidence from the Reagan presidency that Strategic Air Command had not implemented the limited options called for by the Nixon, Ford, and Carter administrations. Mirroring Marx’s analysis of French President Napoleon III’s coup d’état in 1851, Sagan argues: “Political leaders may have made their own nuclear doctrine, but they did not make it just as they pleased.”

I agree. My point is not that civilians always get what they want. It is that they tend to want more competitive policies than MAD predicts, while parochial forces often create pressures for more stable alternatives. In the case of nuclear doctrine, the military was strongly attached to the Single Integrated Operational Plan, an all-or-

⁸⁷ See Green, *The Revolution that Failed*, 112–18, 148–53, 182–88, 235–43.

nothing concept for general nuclear war very similar to what MAD would expect. It was civilian policymakers who wanted a more competitive policy and who pushed for nuclear warfighting options aimed at influencing the intra-war military balance. In the book, I show that during the Nixon and Ford administrations the tradition of the Single Integrated Operational Plan weighed like a nightmare on the brains of these civilian warfighters. Indeed, the military repeatedly deflected and slow-walked civilian desires, bringing about a more stable, MAD-like set of plans than would have otherwise been devised.⁸⁸ I leave it to the reader to decide whether the repetition under Reagan that Sagan points out constitutes tragedy or farce.

Second, Sagan claims that my theoretical framework overlooks how competitive nuclear policies might enhance “operational forms of nuclear stability.” As an example, he proposes that American strategic anti-submarine warfare efforts supported stability — despite being a counterforce capability — by pushing Soviet ballistic missile submarines away from the United States and into bastions closer to Soviet home waters, thereby reducing the threat to Soviet nuclear bombers and command, control, and communications posed by ballistic missile submarines.

I accept the general point, though I did not exactly ignore it in the book: I argued that peacetime competition could divert adversary resources away from other, more threatening missions.⁸⁹ Furthermore, on the specifics of anti-submarine warfare, I described how U.S. policymaker perceptions of bomber and command, control, and communications vulnerability changed over time, and linked these changes to changing policymaker perceptions of America’s anti-submarine warfare capabilities.⁹⁰ Whether these capabilities were ultimately stabilizing is a complicated question. For example, the Yankee-class ballistic missile submarines that threatened U.S. bombers and command, control, and communications never stopped patrolling.⁹¹ However, Sagan is right that competitive policies can in principle lead to

⁸⁸ Green, *The Revolution that Failed*, 182–85.

⁸⁹ Green, *The Revolution that Failed*, 50–51.

⁹⁰ Green, *The Revolution that Failed*, 35–36, 92–94, 126–27.

⁹¹ See, for example, the patrol maps: “Russian Nuclear Submarine Patrols,” The Nuclear Information Project, updated April 16, 2007, <https://www.nukestrat.com/russia/subpatrols.htm>.

stable outcomes, and I probably should have emphasized this point more in the book.

Finally, Sagan criticizes my general approach to critiquing MAD. The leading theorists of MAD, he argues, understood themselves to be creating a prescriptive theory, rather than one that could predict state behavior. A better critique, he writes, would assess whether actual U.S. behavior was as destabilizing as MAD's prescriptions allege.⁹²

Here I disagree, because prescriptive theories nevertheless make predictions. To say that MAD is a prescriptive theory is to make two claims: 1) there are no rational alternatives to its advice (else how could its prescriptions be correct?), and 2) departures from its advice must be caused by some irrational variable (else how could policymakers fail to heed its prescriptions?). My book undermines both claims. It lays out an alternative theory and produces a large quantity of evidence that policymakers were motivated by it. It also disconfirms the most widely mooted irrational explanations for American behavior, namely, the parochial forces usually invoked by advocates of MAD. If my arguments are right, this greatly reduces the credibility of MAD. And if they are wrong, then the problem is with the arguments, not with the approach to critiquing MAD.

Castillo begins his review by conceptualizing an additional pattern of interest in U.S. nuclear weapons policy: a cycle of optimism and pessimism about the state of the nuclear competition. He then argues that a factor outside the framework of my book explains this cycle. Specifically, he argues that allied perceptions of U.S. credibility account for the pattern. Castillo also wonders whether my theory can explain cycles of optimism and pessimism outside of the cases I address in the book. For instance, can my theory explain cases like the competitive hysteria surrounding the 1957 *Gaither Report*, or the McNamara Defense Department's ambitions to pursue stable, MAD-like policies?

⁹² It is worth noting that I do not believe that Pure MAD predicts that deviations from its prescriptions are destabilizing, though it would allege they are wasteful. The beauty of Pure MAD is that stability is baked into the theoretical cake.

I agree that allied perceptions can help explain competitive U.S. nuclear policy. In fact, this fits comfortably within the framework of my book. I argue that enhancing alliance cohesion can be an important peacetime benefit of a competitive policy and find evidence that these concerns influenced the Nixon, Ford, and Carter administrations' nuclear decision-making.⁹³

However, I generally see less variation in optimism and pessimism than does Castillo. Though the *Gaither Report* caused much agitation in parts of official Washington, the White House was remarkably unperturbed by its warnings of American vulnerability.⁹⁴ Robert McNamara is a trickier case. It would be wrong to suggest that he abandoned competitive nuclear policies entirely, since he pursued multiple independently targetable reentry vehicles and ballistic missile accuracy improvements well into his tenure. However, as Castillo suggests, he clearly decided to forgo policies that were even more competitive and eventually adopted an arms control strategy consistent with MAD. I suspect that my theory can only partially explain the nuclear policy that came out of McNamara's Defense Department.

Finally, Castillo claims that even if the United States did escape nuclear stalemate during the Cold War, it would have still suffered tremendous damage in a nuclear exchange. He contends that any crisis bargaining advantages stemming from this kind of modest superiority would be slight, either in the Cold War or today, since Russia and China could probably mount some kind of nuclear retaliation after a first strike. At the same time, Castillo offers that the crisis instabilities generated by a world where each side could limit damage from a nuclear attack could be quite dangerous.

⁹³ Green, *The Revolution that Failed*, 51–52, 100–03, 138–39, 173–74, 228–31.

⁹⁴ President Dwight Eisenhower and Secretary of State John Foster Dulles dismissed the report's assumption that "in a time of relative tranquility and a reduction in international tension there would be mounted a massive surprise attack against the United States and simultaneously against all our bases." Quoted in Marc Trachtenberg, *History and Strategy* (Princeton, NJ: Princeton University Press, 1991), 24 n. 50.

For what it is worth, I do not think that the United States escaped nuclear stalemate during the Cold War, though it did come close.⁹⁵ I believe, rather, that its effort to do so provided a number of peacetime benefits that policymakers judged to be worth the cost. As for a successful escape from nuclear stalemate, the crisis bargaining benefits and crisis instability risks would be commensurate. If U.S. nuclear superiority is not sufficient to cow an adversary in a crisis or war, then it is because both sides believe that having to eat a few nukes is enough to stanch the American appetite for taking risks. But if both sides believe that Washington might get an itchy trigger finger as a crisis or war progresses, then the asymmetric ability to manipulate risks provided by nuclear superiority will give American adversaries reason to back down. I do not think we can know before the fact how much nuclear superiority is enough to produce bargaining advantages. I fear that one day we shall find ourselves pursuing the answer empirically.

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⁹⁵ For the fullest statement of my views on the Cold War balance, see Green and Long, “The MAD Who Wasn’t There,” 610–12.