



OXFORD JOURNALS
OXFORD UNIVERSITY PRESS



"General, I Have Fought Just as Many Nuclear Wars as You Have": Forecasts, Future Scenarios, and the Politics of Armageddon

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Source: *The American Historical Review*, DECEMBER 2012, Vol. 117, No. 5 (DECEMBER 2012), pp. 1431-1460

Published by: Oxford University Press on behalf of the American Historical Association

Stable URL: <https://www.jstor.org/stable/23426554>

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“General, I Have Fought Just as Many Nuclear Wars as
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HISTORIANS HAVE LONG ARGUED THAT ignoring the past or misapplying its lessons can lead to fatal mistakes. But governments have shown far more interest in the promise of prevision. The United States, in particular, has made a massive investment in intelligence estimates, future scenarios, simulations, and technology forecasts since World War II. The sums expended on official history and archives are trifling in comparison.¹

In some ways, this is an old story. Political leaders sought the advice of oracles and soothsayers long before historians arrived on the scene. What has changed is the tremendous growth in bureaucratic structures that are specifically designed to provide foresight. There has also been a qualitative transformation in the sophistication of forecasting and modeling. The development of official efforts to anticipate future events and trends was a trend in itself, one that has become worldwide

It is often said that scholars must collaborate to take on the biggest and most complex subjects. The ever-expanding archive of contemporary history is making the research challenge for single authors increasingly unmanageable, but new information technology is making it easier to work in teams. This particular collaboration began in a summer-long program at Columbia University on the history and future of nuclear proliferation. It continued in cyberspace. The authors pooled research in a common database, shared ideas through virtual meetings, and then co-wrote the article online. This study of the history of the future also represents one possible future for historical research. We would therefore like to thank Roger Hertog for supporting this project, and acknowledge the other participants for sharing their research, especially Bonny Lin, Brian Muzás, and Jaideep Prabhu. Frank Gavin, who co-taught the program, was a source of inspiration and contributed in crucial ways to our understanding of the subject. We would also like to thank those who read earlier drafts and helped us to improve them, including Robert Axelrod, Richard Immerman, Robert Jervis, John Mueller, and Marc Trachtenberg, as well as the anonymous reviewers for the *AHR*.

¹ The intelligence community's classified budget is more than \$80 billion, having doubled in size since 2001. In 1973, it was estimated that over \$100 million was already being spent just on military computer models and simulations—over \$400 million in today's dollars, or more than the entire budget of the National Archives and Records Administration. “Overall U.S. Intelligence Budget Tops \$80 Billion,” *Los Angeles Times*, October 28, 2010, <http://articles.latimes.com/2010/oct/28/nation/la-na-intel-budget-20101029>; Garry D. Brewer and Martin Shubik, *The War Game: A Critique of Military Problem Solving* (Cambridge, Mass., 1979), 41.

in scope.² But to the extent that historians have taken any interest in the future, their work tends to center on intellectual and cultural history, especially utopian and dystopian visions, notions about progress and decline, and visual and literary representations of things to come.³ The political history of what Reinhart Koselleck called “the horizon of expectation” remains largely unexplored.⁴

There is no more important example of the impact of prevision than the United States’ preparations for war with the USSR. Whereas conventional war allowed time to adjust to an adversary’s strategy and tactics, to redeploy some forces and hold others in reserve, nuclear war was expected to unfold with bewildering speed and violence. Misreading Moscow’s intentions could have been catastrophic. U.S. policymakers therefore fought bitterly over both intelligence estimates and war plans, and over what kinds of expertise might substitute for experience. As the young RAND Corporation economist Alain Enthoven pointed out in asserting his own expertise in “systems analysis,” no one—not even the most battle-tested general—had fought even one such war.⁵ Civilian and military experts would also seek out the vicarious experience of war games and role-playing exercises, or what was sometimes called synthetic history. In effect, struggles over the fate of the earth would be resolved in a land of make-believe.

The idea that nuclear weapons made military history irrelevant was and is de-

² Bernard Cazes, *Histoire des futurs: Les figures de l’avenir de saint Augustin au XXI^e siècle* (Paris, 1986), chaps. 9–10.

³ On utopian thought, see the monumental and still-invaluable introduction to the subject by Frank E. Manuel and Fritzie P. Manuel, *Utopian Thought in the Western World* (Cambridge, Mass., 1979). Long out of fashion, utopia as both history and platform is now enjoying a revival; see Russell Jacoby, *Picture Imperfect: Utopian Thought for an Anti-Utopian Age* (New York, 2005); and Fredric Jameson, *Archaeologies of the Future: The Desire Called Utopia and Other Science Fictions* (New York, 2005). For a survey of futurist thought more generally, see Robert Heilbroner, *Visions of the Future: The Distant Past, Yesterday, Today, and Tomorrow* (New York, 1995). The classic studies of the idea of progress and of posterity are J. B. Bury, *The Idea of Progress: An Inquiry into Its Origin and Growth* (London, 1920), http://openlibrary.org/books/OL14014092M/The_idea_of_progress; and Carl L. Becker, *The Heavenly City of the Eighteenth-Century Philosophers*, 2nd ed. (New Haven, Conn., 2003). For an overview of more pessimistic ideas, see Arthur Herman, *The Idea of Decline in Western History* (New York, 1997). On apocalyptic thinking and culture, see Paul Boyer, *When Time Shall Be No More: Prophecy Belief in Modern American Culture* (Cambridge, Mass., 1994); and Michael Adas, *Prophets of Rebellion: Millenarian Protest Movements against the European Colonial Order* (Chapel Hill, N.C., 1979). For fiction about future military history, see I. F. Clarke, *Voices Prophesying War: Future Wars, 1763–3749*, 2nd ed. (New York, 1992).

⁴ Reinhart Koselleck, *Futures Past: On the Semantics of Historical Time*, trans. Keith Tribe (Cambridge, Mass., 1985), 271–276. Important examples of how one can combine intellectual and political histories of the future include Michael Adas, *Machines as the Measure of Men: Science, Technology, and Ideologies of Western Dominance* (Ithaca, N.Y., 1990), chap. 4; and Stephen Kern, *The Culture of Time and Space, 1880–1918* (Cambridge, Mass., 2003). Some studies of modernization theory also examine how it worked in practice; see, e.g., Michael E. Latham, *Modernization as Ideology: American Social Science and “Nation Building” in the Kennedy Era* (Chapel Hill, N.C., 2000); Matthew Connelly, *Fatal Misconception: The Struggle to Control World Population* (Cambridge, Mass., 2008); and Nick Cullather, *The Hungry World: America’s Cold War Battle against Poverty in Asia* (Cambridge, Mass., 2010). On nuclear war specifically, see the insightful intellectual biography of Herman Kahn by Sharon Ghamari-Tabrizi, *The Worlds of Herman Kahn: The Intuitive Science of Thermonuclear War* (Cambridge, Mass., 2005); as well as David Alan Rosenberg’s earlier call for a field of research on nuclear planning and procurement, “The History of World War III, 1945–1990: A Conceptual Framework,” in Robert David Johnson, ed., *On Cultural Ground: Essays in International History* (Chicago, 1994), 197–235.

⁵ Fred Kaplan, *The Wizards of Armageddon* (Stanford, Calif., 1991), 254, and see also 9–10 on the perceived obsolescence of traditional strategic thought. As Herman Kahn argued, “the unrealized and unexperienced, but historically plausible, problems of World Wars III and IV are more valuable than the experienced problems of World Wars I and II”; Kahn, *On Thermonuclear War*, 2nd ed. (New York, 1969), 416.

batable.⁶ But these very debates, and especially the gradual acceptance of the once-controversial position that the “absolute weapon” existed solely for the purpose of deterring its use, help explain why World War III never happened.⁷ Instead, the superpower competition became a “contest in risk-taking,” although the final outcome continued to depend on how each side calculated the odds.⁸ Assessments of the Soviets’ intentions and capabilities were instrumental in justifying a U.S. program that eventually produced more than 70,000 nuclear weapons at a cost of more than \$5 trillion, all in the name of deterrence. Different calculations, or miscalculations, might have been far more costly.⁹

Whether the Cold War could have been more safely and easily resolved is a question that can never be definitively answered. But scholars can help explain the history that actually happened by focusing on how forecasters and planners considered almost every conceivable alternative. How did they hoard information, fight for high-level access, and finally come together to create what scenario planners would call the “official future”? How did Cold War policymakers come to accept a future that radically diminished their range of action, such that they could not defend civilization except by threatening to end civilization? And why did they keep investing in new and ever more promising modes of prevision when so many scenarios strained credulity and forecasts proved false?

It begins with World War II, when rival analysts began to focus on how soon the USSR would recover and be ready to challenge the United States. Moscow’s unexpectedly early detonation of an atomic bomb and its decision to back the invasion of South Korea disoriented policymakers, as America’s technological-strategic lead and distance from danger seemed to disappear. The compression of time and space intensified debate about “preventive” war, a debate that was rooted in conflicting understandings of leadership, progress, and civilization. By the end of the 1950s, a surprising consensus coalesced around the idea that the preservation of civilization was actually dependent upon the threat of “mutual assured destruction.” The Pentagon used increasingly elaborate war games to design nuclear forces that could deter any conceivable attack, and role-playing future scenarios served to socialize policymakers in how to behave during crises. When, in the 1960s, Moscow finally began to match the U.S. in both the quantity and quality of weapons and seemed poised to take the lead, Washington invested deeply in technology forecasts and computer-simulated conflict. A high-tech, mathematical approach to the future proved no less divisive than earlier, more intuitive estimates. At the same time, some analysts began to realize that forecasts—which were disappointing on their own terms yet potent weapons in bureaucratic struggles—could be used to deceive the USSR.

While the geopolitical contest between the superpowers is well-documented, this internal struggle over how to predict and plan for nuclear war was no less decisive.

⁶ John Mueller, *Atomic Obsession: Nuclear Alarmism from Hiroshima to Al Qaeda* (New York, 2010), 29–33.

⁷ Bernard Brodie opened the debate with his extremely prescient edited volume *The Absolute Weapon: Atomic Power and World Order* (New York, 1946).

⁸ The classic statement is Thomas C. Schelling, *Arms and Influence* (1966; repr., New Haven, Conn., 2008), 94; but see also Robert Jervis, *The Illogic of American Nuclear Strategy* (Ithaca, N.Y., 1984), 135–138.

⁹ Stephen I. Schwartz, ed., *Atomic Audit: The Costs and Consequences of U.S. Nuclear Weapons since 1940* (Washington, D.C., 1998).

Showing how it might have ended differently will point up a paradox, one that Marc Bloch emphasized in his unfulfilled plan to explore the problem of prevision: prophecies that change history can be self-falsifying. Predictions that today appear implausible may therefore have been the most important of all.¹⁰

In the end, different modes of prevision helped accustom policymakers to the idea that the U.S.-Soviet confrontation would continue indefinitely, and that neither side should deviate too greatly from the other's expectations. Practitioners began to find it difficult to imagine that the Cold War could ever be resolved in any way *other* than nuclear war, leaving them ill-prepared for the collapse of Soviet power.

EVEN BEFORE THE UNITED STATES entered World War II, there was a bitter struggle over who in the U.S. government would be authorized to make official predictions about international politics. While the Army, Navy, and State Department had dedicated services for collecting information, Colonel William Donovan advised President Franklin Roosevelt that they were focused on their own immediate operational needs, and not on "obtain[ing] that accurate, comprehensive, long-range information without which no strategic board can plan for the future."¹¹

Roosevelt had to personally intervene in September 1941 to help Donovan organize what would become the Office of Strategic Services (OSS) against determined opposition from the Army and Navy. They responded that same month by creating a Joint Intelligence Committee (JIC) to present a more united front. The Army's chief of war plans, General Leonard T. Gerow, wanted the committee to "estimate hostile capabilities and probable intentions." But his Navy counterpart, Admiral Richmond Turner, defined a more limited mandate for the JIC: to report "such factual evidence as might be available, but to make no estimate or prediction." The committee did not begin work until two days after Pearl Harbor, too late to even try to predict Japanese intentions.¹² And it was not until Winston Churchill proposed a Combined Intelligence Committee of top U.S. and British officials that State Department and OSS representatives finally became members of the JIC and joined the Army and Navy in making predictions about the postwar world.¹³

What became known as National Intelligence Estimates were widely regarded as the most important pronouncements of U.S. intelligence because they were the most oracular. The different agencies distilled their collective wisdom and offered terse responses to all manner of questions, from the immediate and particular to the "world political situation" ten years hence. These pronouncements were cloaked in mystery because they did not describe sources and methods. Hoarding information created institutional power, both in competition with other agencies and against those outside the "intelligence community." This contributed to the suspicion—often well-founded—that classified intelligence was merely information culled from

¹⁰ Marc Bloch, *The Historian's Craft*, trans. Peter Putnam (New York, 1953), xvi.

¹¹ "Memorandum of Establishment of Service of Strategic Information," https://www.cia.gov/library/center-for-the-study-of-intelligence/kent-csi/vol17no2/html/v17i2a05p_0029.htm.

¹² Edwin T. Layton, Roger Pineau, and John Costello, *And I Was There: Pearl Harbor and Midway—Breaking the Secrets* (New York, 1985), 167–168.

¹³ Ludwell Lee Montague, "The Origins of National Intelligence Estimating," *Studies in Intelligence* 16, no. 2 (1972): 63–70, here 63–66.

diplomatic dispatches and foreign newspapers. But consistent with Donovan’s original vision, those charged with writing estimates continued to insist on the uniquely objective and long-term nature of their work. Whereas much of intelligence analysis was directed toward evaluating the credibility of specific information, they alone would estimate the larger significance and likely consequences if such information proved to be true.¹⁴

No estimate was more closely watched, or more hotly contested, than the periodic assessment of Soviet intentions and capabilities. In January 1945, nearly seven months before World War II came to an end, intelligence analysts were already offering predictions as to when the USSR would be ready to go to war against the United States. This first JIC analysis evaluated the Soviet economy as the material base for all speculation about its future. But analysts were limited to educated guesswork based on official Soviet statistics, which were incomplete and unreliable, if not totally fabricated. Nevertheless, considering the Soviets’ obvious need for postwar reconstruction, they concluded that Stalin would avoid provoking an arms race before 1952, when the USSR would be able to compete on more equal terms.¹⁵

This first estimate identified a problem that persisted throughout the Cold War. Soviet intentions were a moving target, not least because Moscow would be responding to how the U.S. decided to act.¹⁶ Any estimate could therefore be read as implicit support or criticism of existing policy. This helps explain why the Navy’s chief of plans wanted the JIC to avoid forecasts altogether.¹⁷

Since all of the agencies represented on the JIC had to approve intelligence estimates, they tended to obscure their differences with ambiguous prose, especially when they took on the most difficult questions. Rather than challenging policy, estimates that elicited agreement from all parties represented an “official future”—analogous to an official history—that could be used to justify what they were already doing. So while national estimates were authoritative, they could also be oracular in their enigmatic language.¹⁸

As World War II drew to a close, it became increasingly difficult to achieve consensus. The State Department and OSS offered competing plans for developing independent forecasts. The JIC advised instead that the White House should appoint one person to create consensus estimates, register any dissents, and report directly to the president. Even after the Central Intelligence Group (CIG) was finally launched in 1946—the nucleus of what would become the Central Intelligence

¹⁴ Ludwell Lee Montague, *General Walter Bedell Smith as Director of Central Intelligence, October 1950–February 1953* (University Park, Pa., 1992), 161.

¹⁵ JIC 250/1, “Estimate of Soviet Postwar Capabilities and Intentions,” January 31, 1945, Declassified Documents Reference System [hereafter DDRS], Document Number: CK3100390672. On problems with Soviet statistics, see Richard E. Ericson, “The Soviet Statistical Debate: Khanin vs. TsSU,” in Henry S. Rowen and Charles Wolf, eds., *The Impoverished Superpower: Perestroika and the Soviet Military Burden* (San Francisco, 1988), 63–92; and Alain Blum and Martine Mespoulet, *L’anarchie bureaucratique: Statistique et pouvoir sous Staline* (Paris, 2003). On problems with the input-output method that analysts used, see David C. Engerman, *Know Your Enemy: The Rise and Fall of America’s Soviet Experts* (New York, 2009), 99, 107–108.

¹⁶ JIC 250/1, “Estimate of Soviet Postwar Capabilities and Intentions,” January 31, 1945.

¹⁷ On the idea of separating estimates from policy, see Lawrence Freedman, *US Intelligence and the Soviet Strategic Threat*, 2nd ed. (Princeton, N.J., 1986), 41–43.

¹⁸ Montague, “The Origins of National Intelligence Estimating,” 67.

Agency (CIA)—Army and Navy intelligence refused to even meet with its analysts, let alone help them create estimates.¹⁹

The disarray in the U.S. intelligence community came at a crucial time, when a new and inexperienced president was having to make critical decisions about the postwar world. None was more important than deciding what to do about the U.S. monopoly on atomic bombs. The JIC estimated that the Soviets would need five years to build their own A-bomb. They based this forecast on the views of the Los Alamos scientists and engineers, who expected their Soviet counterparts to work as quickly as they did.²⁰ But General Leslie Groves, head of the Manhattan Project, estimated that it would take the Soviets at least ten years to build a nuclear weapon, with twenty years more likely. His confidence derived from a highly secret program—secret even to other intelligence analysts—in which the U.S. and UK had systematically taken control of high-grade uranium sources around the world.²¹

Some intelligence agencies avoided speculating about the Soviet program altogether, frustrated by the lack of cooperation on the part of Groves and his Foreign Intelligence Section. It was difficult to assess foreign programs, after all, without even knowing how the bomb worked. General Hoyt S. Vandenberg, the director of central intelligence, complained that intelligence-sharing with the Manhattan Engineering District was “a one-way street.” Even if Groves discovered that the Soviets had atomic bombs and were prepared to use them, Secretary of War Robert P. Patterson complained, none of the other intelligence agencies would know about it. They, for their part, withheld information about the Soviet program, including intercepted communications, generally considered the most valuable kind of intelligence.²²

In this period, the U.S. was trying to persuade Moscow to accept international control of atomic energy. But Washington did not know whether the Soviets were five or twenty years away from building their own bomb. President Harry S. Truman himself complained about the general state of U.S. foreign intelligence: “I want someone to tell me what’s going on around the world! Damn it, there are people coming in from all over the place, different agencies, different interests, telling me different things.” He followed the congressional hearings on Pearl Harbor—which exposed the inter-service rivalries that had prevented the JIC from assessing Japanese intentions—and worried that the U.S. might once again become vulnerable to a surprise attack.²³

But Truman could not, or would not, force intelligence agencies to consolidate collection and analysis. In August 1946, Vandenberg demanded that Groves’s

¹⁹ *Ibid.*, 67–69.

²⁰ JIC 250/4, “Air Capabilities and Intentions of the U.S.S.R. in the Post-War Period,” October 19, 1945, U.S. National Archives and Records Administration, National Archives at College Park, Md. [hereafter NARA II], Record Group [hereafter RG] 165, ABC 336 Russia (August 22, 1943), Sec. 1-A, Box 250.

²¹ Charles A. Ziegler, “Intelligence Assessments of Soviet Atomic Capability, 1945–1949: Myths, Monopolies, and Maskirovka,” *Intelligence and National Security* 12, no. 4 (1997): 1–24, here 10–11, 22.

²² “Minutes of the Sixth Meeting of the National Intelligence Authority,” August 21, 1946, in *Foreign Relations of the United States* [hereafter *FRUS*], 1945–1950: *Emergence of the Intelligence Establishment* (Washington, D.C., 1996), 395–400, here 397, emphasis in the original; A. C. Peterson memorandum for Col. Ennis, November 20, 1947, Digital National Security Archive, nsarchive.chadwyck.com [hereafter DNSA], Item Number: HN00237.

²³ Mark Riebling, *Wedge: The Secret War between the FBI and CIA* (New York, 1994), 70.

analysts be transferred to the CIG before they were absorbed by the new Atomic Energy Commission (AEC). In a contentious meeting, it was revealed that there were "only a few people here and abroad" tracking foreign efforts and helping to identify new sources of uranium.²⁴ Truman himself told Undersecretary of State Dean Acheson to keep them where they were.²⁵ The CIG's Office of Reports and Estimates therefore had to admit that it had only "meager" information when, in October 1946, it offered its first forecast: "It is *probable* that the capability of the U.S.S.R. to develop weapons based on atomic energy will be limited to the *possible* development of an atomic bomb to the stage of production between 1950 and 1953."²⁶

It was not until 1947 that some of the experts and files from the Manhattan Engineering District were transferred to the new CIA.²⁷ Whereas in 1945 analysts had offered crude conjectures about whether the USSR could possibly put together "100 first-rate and 1,000 second-rate men," now they based their predictions on something more tangible: the quality of Soviet uranium ore.²⁸ The Army and Navy judged in July 1947 that while it was possible that the Soviets would have the bomb in three years, five was more probable. Five months later, they joined with the CIA and the AEC in another assessment that specified the same minimum period, three years, and offered the same best estimate: five years.²⁹

The CIA, like military intelligence, based its projection on the U.S. experience. But it still had relatively few "first-rate" men of its own with direct knowledge of either the USSR or atomic weapons. The secretary of the National Security Council (NSC), Sidney Souers, had had to plead with David Lilienthal, the head of the AEC, to contribute to a more coordinated effort to monitor the Soviet program. Yet Army and Navy intelligence, for their part, still refused to share any of what they gathered from intercepted Soviet communications.³⁰

Even while trying, and failing, to connect the dots regarding the Soviet atomic program, intelligence analysts grew increasingly alarmed at the prospect of a nuclear-armed USSR. They now gave less attention to the state of the Soviet economy, instead focusing on Communist ideology. The assumption that Moscow believed that conflict with capitalism was inevitable became the foundation for speculation about Soviet intentions.³¹ In 1947, the JIC described how the Soviets would be able to unleash a surprise nuclear attack on U.S. cities within five to ten years, flying across

²⁴ "Minutes of the Sixth Meeting of the National Intelligence Authority," August 21, 1946, 396.

²⁵ Hoyt S. Vandenberg memorandum for National Intelligence Authority, August 13, 1946, in *FRUS, 1945-1950*, 394-395.

²⁶ ORE 3/1, "Soviet Capabilities for the Development and Production of Certain Types of Weapons and Equipment," October 31, 1946, DDRS, Document Number: CK3100533980, emphasis added.

²⁷ L. R. Groves to AEC, November 21, 1946, in *FRUS, 1945-1950*, 458-460; J. S. Earman, "Coordination of Intelligence Activities Related to Foreign Atomic Energy Developments and Potentialities," April 18, 1947, *ibid.*, 510-511.

²⁸ JIS 80/15, "Soviet Capabilities," November 9, 1945, DDRS, Document Number: CK3100346219.

²⁹ JCS 1764/1, "Guidance on Military Aspects of United States Policy," July 14, 1947, DNSA, Item Number: NP00044; "Interdepartmental Intelligence Study," December 15, 1947, in *FRUS, 1947*, vol. 1: *General; The United Nations*, 904-905.

³⁰ "Atomic Energy Intelligence," July 1, 1947, DNSA, Item Number: NP00043; A. C. Peterson, "Intelligence Liaison," November 20, 1947, *ibid.*, Item Number: HN00237.

³¹ JCS 1764/1, "Guidance on Military Aspects of United States Policy," July 14, 1947, DNSA, Item Number: NP00044; JGPC 314/3, "Estimate of the Possible Development in the World Political Situation up to 1957," December 11, 1947, DDRS, Document Number: CK3100346257.

the Arctic Circle and firing missiles from submarines. The Red Army would overrun continental Europe, Great Britain, the Middle East, and nationalist China as far south as the Yangtze River. After Soviet airborne troops seized bases in Alaska and northern Europe, they might even conquer the continental United States.³²

All of this was still imagined as a future scenario, with time enough for the U.S. to build up its arsenal of atomic bombs and rally its allies. CIA analysts in this period tended to downplay the near-term risk of war.³³ But even they worried about long-term trends: if Moscow did not gain enough strength to challenge U.S. vital interests, it might eventually conclude that time was working against the USSR, an analysis that also implied that a showdown was inevitable.³⁴ All agreed that Moscow would not take on the U.S. before testing its own atomic bombs. In 1948, every intelligence agency except the Air Force agreed that it was not “remotely possible” that Moscow would achieve this before mid-1950, and 1953 was more probable. That remained the consensus right up until August 1949, when Moscow proved them wrong.³⁵

Most of the raw data that analysts used to assess the Soviet program remains classified, and new releases may put their efforts in a different light. But after seeing how the oracles worked, Lilienthal took a dim view:

The thing that rather chills one’s blood is to observe what is nothing less than lack of integrity in the way the intelligence agencies deal with the meager stuff they have. It is chiefly a matter of reasoning from our own American experience, guessing from that how much longer it will take Russia using our methods and based upon our own problems of achieving weapons. But when this is put into a report, the reader, e.g., Congressional committee, is given the impression, and deliberately, that behind the estimates lies specific knowledge, knowledge so important and delicate that its nature and sources cannot be disclosed or hinted at.³⁶

All of this helps to explain what the nuclear physicist Isidor Rabi called “a peculiar kind of psychology” in U.S. forecasts. “If you had asked anybody in 1944 or 1945 when would the Russians have it, it would have been 5 years. But every year that went by you kept on saying 5 years.”³⁷ This psychology is not so peculiar when we consider the analyst’s predicament. When information is meager, predicting that

³² JIC 397/M, “Soviet Capabilities and Critical U.S. Overseas Areas 1952–1957,” July 14, 1947, NARA II, RG 165, ABC USSR (March 2, 1946), Sec. 1-E, Box 381.

³³ Donald P. Steury, “Origins of CIA’s Analysis of the Soviet Union,” in Gerald K. Haines and Robert E. Leggett, eds., *Watching the Bear: Essays on CIA’s Analysis of the Soviet Union* (Langley, Va., 2003), 1–16, <https://www.cia.gov/library/center-for-the-study-of-intelligence/csi-publications/books-and-monographs/watching-the-bear-essays-on-cias-analysis-of-the-soviet-union/article01.html>.

³⁴ ORE 60-48, “Threats to the Security of the United States,” September 28, 1948, CIA FOIA Reading Room, www.foia.cia.gov [hereafter CIA FOIA], Document Number: 0000258368.

³⁵ “Estimate of the Status of the Russian Atomic Energy Project,” July 1, 1948, NARA II, RG 330, SOD Correspondence Control Section Numerical File, Folder (CD 11-1-2), Box 61; Ziegler, “Intelligence Assessments,” 13–14. On the Air Force, see John Prados, *The Soviet Estimate: U.S. Intelligence Analysis and Russian Military Strength* (Princeton, N.J., 1986), 18–19.

³⁶ David E. Lilienthal, *The Journals of David E. Lilienthal*, vol. 2: *The Atomic Energy Years, 1945–1950* (New York, 1964), 376. It now appears that since the Western intelligence services had no agents inside the Soviet atomic program, they depended on German prisoners of war and scientists who had labored in uranium mines and atomic research facilities before defecting to the West. On the basis of their testimony, intelligence agencies continued to assume that a shortage of high-grade uranium was hindering the Soviet program. But the Soviets had discovered reserves inside Germany. Richard J. Aldrich, *The Hidden Hand: Britain, America and Cold War Secret Intelligence* (London, 2001), 224–229; Michael S. Goodman, *Spying on the Nuclear Bear: Anglo-American Intelligence and the Soviet Bomb* (Stanford, Calif., 2007), 23–32.

³⁷ U.S. Atomic Energy Commission, *In the Matter of J. Robert Oppenheimer: Transcript of Hearing*

something will happen later rather than sooner is a safer bet. A false warning of a near-term development is quickly debunked; if repeated, it will require further corrections, quickly diminishing an analyst’s credibility. The chances of guessing wrong—and paying a price—are greater when information is compartmentalized among competing agencies. Overestimating the time expected, on the other hand, requires correction only once. There is also safety in numbers, since individual analysts are less likely to be blamed if they join a consensus estimate.

Of course, after the Soviet A-bomb test, intelligence analysts had incentives to err on the side of caution so as not to seem complacent. All of the agencies began to focus on predicting the “moment of maximum danger,” when Moscow might consider the correlation of forces to have turned in its favor. And now that Moscow could deliver devastating blows from a distance, the compression of strategic space began to change perceptions of time. Unlike the atomic bomb estimate, the “moment of maximum danger” did not recede toward the horizon, at least not right away. Instead, it began to march forward toward the present.³⁸

Overseas bases now seemed vulnerable to a surprise attack, which would greatly complicate plans for retaking Western Europe and the Middle East if they were overrun by the Red Army. And if the Soviets succeeded in delivering two hundred atomic bombs against the U.S.—a figure at the high end of the projected range for mid-1954—it might bring the American economy to its knees, enabling the USSR to fight on more equal terms in a long struggle. According to a 1950 JIC estimate, an attack on this scale might knock the U.S. out of the war.³⁹ The famed April 1950 National Security Council brief for a massive military buildup, NSC-68, reproduced this worst-case scenario. It also specified two hundred atomic bombs as the consensus estimate for mid-1954, while warning that even this figure might be “dangerously misleading” if the CIA had once again overlooked Soviet production facilities.⁴⁰

U.S. officials had long predicted that the United States’ loss of the A-bomb monopoly would embolden the Communists. But there was no warning of the North Korean attack in June 1950.⁴¹ Four months later, the CIA judged that Communist China would not send in its own forces unless the USSR had decided to initiate general war.⁴² When Chinese troops began streaming across the Yalu River—with Soviet jet fighters flying overhead—Acheson sounded a note of caution during a meeting of the NSC: “Time is shorter than we thought. We used to think we could

before *Personnel Security Board and Texts of Principal Documents and Letters* (Cambridge, Mass., 1970), 467.

³⁸ For other examples of how analysts overcompensate when trying to avoid the same mistake, rather than reexamining their methods, see Jennifer S. Lerner and Philip E. Tetlock, “Accounting for the Effects of Accountability,” *Psychological Bulletin* 125, no. 2 (1999): 255–275.

³⁹ JIC 502, “Implications of Soviet Possession of Atomic Weapons,” January 20, 1950, NARA II, RG 218, Central Decimal File, CCS 471.6 USSR (11-8-49), Box 88; see also Kaplan, *The Wizards of Armageddon*, 93–94.

⁴⁰ NSC-68, “A Report to the National Security Council,” April 14, 1950, in *FRUS, 1950*, vol. 1: *National Security Affairs; Foreign Economic Policy*, 235–296, here 251–252.

⁴¹ ORE 18-50, “Current Capabilities of the Northern Korean Regime,” June 18, 1950, CIA FOIA, Document Number: 0000258828.

⁴² “Memorandum for the President,” October 12, 1950, CIA FOIA, Document Number: 0000121494.

take our time up to 1952, but if we were right in that, the Russians wouldn't be taking such terrible risks as they are now."⁴³

The NSC approved a rearmament program that would triple the defense budget. But the U.S. still needed at least a year and a half to get ready, and officials feared that the buildup would provoke Moscow to strike first. For Vandenberg, now Air Force chief of staff, the "point of greatest danger" would not arrive in five years, or four years, or even two years. It was just eight months away. One of those present, Assistant Secretary of State for Far Eastern Affairs Dean Rusk, concluded that Vandenberg wanted "to precipitate hostilities at an early date in order to prevent further USSR atomic buildup." The U.S. commander in Korea, Douglas MacArthur, repeatedly pressed for the use of atomic bombs against China.⁴⁴

Thus, at the end of 1950, some U.S. policymakers measured the prospects for general war with the USSR not in years, or even months, but—if people such as Vandenberg and MacArthur had their way—in the number of days and hours it would take the Strategic Air Command (SAC) to prepare an attack. The Soviets could themselves strike first. Since a radar network and all-weather interceptors capable of covering the approaches to North America were still in the planning stages, they needed only to overcome volunteer Canadian and American plane-spotters to achieve complete surprise.⁴⁵ Those who still looked to National Intelligence Estimates for guidance in November 1950 were told that the question of when the Soviets might strike was "not now determinable by Intelligence." Three weeks later, another estimate concluded that Moscow might already have decided to use the Korean conflict to precipitate a global war.⁴⁶ The official future was no longer the future; it was now, and the oracles admitted that they could see no further.

HOW DID THE DISAPPEARANCE OF the future as a measurable object affect U.S. policymakers' perceptions of time and readiness to take risks? In the aftermath of the First World War, the French psychiatrist Eugène Minkowski posited that the way people "live the future" can be divided between activity and expectation. One can drive toward the future, with a sense of mastery over one's surroundings and in control of what will happen, or one can wait for events and pull back from a future that feels overwhelming. But Minkowski had one patient who awoke each day with no memory of the day before and no expectation of living to see the morrow. He was always convinced that he faced execution in just a few hours. Minkowski attributed

⁴³ Acheson quoted in Marc Trachtenberg, *History and Strategy* (Princeton, N.J., 1991), 114; Xiaoming Zhang, *Red Wings over the Yalu: China, the Soviet Union, and the Air War in Korea* (College Station, Tex., 2004), chap. 8. Acheson may have been referring to the most recent intelligence estimate, which suggested that while there was already a danger that the USSR would start a general war, it would not reach the peak of its relative power for another two years; "The Danger of War with the USSR," September 25, 1950, DDRS, Document Number: CK3100327148.

⁴⁴ Trachtenberg, *History and Strategy*, 123; Bruce Cumings, "Nuclear Threats against North Korea: Consequences of the 'Forgotten' War," *Asia-Pacific Journal: Japan Focus*, www.japanfocus.org/-Bruce-Cumings/2055.

⁴⁵ Kenneth Schaffel, *The Emerging Shield: The Air Force and the Evolution of Continental Air Defense, 1945–1960* (Washington, D.C., 1991), 98–102, 119–122, 156–157.

⁴⁶ "National Intelligence Estimate: Soviet Capabilities and Intentions," NIE 3, November 15, 1950, CIA FOIA, Document Number: 0000269240; NIE 11, "Soviet Intentions in the Current Situation," December 5, 1950, *ibid.*, Document Number: 0000269236.

this persistent, paralyzing condition to a kind of blockage that prevented his patient from drawing on memories to find his place in time. In fixating on imminent doom, the rational part of his brain gave his otherwise meaningless existence some sense of movement.⁴⁷

For Stephen Kern, Minkowski’s patient serves as a metaphor for how whole nations approached World War I, or sensed that it was approaching them.⁴⁸ It is an even more apt description of how people first experienced the prospect of World War III. After all, in the First World War it was mainly soldiers in the trenches, living under the constant threat of artillery bombardment, who had to endure every day with the expectation of imminent doom. In 1951, newspapers were reporting that Soviet aircraft might suddenly arrive over twenty American cities and start dropping atomic bombs.⁴⁹ Government films instructed young and old that at any moment they might have to “duck and cover.” And while the artillery was distant, and few Americans actually heard it, the media reported ever larger nuclear detonations in the Nevada desert, the South Pacific, and Central Asia, a rolling barrage that seemed to be advancing across the world.

Many senior U.S. officials refused to believe that accepting a MAD world—a world of “mutual assured destruction”—was the only sane option. They favored the more “active” mode of approaching the future. The secretary of the Navy and the commander of the Air War College spoke out in favor of attacking the USSR.⁵⁰ Many others made the same argument behind closed doors.⁵¹ Truman himself, frustrated when the Korean War dragged on, imagined in his diary how he might issue an ultimatum threatening to destroy all of the largest Soviet cities.⁵²

What made the situation maddening for top U.S. officials was how difficult it seemed to “show leadership.” After all, the mark of a leader is to see the future more clearly than anyone else and to point other people to a safer place. In this case, the USSR appeared to pose an implacable and growing threat. If more officials did not advocate war in 1950–1952, it was because they thought the USSR might ultimately prevail in such a struggle. But to build up U.S. military strength was to risk provoking a Soviet attack.⁵³

One might suspect that those who benefited from the growth of a national security state exaggerated the Soviet threat. This is true of aviation industry lobbyists and their allies in Congress, and of many more people after the Korean War buildup. Yet the internal deliberations of top decision-makers show that there was a very real sense of powerlessness about the prospect of war in 1950–1952. There is scant ev-

⁴⁷ Eugène Minkowski, *Lived Time: Phenomenological and Psychopathological Studies*, trans. Nancy Metzel (Evanston, Ill., 1970), 83–91, 186–188. For an insightful analysis that inspired the discussion that follows, see Kern, *The Culture of Time and Space*, 89–90.

⁴⁸ Kern, *The Culture of Time and Space*, 282–283.

⁴⁹ “Soviets Could Atom-Bomb 20 Cities,” *New York Times*, October 10, 1951, 8.

⁵⁰ “Matthews Favors U.S. War for Peace,” *New York Times*, August 26, 1950, 1; Austin Stevens, “General Removed over War Speech,” *New York Times*, September 2, 1950, 1.

⁵¹ Trachtenberg, *History and Strategy*, 122–124; Russell D. Buhite and Wm. Christopher Hamel, “War for Peace: The Question of an American Preventive War against the Soviet Union, 1945–1955,” *Diplomatic History* 14, no. 3 (1990): 367–384, here 372–380.

⁵² Barton J. Bernstein, “New Light on the Korean War,” *International History Review* 3, no. 2 (1981): 256–277, here 271–272.

⁵³ Trachtenberg provides the best account of the preventive war debate in this period; *History and Strategy*, 112–132.

idence that the most pessimistic intelligence analysts disbelieved their own estimates. The Air Force was so unsettled that it ordered investigators to look into UFO sightings and determine whether they could be covert Soviet overflights.⁵⁴

If some Americans believed that aliens had come to earth—or even hoped that extraterrestrials would save the world from nuclear war, as in the classic 1951 film *The Day the Earth Stood Still*—it may have been because they fully shared in the anxiety that time had run out. In 1950, a Gallup poll found that a majority of Americans believed that the U.S. was “now actually in World War III.”⁵⁵ Many writers were reminded of the Fall of Rome.⁵⁶ The prospect of a nuclear Armageddon also inspired a host of preachers to deliver apocalyptic sermons. But in contrast to earlier generations, the congregants listening to them could not be confident that the end of the world constituted divine judgment. The very concept of the future had become meaningless, as Perry Miller pointed out, now that mere mortals could end it all.⁵⁷

The most famous image of how time had run out, and then stood still, was the “doomsday clock” on the cover of the *Bulletin of the Atomic Scientists*. In 1953, after the U.S. and USSR tested hydrogen bombs, the editor warned that just two minutes remained before “atomic explosions will strike midnight for Western Civilization.” The clock would remain frozen there for seven long years.⁵⁸

The danger was appalling in itself, but learning to live with it was deeply troubling for the self-image of Americans in the 1950s. As Koselleck pointed out, it was the notion that one could “make history” that distinguished modernity from the dark ages.⁵⁹ Rather than the eve of an apocalypse already revealed in scripture, the future was something that people were supposed to plan and carry out over time, creating progressive change. Until the Korean War, Truman would often invoke the future in these terms in his most important addresses. But in his 1952 State of the Union speech, he did not use the word “future” even once. A year later, in his last message to Congress, he returned to the subject and dwelled on it:

The war of the future would be one in which man could extinguish millions of lives at one blow, demolish the great cities of the world, wipe out the cultural achievements of the past—and destroy the very structure of a civilization that has been slowly and painfully built up through hundreds of generations. Such a war is not a possible policy for rational men.⁶⁰

Truman spoke directly to Stalin, urging him to realize that the nature of war had changed. But he also observed that the Soviets “seem to think and plan in terms of generations. And there is, therefore, no easy, short-run way to make them see that

⁵⁴ L. Aronsen, “Seeing Red: U.S. Air Force Assessments of the Soviet Union, 1945–1949,” *Intelligence and National Security* 16, no. 2 (2001): 103–132, here 120–122, 127.

⁵⁵ Trachtenberg, *History and Strategy*, 109.

⁵⁶ Bertrand Russell, “No Funk, No Frivolity, No Fanaticism,” *New York Times*, May 6, 1951, 7, 22; and see also Raymond Fosdick, “Acts of Faith for a Time of Peril,” *New York Times*, April 8, 1951, 9, 173.

⁵⁷ Boyer, *When Time Shall Be No More*, 120–121; Perry Miller, “The End of the World,” in Miller, *Errand into the Wilderness* (New York, 1956), 217–239, here 217.

⁵⁸ Eugene Rabinowitch, “The Narrowing Way,” *Bulletin of the Atomic Scientists* 9, no. 8 (October 1953): 294–295, 298, here 294.

⁵⁹ Koselleck, *Futures Past*, 199–206.

⁶⁰ Harry S. Truman, “Annual Message to the Congress on the State of the Union,” January 7, 1953, *The American Presidency Project*, <http://www.presidency.ucsb.edu/ws/index.php?pid=14379>.

their plans cannot prevail.” Instead, the U.S. would have to outlast them, and the only thing certain about the future was that there would be more sacrifices.⁶¹

When Dwight Eisenhower became president, the U.S. was building up an overwhelming military advantage. Ready to jet bombers with thermonuclear weapons to use against an enemy that still depended on prop planes flying one-way missions, the Strategic Air Command promised that it could reduce the USSR to “a smoking radiating ruin at the end of two hours.”⁶² Eisenhower quietly signaled that he might use nuclear weapons in Korea.⁶³ But the 1953 armistice did not solve the long-term problem. Eisenhower worried that an unending competition with the USSR would bankrupt the country or turn it into a garrison state.⁶⁴

Because the Communist ideology of inevitable conflict was thought to be unchanging, intelligence analysts once again began to focus on when the Soviet economy might grow enough to support such a challenge. In 1953, influential new studies suggested that it could continue growing at more than double the rate of the American economy through the end of the decade.⁶⁵ It was expected that the Soviets would build 300 atomic bombs within two years, and 550 in four years.⁶⁶ Knowing that U.S. cities were vulnerable made the commitment to defending Western Europe increasingly doubtful, stoking fears that NATO might start to unravel.⁶⁷

In a meeting in the White House solarium, Secretary of State John Foster Dulles advised that the Soviet threat to the West was “the most terrible and fundamental in the latter’s 1000 years of domination,” likening it to the Muslim conquests.⁶⁸ Eisenhower decided that the question of whether to confront the Soviets even at the risk of war had to be answered once and for all. In what became known as the Solarium Project, he had three teams of officials and outside experts develop different long-range strategies. One team stipulated that “time will be working against us to the point where the Soviet threat will soon become unbearable and the survival of the United States problematical.” They laid out a five-year plan in which the U.S. would defeat China in war and destroy some of its industrial centers, presumably through atomic bombardment. After twelve years, the USSR would be stripped of its satellites, forced to withdraw troops within its own borders, and compelled to stand aside as the Communist government in China was overthrown.⁶⁹

⁶¹ Ibid.

⁶² David Alan Rosenberg, “‘A Smoking Radiating Ruin at the End of Two Hours’: Documents on American Plans for Nuclear War with the Soviet Union, 1954–1955,” *International Security* 6, no. 3 (Winter 1981/1982): 3–38, here 24–25.

⁶³ Richard K. Betts, *Nuclear Blackmail and Nuclear Balance* (Washington, D.C., 1987), 37–47.

⁶⁴ Robert R. Bowie and Richard H. Immerman, *Waging Peace: How Eisenhower Shaped an Enduring Cold War Strategy* (New York, 1998), 49–51.

⁶⁵ Engerman, *Know Your Enemy*, 113.

⁶⁶ George F. Lemmer, “The Air Force and Strategic Deterrence, 1951–1960,” December 1967, <https://www.hsdl.org/?view&did=485706>.

⁶⁷ Marc Trachtenberg, *A Constructed Peace: The Making of the European Settlement, 1945–1963* (Princeton, N.J., 1999), 179–193.

⁶⁸ “Solarium Project: Principal Points Made by JFD,” May 8, 1953, DDORS, Document Number: CK3100116401. Our thanks to Richard Immerman for helping us locate this document.

⁶⁹ “Project Solarium: Summary of Basic Concepts of Task Forces,” July 30, 1953, NARA II, NSC Meeting Files, No. 157, Tab D, NSC Records; “Summaries Prepared by the NSC Staff of Project Solarium Presentations and Written Reports,” in *FRUS, 1952–1954*, vol. 2, pt. 1: *National Security Affairs*, 399–434, here 430–431.

Eisenhower listened to these plans during an all-day meeting of the NSC and the Joint Chiefs of Staff. That is when he finally buried the idea of provoking World War III. “What would we do with Russia, if we should win in a global war?” He concluded that “the only thing worse than losing a global war [is] winning one.”⁷⁰ As he later explained to senior military officers, “Here would be a great area from the Elbe to Vladivostok and down through Southeast Asia torn up and destroyed without government, without its communications, just an area of starvation and disaster. I ask you what would the civilized world do about it?”⁷¹

After rejecting preventive war, Eisenhower began to “manage expectations.” This required him to challenge certain assumptions, especially intelligence estimates suggesting that time was on the side of the Soviet Union. It also meant depending on outside experts with different credentials and prestige to lend authority to alternative views. The Rockefeller Foundation was asked to begin a large-scale project to improve Soviet economic forecasts.⁷² Eisenhower also supported the CIA’s new Office of National Estimates (ONE) in contesting the most pessimistic military forecasts. It was overseen by a board, which was to act as a kind of Supreme Court and hand down authoritative rulings. Four of the eight members were professors, and five had doctorates in history.⁷³ Yale historian Sherman Kent, who was director of ONE from 1952 until 1967, institutionalized the practice of relegating dissents to footnotes so that the official forecast could be clear and unambiguous. Eisenhower himself sometimes intervened to demand consensus.⁷⁴ And in 1953, the military was forced to give the CIA access to information about U.S. plans and capabilities. Until then, it had had to assess the Soviet threat without any information about how the U.S. planned to defend itself.⁷⁵

In 1955, ONE staff took part in a comprehensive study for the NSC that determined that nuclear war three years hence would bring about total economic collapse. Two-thirds of Americans would need medical attention. Even so, the USSR would suffer three times as much damage as the U.S.⁷⁶ Eisenhower expressed doubt “that

⁷⁰ “Minutes of the 155th Meeting of the National Security Council,” July 16, 1953, in *FRUS, 1952–1954*, vol. 2, pt. 1: 394–398, here 397.

⁷¹ Dwight D. Eisenhower, “Statement to Senior Military Officers,” June 19, 1954, Dwight D. Eisenhower Library, Abilene, Kans., James Hagerty Diary, James Hagerty Papers, Box 1. This account has emphasized the role of senior officials in deciding against preventive war despite pessimistic long-range forecasts regarding the Cold War competition. Others might give greater emphasis to anti-nuclear protest movements. But the crucial period of 1950–1953 was a low point for this movement in the U.S. as well as other countries; see Lawrence S. Wittner, *The Struggle against the Bomb*, vol. 1: *One World or None: A History of the World Nuclear Disarmament Movement through 1953* (Stanford, Calif., 1993), 310–329.

⁷² John W. Kestner, “Through the Looking Glass: American Perceptions of the Soviet Economy, 1941–1964” (Ph.D. diss., University of Wisconsin–Madison, 1999); and see also Engerman, *Know Your Enemy*, 117–118. On Eisenhower’s larger effort to stabilize the Cold War competition and avoid open conflict, see Bowie and Immerman, *Waging Peace*, and Trachtenberg, *A Constructed Peace*.

⁷³ Montague, *General Walter Bedell Smith*, 131–136.

⁷⁴ Sherman Kent, unpublished memoir draft, n.d., Yale University Manuscripts and Archives, New Haven, Conn., Sherman Kent Papers, Group 854, Series IV, Box 53, Memoirs, Folder 26, Series II, Tape No. 11, 9, 16–17.

⁷⁵ “The ‘Net Estimates’ Problem,” August 25, 1954, in *FRUS, 1950–1955*, 523–530.

⁷⁶ “Diary Entry by the President,” January 23, 1956, in *FRUS, 1955–1957*, vol. 19: *National Security Policy*, 187–188.

the human mind [is] capable of meeting and dealing with the kind of problems that would be created by such an exchange of blows.”⁷⁷

Eisenhower privately mused about whether a “duty to future generations [would] not require us to *initiate* war at the most propitious moment that we could designate.”⁷⁸ But in public he stigmatized talk of preventive war as lunacy, beginning with his 1953 “Atoms for Peace” address to the UN General Assembly.⁷⁹ He instructed senior officers to stop making public statements that could be construed as favoring war. In his address to the 1956 Republican National Convention upon accepting the nomination for a second presidential term, he said, “With [nuclear] weapons, war has become, not just tragic, but preposterous.” He also painted “a brave and new and shining world,” the kind of future made famous in the 1950s, which emphasized science and technology and labor-saving devices.⁸⁰ This atomic-powered idyll now seems naïve, but it provided a way to overcome a paralyzing and potentially dangerous fixation on World War III.

As much as Eisenhower privately brooded about nuclear war, he strove to project optimism.⁸¹ It was difficult when critics argued that his complacency condemned their children to live under Communism. In 1956, what turned out to be grossly overstated projections of the Soviet bomber force were leaked to the press, and the Air Force succeeded in winning new appropriations. In 1957, ONE began to raise questions about these estimates, favoring CIA research.⁸² At the same time, it scrutinized new Air Force claims about a projected “Missile Gap,” producing sixteen different estimates concerning the development and deployment of Soviet intercontinental ballistic missiles (ICBMs) between 1957 and 1961.⁸³ In both cases, Eisenhower tried to calm the public, but he could not stop the drive for a rapid buildup.⁸⁴ As it turns out, whereas the Air Force had predicted that the Soviets could have a thousand ICBMs by 1961, they built only eleven. Not only were the analysts not held accountable for these errors, they were actually promoted.⁸⁵

BETWEEN 1956 AND 1961, THE NUMBER of nuclear weapons in the U.S. arsenal increased from 4,618 to 24,111. Those designed to be dropped from B-52s were as much as a thousand times more powerful than the one that destroyed Hiroshima. Minuteman missiles could be launched in thirty seconds and could hit the other side

⁷⁷ “The Repetition of the Net Evaluation Subcommittee Briefing,” January 23, 1956, *ibid.*, 188–191.

⁷⁸ “Memorandum by the President to the Secretary of State,” September 8, 1953, in *FRUS, 1952–1954*, vol. 2, pt. 1: 460–463, here 461, emphasis in the original.

⁷⁹ Dwight D. Eisenhower, “Address before the General Assembly of the United Nations on Peaceful Uses of Atomic Energy,” December 8, 1953, *The American Presidency Project*, www.presidency.ucsb.edu/ws/index.php?pid=9774.

⁸⁰ Eisenhower, “Statement to Senior Military Officers,” June 19, 1954; Dwight D. Eisenhower, “Address at the Cow Palace on Accepting the Nomination of the Republican National Convention,” August 23, 1956, *The American Presidency Project*, www.presidency.ucsb.edu/ws/index.php?pid=10583.

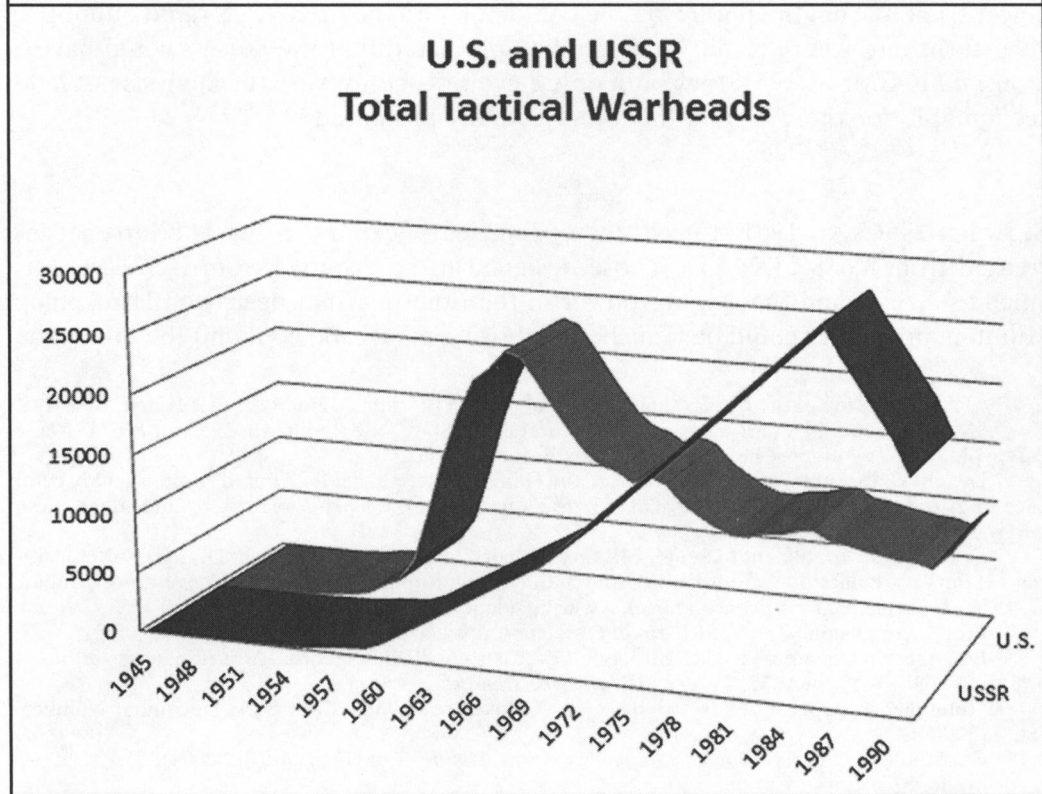
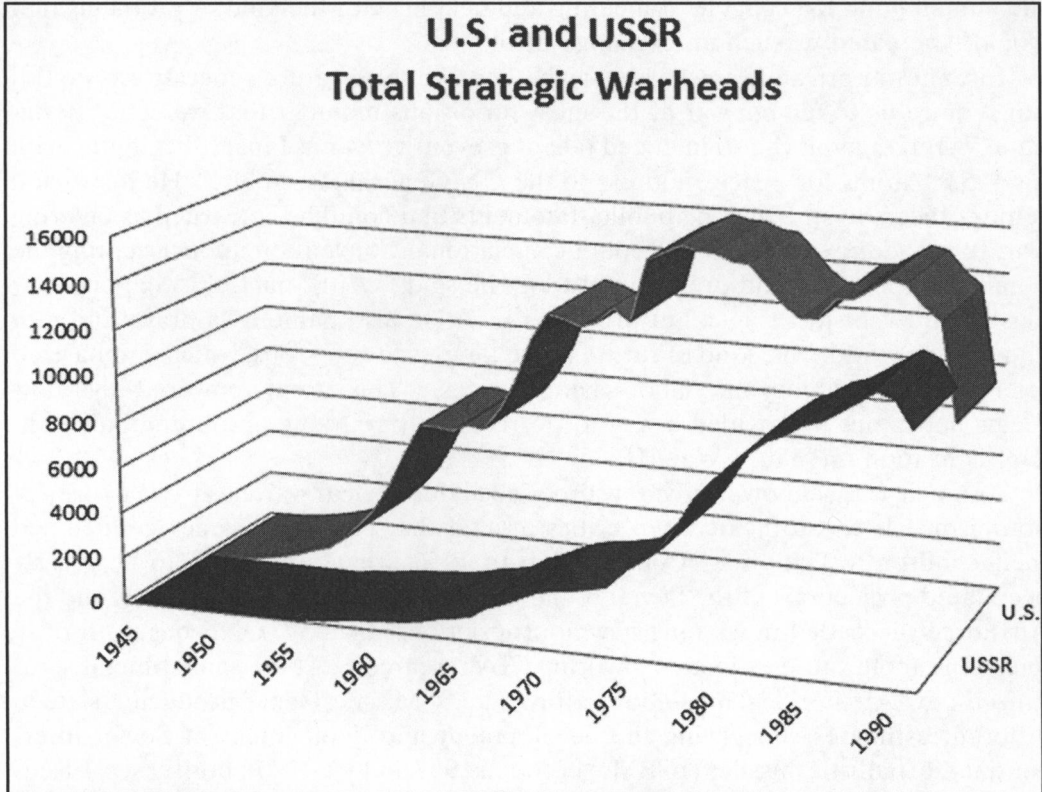
⁸¹ Fred I. Greenstein, *The Hidden-Hand Presidency: Eisenhower as Leader* (New York, 1982), 37–38.

⁸² Les Aspin, “Debate over U.S. Strategic Forecasts: A Mixed Record,” *Strategic Review* 8, no. 3 (1980): 29–43, 57–59, here 32; Prados, *The Soviet Estimate*, 46–49.

⁸³ “Intelligence Aspects of the ‘Missile Gap,’” November 1968, CIA FOIA, Document Number: TSC 11848/68.

⁸⁴ Christopher A. Preble, *John F. Kennedy and the Missile Gap* (DeKalb, Ill., 2004), 91.

⁸⁵ Prados, *The Soviet Estimate*, 50.



of the world in thirty minutes.⁸⁶ The stakes of mismanaging a crisis had become ever greater, fateful decisions would have to be made under unprecedented time pressures, and if it came to war, the speed and violence of a nuclear attack seemed beyond human comprehension or control. Historical experience—even combat experience—appeared less and less relevant.

Senior officers and civilian officials instead created increasingly elaborate war games set five and ten years in the future. They tended to show that bombers, the mainstay of the U.S. deterrent, would be destroyed on the ground by ICBMs.⁸⁷ In 1957, the head of the Strategic Air Command, Curtis LeMay, complained that war games proved only that SAC needed more bombers, aerial refueling tankers, and dispersed airfields: "Every thoughtful analysis of the future that I have seen confirmed my conviction. Only if we have such a force can we be reasonably assured that war will be avoided on our terms in the critical 1960–65 time period."⁸⁸ Thus, the predicted "moment of maximum danger" kept receding toward the horizon, but future scenarios supported weapons acquisitions here and now.

Realizing the stakes in these nuclear combat simulations, SAC fought hard to take control of them. In 1960, it won the assignment for developing and testing a "Single Integrated Operational Plan," or SIOP, for using nuclear forces in a war with the USSR. Arleigh Burke, the chief of naval operations, complained that SAC's approach had prevailed because it was "pseudo mathematical" and the Navy had nothing to offer in its place. SAC headquarters in Omaha also had the computers needed to crunch the numbers.⁸⁹

The commander in chief of the Pacific Fleet, Admiral Harry Felt, went to Omaha and found that LeMay's successor, Tommy Power, was "playing the game quite cleverly," promising that each service would play a role. He could then war-game the SIOP in a way that would justify a preeminent role for the Air Force.⁹⁰ Admiral Robert Dennison, commander of the Atlantic Fleet, confirmed that SAC was rigging the game to make U.S. aircraft carriers and ballistic missile-firing submarines seem more vulnerable. It was a "transparent campaign" to obtain more B-52s and B-58s and to push for development of the B-70.⁹¹ Felt judged it imperative to prove that carriers could play a role in a nuclear war, and not just in smaller conflicts, since "the money contest is big league," and "We must stay in [the] majors."⁹²

Major-league military appropriations would require the Army, Navy, and Air Force to counter seemingly scientific and mathematical approaches to future wars

⁸⁶ "Archive of Nuclear Data," Natural Resources Defense Council, <http://www.nrdc.org/nuclear/nudb/datainx.asp>. On the buildup, see also David Alan Rosenberg, "The Origins of Overkill: Nuclear Weapons and American Strategy, 1945–1960," *International Security* 7, no. 4 (1983): 3–71, here 63, 66; Rosenberg, "The History of World War III," 205. On reaction times, see Eugene M. Zuckert to President Kennedy, October 26, 1962, DNSA, Item Number: NH00754.

⁸⁷ See, e.g., "Report on the Character and Probable Results of General War," December 30, 1957, DNSA, Document Number: NH00369.

⁸⁸ "War Game of Strategic Air Command Forces Reflected in P-59 Series Programming Documents," July 5, 1957, DNSA, Document Number: NH00364.

⁸⁹ Arleigh Burke memorandum for Robert L. Dennison, Harry D. Felt, and Levering Smith, November 22, 1960, DNSA, Document Number: NH00281; Rosenberg, "The Origins of Overkill," 64–65.

⁹⁰ "Single Integrated Operational Plan Issues," November 2, 1960, DNSA, Document Number: NH00271.

⁹¹ "War Gaming of Single Integrated Operational Plan," June 2, 1961, DNSA, Document Number: NH00321.

⁹² "Atomic Strike Forces," April 12, 1961, 3, DNSA, Document Number: 00314.

with other scientific and mathematical approaches. But it also made all of them vulnerable to what a British observer called the “war gamester.” This new breed of defense intellectual typically had advanced training in economics or formal modeling, and combined the qualities of a soothsayer and a chess player:

He needs a clear mathematical mind, which can abstract itself from all human considerations, assimilate facts like an adding machine, and then, with absolute predictability and accuracy, produce the logical conclusions from the particular sets of facts which have been fed into his thinking machine. The war gamester, in fact, is a human computer.⁹³

These calculations reflected a shift in the methods and the kind of men—virtually all of them were men—deemed capable of predicting and planning nuclear war. And the consequences went far beyond deciding victory or defeat in multi-billion-dollar budgetary battles. Computer simulations of surprise attacks made military commanders all the more determined to press for “pre-delegation” of authorization to launch a preemptive strike on thousands of targets from Eastern Europe to China. Civilian analysts, on the other hand, wanted to ensure that civilians retained control. They favored more discriminating attack plans initially limited to Soviet nuclear forces.⁹⁴

Both approaches to nuclear war required clear communication and close coordination among hundreds of thousands of people in hundreds of bases all over the world. These forces were on constant high alert, trained to unleash intricately coordinated strikes minutes after the first warning. This made peacetime accidents and false alarms inevitable, in some cases precisely *because* commanders were constantly testing redundant, “fail-safe” systems, only to create new layers of complexity and interactions that no one could anticipate. Some of the most terrifying near-misses occurred when training tapes simulating attacks were mistakenly fed into computers, causing operators to believe that it was the real thing.⁹⁵

The dependence on computers—both human and mechanical—to plan and execute nuclear war was already generating distrust even before Robert McNamara and “whiz kids” such as Enthoven arrived at the Pentagon and started to order generals around. Eisenhower insisted that “the function of judgment concerning the over-all operational objectives should not be turned over to experts and planners.” The problem was not just the peculiar results, such as a plan in which the Air Force and Navy competed to create appalling “overkill.” The process itself missed the whole point: “this type of planning fails to recognize that war of the kind described no longer makes any sense,” Eisenhower explained. “Our aim is to deter the enemy by making him conscious of the fact that we are strong enough to destroy him whatever he does.”⁹⁶ Ironically, testing the U.S. deterrent against every conceivable scenario seemed to demand war games and planning that—contrary to

⁹³ R. H. S. Crossman, “Western Defence in the 1960s,” *Journal of the Royal United Services Institution* 106, no. 623 (August 1961): 324–341, here 325.

⁹⁴ Rosenberg, “The Origins of Overkill,” 5–8; Kaplan, *The Wizards of Armageddon*, 202–219. On civilian-military tensions over delegation more generally, see Bruce G. Blair, *Strategic Command and Control: Redefining the Nuclear Threat* (Washington, D.C., 1985), 70–78.

⁹⁵ Scott D. Sagan, *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons* (Princeton, N.J., 1995), 59–61, 130–131, 228–246.

⁹⁶ “Memorandum of Conference with the President,” December 1, 1960, DNSA, Document Number: NH00290.

Eisenhower’s intentions—created rationales for an endless series of new weapons systems.

The Kennedy administration began to employ a different, more qualitative kind of “politico-military game” to determine how nuclear war might begin, and how it could be avoided.⁹⁷ A RAND sociologist named Herbert Goldhamer first developed this technique when he realized that the simplifications required for quantitative simulations made it impossible to capture the complexity of superpower relations. Creating realistic “future history” required professionals to role-play the interaction between the two sides and also react to contingent events. In September 1961, just after the Soviets erected the Berlin Wall, officials decided to organize politico-military games to demonstrate how broad strategic concepts such as “flexible response” and “controlled escalation” would work if the crisis escalated.⁹⁸

The scenario for the first game, held at Camp David, was set three months in the future, and depicted East German forces harassing Allied efforts to resupply Berlin. A Blue Team led by Assistant Secretary of Defense John McNaughton and a Red Team under Deputy Special Assistant for National Security Affairs Carl Kaysen made moves and countermoves over four rounds of play. At the same time, a Control Group under Thomas Schelling introduced false signals and surprise developments.⁹⁹ “People got desperately involved,” Schelling later recalled, adding, “these people virtually ‘lived’ the game.” But for that very reason, they played cautiously and avoided anything that risked nuclear war. Kaysen concluded that “it’s very hard to get a war started.”¹⁰⁰

At the end of September 1961, a larger group of officials, including National Security Adviser McGeorge Bundy, engaged in a second politico-military game. This time the Blue Team was more aggressive and backed a revolt in East Berlin, but to no avail.¹⁰¹ Abram Chayes, a State Department participant, wrote: “The weakness of Blue’s over-all position [in Berlin] was so brutally exposed that [he] was disturbed enough not to be able to get to sleep.” Red’s victory exposed the complete “poverty” of Kennedy’s options: “Khrushchev is right—the US will not initiate nuclear war over Berlin. More generally the US will not strike first with nuclear weapons, tactical or strategic, short a major conventional attack on western Europe. The Soviet deterrent is at least as effective as ours.”¹⁰² Robert Komer, who would become a top national security adviser to Lyndon Johnson, agreed. The United States would either have

⁹⁷ Brewer and Shubik, *The War Game*, 59, 100–103.

⁹⁸ Paul Nitze, “Proposed Game on the Berlin Situation,” August 22, 1961, John F. Kennedy Library, Boston, Mass. [hereafter JFKL], National Security Files [hereafter NSF], Box 82A, Berlin, General, 8/23/61–8/24/61.

⁹⁹ Thomas Schelling, “Summary History of the Berlin Political War Game,” n.d. but ca. September 1961, JFKL, NSF, Box 83, Berlin, General, 9/17/61–9/22/61; Carl Kaysen Memorandum for Kennedy, September 22, 1961, *ibid.*

¹⁰⁰ “Nuclear Crisis Group” oral history with Thomas Schelling and Alan Ferguson, November 22, 1988, DNSA, Item Number: BC02946; Thomas Schelling, “Comments by T. C. Schelling on the Berlin Game Played at Camp David September 8–11,” n.d. but ca. September 1961, JFKL, NSF, Box 83, Berlin, General, 9/17/61–9/22/61; Marc Trachtenberg, David Rosenberg, and Stephen Van Evera, “An Interview with Carl Kaysen,” August 3, 1988, http://web.mit.edu/SSP/publications/working_papers/Kaysen%20working%20paper.pdf.

¹⁰¹ Robert Komer, “Memorandum about Berlin War-Game, 27–29 September 1961,” October 5, 1961, JFKL, NSF, Box 83, Berlin, General, 10/5/61–10/12/61.

¹⁰² “Abram Chayes to Secretary Dean Rusk on the Berlin Game,” October 2, 1961, JFKL, NSF, Box 90, Berlin, Subjects, Berlin Game, 9/22/61–9/1/62 & undated.

to “consider new ways of enhancing the credibility of our contention that if hostilities occur on the ground, we may have to resort to nuclear weapons,” or “seriously consider broadening the range of our political options.”¹⁰³

Kennedy’s advisers decided to go outside the normal planning processes that had produced SIOP to develop alternative nuclear options. They presented Kennedy with a detailed study of different scenarios, including a surprise attack on Soviet nuclear forces. The planners speculated that Khrushchev could be left with so few long-range weapons that he might capitulate. If instead he opted to retaliate, there would be no more than 9 million American fatalities, and perhaps only half that number. The Soviets could still cause 35 million deaths in Western Europe with medium-range missiles and bombers. Even so, the study concluded that Khrushchev “will have lost the war.”¹⁰⁴

Notwithstanding the fact that Europeans had so much more to lose if the U.S. tried to “win” a nuclear war, the games discouraged closer consultation. Kaysen found that concern for how allies would react prevented the Blue Team from acting quickly in a crisis, calling it “alliance drag.” Acheson advised Kennedy that the United States did not “need to coordinate with our allies. *We need to tell them.*”¹⁰⁵ But these Red-Blue games did not include any role for the allies, even as observers.¹⁰⁶ General Lauris Norstad, NATO supreme commander, wrote to Chairman of the Joint Chiefs Lyman Lemnitzer in 1962 that he was “appalled” by the notion that another war game would be presented to the NATO Council.¹⁰⁷

The Joint Chiefs of Staff assumed control of organizing politico-military games in a new Joint War Games Agency. Safe from outside scrutiny, the scenarios became ever more elaborate, in some cases reflecting the obsessions of colonels and generals given free rein to imagine future worlds. In one 1962 scenario, set ten years in the future, a Communist invasion following a nuclear attack installed a Cuban–Black Power confederacy in the southern states, which proceeded to carry out public lynchings of capitalists “in garish ceremonies in the Orange Bowl, before large crowds of drum-beating, chanting fanatics.” In another, most whites south of the Sahara were massacred “in a gruesome cannibalistic orgy of Inter-tribal Mau Mau murder.” In this case, the Joint War Games Agency invited participation by business executives and labor leaders as well as representatives from the entertainment industry, including the film director John Ford and *Twilight Zone* creator Rod Serling. The Pentagon officials were surprised by how ready their guests were to go nuclear.¹⁰⁸

These officials were usually more cautious. A rare exception occurred in 1965,

¹⁰³ Komer, “Memorandum about Berlin War-Game.”

¹⁰⁴ “Consequences of Thermonuclear War under Various Conditions of Outbreak,” October 28, 1961, DNSA, Item Number: NH00152.

¹⁰⁵ Kaysen memorandum for Kennedy, emphasis in the original; Acheson quoted in Trachtenberg, *A Constructed Peace*, 304, and see also 302–303.

¹⁰⁶ On the exclusion of non-citizens more generally, see Thomas B. Allen, *War Games: The Secret World of the Creators, Players, and Policy Makers Rehearsing World War III Today* (New York, 1989), 31.

¹⁰⁷ “General Norstad and Lemnitzer Exchange Views on NATO Education/Information Program,” May 17, 1962, DDRS, Document Number: CK3100272531.

¹⁰⁸ “Final Report of Politico-Military Game-Olympiad I-62: Decade After,” December 3, 1962, DDRS, Document Number: CK3100262484. These scenarios of nuclear race war were probably developed by Colonel James Y. Adams, who commanded troops at Heartbreak Ridge in one of the last and bloodiest engagements of the Korean War.

when a participant in a post-game review admitted that his advocacy of using nuclear weapons against North Vietnam was against policy, and that he risked “being called a horrible war monger.”¹⁰⁹ Officials recognized that as much as these games were meant to be imaginative and everything was off the record, they were jeopardizing their careers if they acted outside organizational norms. In effect, the games socialized policymakers in how to act in the real world—for example, teaching them not to be “a horrible war monger,” at least not in 1965.¹¹⁰

In time, scenarios would stipulate the outbreak of nuclear hostilities, and some went beyond tabletop exercises to alert and deploy actual nuclear forces. Policymakers wanted to demonstrate that they could retain “command and control” in the midst of a nuclear onslaught and also explore the even more difficult challenge of terminating hostilities.¹¹¹ But no matter how imaginative, or even bizarre, these scenarios always showed some other country provoking conflict, even West Germany.¹¹² Notwithstanding the history of debates about preventive war, in the “official future” the U.S. was never the aggressor.

LIKE INTELLIGENCE ESTIMATES AND SIOP planning, politico-military games could be manipulated to lend support to a particular policy or even a particular weapons system, and organizers never promised that they could actually predict anything.¹¹³ In the course of the 1960s, policymakers placed ever greater reliance on “machine-machine” simulations. Humans were reluctant to start wars, even simulated wars, and the Pentagon under Robert McNamara required quantitative measures of the effectiveness of different weapons and different war plans. An influential “systems analysis” of the vulnerability of U.S. overseas bases by RAND’s Albert Wohlstetter had led civilian strategists to focus on the survivability of retaliatory forces in the event of a surprise attack. Crises would inevitably arise between the superpowers, but McNamara’s “Programming-Planning-Budgeting System” aimed to maintain a sufficient deterrent at minimum cost so that *neither* side would be inclined to escalate.¹¹⁴

In contrast to the staged quality of politico-military games, which were consciously intended to create drama, these simulations depicted in quantitative detail

¹⁰⁹ “Final Report of Politico-Military Game SIGMA II-65,” August 20, 1965, DDRS, Document Number: CK3100260286.

¹¹⁰ Allen, *War Games*, 45–46.

¹¹¹ “A Report on Strategic Developments over the Next Decade for the Inter-Agency Panel,” October 12, 1962, DNSA, Item Number: NH00158.

¹¹² For an example of West Germany as provocateur, see “Epsilon 72: Simulation Documentation,” October 30, 1972, <http://www.foia.cia.gov/best-of-crest/CIA-RDP80R01731R002400130002-4.pdf>. For North Korea, see Peter Pringle and William Arkin, *S.I.O.P.: The Secret U.S. Plan for Nuclear War* (New York, 1983), 23–36.

¹¹³ For an example of the political uses of politico-military games, see “Beta I & II-67,” March 21, 1967, NARA II, CIA General Records, 80B01676R, Box 0016, Folder 0012, two exercises that were inspired in part by a desire to show how anti-ballistic missile systems could discourage proliferation.

¹¹⁴ While Albert Wohlstetter’s quantitative methods would be more influential, he was himself influenced by his wife Roberta Wohlstetter’s historical research, which was later published as *Pearl Harbor: Warning and Decision* (Stanford, Calif., 1962). Kaplan, *The Wizards of Armageddon*, 92, 97–110; Robert Jervis, *The Meaning of the Nuclear Revolution: Statecraft and the Prospect of Armageddon* (Ithaca, N.Y., 1990), 48–49.

the weapons—rather than the people—that would wage future war.¹¹⁵ In 1962, for instance, McNamara asked for an in-depth study of what might happen in a nuclear exchange six years later. There was little reliable data even for existing Soviet weapons and war plans. Analysts nonetheless offered deceptively precise figures for how projected U.S. and Soviet forces would fight in the future, calculating to three decimal places the “average deliverability per weapon” to tally the total megatonnage.¹¹⁶ The fog of war, combined with the dubious assumption that Soviet strategists would think like their U.S. counterparts, made computer simulations of future nuclear combat little more than smoke and mirrors.

Nevertheless, these forecasts appeared to be essential for determining whether the balance of terror could be kept stable, and it was easier to predict how future weapons would perform than to foresee how humans would choose to use them. In the 1960s, analysts tended to employ three techniques. Systems analysis developed out of World War II-era operations research. It helped in choosing between alternatives, such as a bomber versus an ICBM, as well as in the optimization of these weapons depending on the desired performance criteria and the most likely scenarios.¹¹⁷ Another technique was to extrapolate technological developments from past trends. Historical cases appeared to show that improvements in performance over time, such as in computer processing or energy per pound of nuclear explosive, conformed to a standard curve. These improvements could also be correlated with cost to estimate the expense of developing new capabilities.¹¹⁸ Still another method was to poll experts about what they considered possible and probable technological breakthroughs. The RAND Corporation’s Delphi method was particularly influential. It was intended to counter the “groupthink” that often resulted when teams of analysts convened by creating an anonymous peer-review system. Participants had to explain and defend their predictions, and reconsider their position when new information emerged.¹¹⁹

All of these techniques were susceptible to the same criticism. Even when correct, they amounted to self-fulfilling prophecies: systems analysis depended entirely on the criteria used to pick winners. Anticipating trends led to investment—or disinvestment—that reinforced trends. And experts predicted breakthroughs in the areas

¹¹⁵ For an overview, see Alfred H. Hausrath, *Venture Simulation in War, Business, and Politics* (New York, 1971).

¹¹⁶ Special Studies Group, “Project 47: Strategic Nuclear Study,” September 1962, NARA II, RG 200, Records of Robert S. McNamara, Defense Programs and Operations, Box 19.

¹¹⁷ I. B. Holley, Jr., “The Evolution of Operations Research and Its Impact on the Military Establishment: The Air Force Experience,” in Monte D. Wright and Lawrence J. Paszek, eds., *Science, Technology, and Warfare: Proceedings of the Third Military History Symposium, United States Air Force Academy, 8–9 May 1969* (1969; repr., Honolulu, 2001), 89–121, Office of Air Force History, <http://www.afhso.af.mil/shared/media/document/AFD-100929-008.pdf>. For more on systems analysis and operations research, see E. S. Quade, “Military Systems Analysis,” in Stanford L. Optner, ed., *Systems Analysis: Selected Readings* (Middlesex, 1973), 121–140; E. S. Quade and W. I. Boucher, eds., *Systems Analysis and Policy Planning: Applications in Defense* (New York, 1968).

¹¹⁸ Joseph P. Martino, “Methods of Technological Forecasting,” in Walter A. Hahn and Kenneth F. Gordon, eds., *Assessing the Future and Policy Planning* (London, 1973), 19–40, here 26–28; Herman Kahn and B. Bruce-Briggs, *Things to Come: Thinking about the Seventies and Eighties* (New York, 1972), 188–190.

¹¹⁹ Norman Dalkey and Olaf Helmer, “An Experimental Application of the DELPHI Method to the Use of Experts,” *Management Science* 9, no. 3 (1963): 458–467; Martino, “Methods of Technological Forecasting,” 22–26; Theodore Gordon, “Futures Research: Did It Meet Its Promise? Can It Meet Its Promise?” *Technological Forecasting and Social Change* 36, no. 1–2 (1989): 21–26, here 23.

that were already a priority. Accuracy diminished when these techniques were applied to domains in which the forecasters were not firsthand observers and participants, such as how their Soviet adversaries were thinking about the optimal solutions, the likely trends, and the most promising breakthroughs.¹²⁰

Nevertheless, McNamara pressed the CIA and military intelligence to produce detailed specifications for Soviet forces ten years out. They finally began to do so in 1964, offering a quantitative range for every major weapons system with the promise of 75 percent accuracy. But they also complained about having to offer these projections in the absence of any real data, and they finally killed the program after McNamara left the Pentagon.¹²¹

By the end of the 1960s, the Soviets appeared to be challenging U.S. technological superiority, the foundation of defense strategy since 1945. Shortly after assuming office, President Nixon appointed a Blue Ribbon Defense Panel to investigate. The panel found that the Department of Defense had a dismal record with regard to predicting acquisition costs and weapons system capability.¹²² Implicit in their recommendations for restructuring the department was a lower degree of confidence in technology forecasting. The drive for efficiency under the Programming-Planning-Budgeting System, they argued, was no substitute for a strategic vision.¹²³

In the Johnson and Nixon administrations, the Board of National Estimates—now dominated by intelligence professionals rather than professors—also lost favor. It did not help that ONE analysts challenged claims about U.S. progress in Vietnam and questioned senior officials' predictions about the dire consequences of defeat. They also disagreed with the Pentagon's forecast of when the Soviets would be able to deploy an ICBM with multiple warheads.¹²⁴ Nixon's hawkish new defense secretary, Melvin Laird, decided that he did not need a counterweight to military intelligence. Henry Kissinger, the national security adviser, suspected that any entrenched bureaucracy tended to reduce the options available to top decision-makers. The board's consensus-building approach seemed designed to obscure rather than illuminate alternative ideas and dissenting views. It would be shut down in 1973.¹²⁵

Kissinger instead counted on his own NSC staff to assess long-range Soviet intentions and capabilities, especially a RAND consultant named Andrew Marshall.

¹²⁰ On some of the complications of technology forecasting more generally, see Kahn and Bruce Briggs, *Things to Come*, 187–188.

¹²¹ "Intelligence Assumptions for Planning," February 14, 1964, CIA FOIA, Document Number: 0000794608; "Innovation, Research, and Development of Intelligence Analysis," Andrew Marshall to Henry Kissinger, May 1, 1970, NARA II, Nixon Presidential Materials, National Security Council Files, Name Files, Box 825, Andrew Marshall.

¹²² Department of Defense, "Report to the President and the Secretary of Defense on the Department of Defense by the Blue Ribbon Defense Panel," July 1, 1970, Defense Technical Information Center, Document Number: AD-A013 261, 7, 72–74, 154–155, <http://www.dtic.mil/dtic/tr/fulltext/u2/a013261.pdf>.

¹²³ Phillip Karber, "Net Assessment & Strategy Development for the Secretary of Defense: Future Implications from Early Formulations" (paper presented at the conference on "Net Assessment: Past, Present and Future," Washington, D.C., March 28–29, 2008), 30–31, <http://lsgs.georgetown.edu/faculty/research/NA&SD%20for%20SecDef.pdf>.

¹²⁴ Robert S. McNamara with Brian VanDeMark, *In Retrospect: The Tragedy and Lessons of Vietnam* (New York, 1995), 292–293; Harold P. Ford, *CIA and the Vietnam Policymakers: Three Episodes, 1962–1968* (Washington, D.C., 1998), 93–104; Prados, *The Soviet Estimate*, 218–224.

¹²⁵ Freedman, *U.S. Intelligence and the Soviet Strategic Threat*, 52–54.

Marshall had participated in some of the first politico-military games with Goldhamer, his mentor at the University of Chicago. A statistician by training, Marshall had also created some of the earliest quantitative simulations of nuclear combat. Now he turned to the problem of official forecasts, and technology forecasts in particular.¹²⁶

There was “something so clearly wrong” with how the U.S. tried to stay ahead of the Soviets, Marshall advised Kissinger, with “technically ambitious, high cost, lower than promised performing systems.” While the U.S. spent incalculable sums planning future weapons, there was little good research on the technology of forecasting itself.¹²⁷ Marshall was keenly aware of how bureaucratic politics bedeviled U.S. forecasts and planning, which led him to an important insight: the rivalries within and between the five branches of the Soviet military might be no less complex, and no less important. Looking back at the development of Soviet nuclear forces, he was struck by how greatly it had differed from what U.S. intelligence had predicted. For instance, Moscow had developed ICBMs slowly and at first left them vulnerable to surprise attack. Marshall surmised that studying the interaction of U.S. and Soviet force postures, the weapons-acquisition process, and organizational behavior could prove extremely valuable. This would be especially important when the U.S. could not count on having a bigger defense budget or better technology.¹²⁸

In 1973, Marshall was placed in charge of the Pentagon’s new Office of Net Assessment—one of the proposals of the Blue Ribbon Panel—and reported directly to the secretary of defense.¹²⁹ He encouraged experimentation with new forecasting and gaming methods. But rather than simply trying to improve predictions, Marshall argued that the U.S. should instead seek to influence Soviet decision-making. If the intelligence community better understood Moscow’s system for developing future weapons, and took account of inter-service rivalries, budgeting practices, and career patterns, *it could game that system*. The object was to induce Moscow to spend more on defensive rather than offensive forces, to develop short-range rather than intercontinental weapons, and to pursue technologies where the U.S. retained a comparative advantage.¹³⁰

Analysts had long understood that the USSR organized the weapons-acquisition process in five-year cycles and tended to follow the American lead. In the early 1970s, the Soviets also looked to U.S. forecasting practices; in one case, a technology forecasting tool developed by the Honeywell Corporation in the 1960s found an afterlife with Soviet planners, a fact that did not escape the CIA’s attention. As the development time of weapons systems increased, the Soviets began making longer-range forecasts, from ten to fifteen years out. If the U.S. signaled that it planned a par-

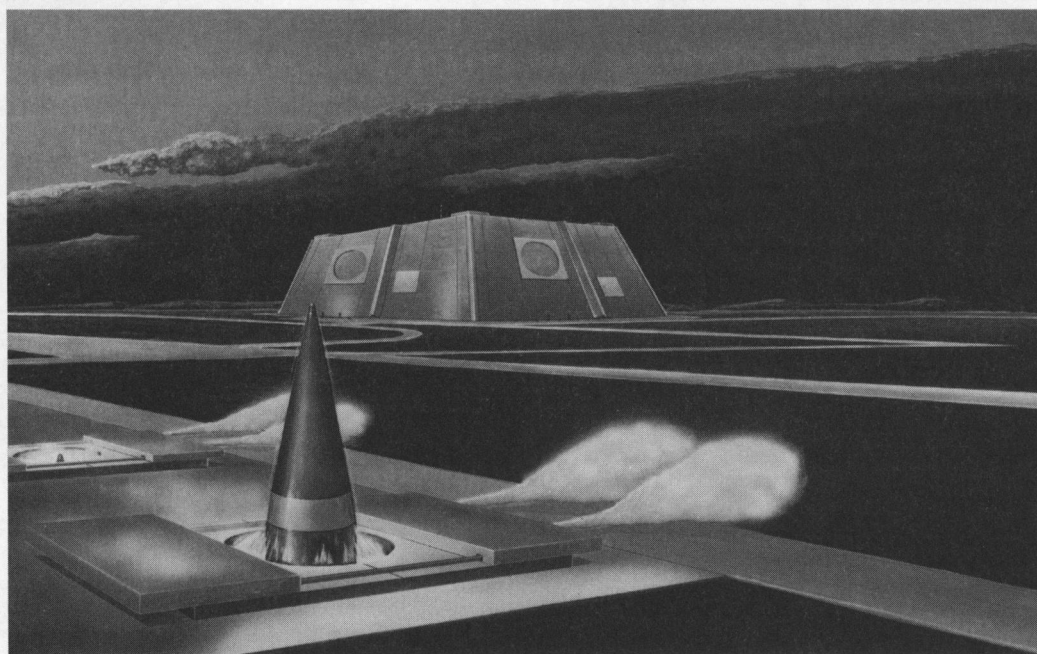
¹²⁶ Allen, *War Games*, 142–143; Kaplan, *The Wizards of Armageddon*, 213–216.

¹²⁷ “Innovation, Research, and Development of Intelligence Analysis,” May 1, 1970, 1–4.

¹²⁸ “Innovation, Research, and Development of Intelligence Analysis.”

¹²⁹ George E. Pickett, James G. Roche, and Barry D. Watts, “Net Assessment: A Historical Review,” in Andrew W. Marshall, J. J. Martin, and Henry S. Rowen, eds., *On Not Confusing Ourselves: Essays on National Security Strategy in Honor of Albert and Roberta Wohlstetter* (San Francisco, 1991), 159–185, here 166–169.

¹³⁰ A. W. Marshall, *Long-Term Competition with the Soviets: A Framework for Strategic Analysis*, RAND Report R-862-PR (Santa Monica, Calif., 1972), 33–34.



Soviet MI-24 Hind Delivering Chemical Spray (Edward L. Cooper, 1986) and *Pushkino ABM* (Ronald C. Wittman, 1983). Artists at the Defense Intelligence Agency produced many images of future war to dramatize the Soviet threat, most famously in a series of white papers in the 1980s titled “Soviet Military Power.” The depictions of armored surface-to-air laser weapons and Warsaw Pact invasion plans were widely criticized as alarmist. But the images also showed how the Soviets were making wasteful investments, such as adapting helicopters to deliver chemical and biological weapons, and modernizing anti-ballistic missile defenses outside Moscow.

ticular system, it could expect to provoke a reaction. And if it did so after Moscow had already embarked on new programs, it could throw the Soviet weapons-acquisition cycle into confusion.¹³¹

Some of the new American weapons, such as the B-1, seemed dubious. But announcing a new bomber gave the Soviet Air Defense Forces a new lease on life, and new claims on the budget. At the same time, the U.S. secretly developed stealth technologies that would make these defenses obsolete.¹³² Marshall also advocated investing heavily in the miniaturization of missile guidance components to create weapons with near-perfect accuracy, which Soviet forecasters feared would constitute a military revolution comparable to the emergence of nuclear weapons.¹³³ In the 1970s, the U.S. also engaged in a complex disinformation operation to give the impression that it was covertly developing biological weapons, which helped to provoke the Soviets into embarking on a program that eventually employed some 60,000 scientists and technicians to mass-produce anthrax and smallpox.¹³⁴ The point of all this was not simply to “outspend” the USSR, but rather to induce the Soviets to spend on the wrong things.

By the end of the Cold War, Marshall had become a cult figure in military circles. He was credited not only with devising strategies that made it harder for Moscow to compete, but also with helping to spark the larger “revolution in military affairs” in which conventional weapons became so precise and lethal as to obviate the need for nuclear weapons. Ironically, while the Soviets’ own forecasting efforts are still largely secret, it appears that they were the first to realize how this would shift the terms of competition against them.¹³⁵ One might surmise that Marshall’s less prophetic initiatives have received less publicity, and the USSR obviously faced challenges that went well beyond producing precision-guided munitions. Yet if his position in the Pentagon’s official history can be questioned, there can be little doubt about his contributions to its official future: Marshall was the first to realize that if it was difficult to overcome bureaucratic rivalries and impossible to foresee enemy intentions, deliberately making false predictions and playing on an adversary’s internal divisions could change the future—and change history.

¹³¹ Robert Randolph, “Social and Technological Forecasting in the Soviet Union,” *Futures* 8, no. 6 (1976): 485–495, here 487–489, 492; “USSR: Forecasting and Planning Weapons Acquisition,” January 1988, CIA FOIA, Document Number: 0000500618; Marshall, *Long-Term Competition with the Soviets*, 38–39; Jacob W. Kipp, “The Methodology of Foresight and Forecasting in Soviet Military Affairs,” May 1988, Defense Technical Information Center, Document Number: AD-A196 677, 19–22, <http://www.dtic.mil/dtic/tr/fulltext/u2/a196677.pdf>.

¹³² Thomas G. Mahnken, *Technology and the American Way of War* (New York, 2008), 163–164.

¹³³ Marshall, *Long-Term Competition with the Soviets*, 36; Dima P. Adamsky, “Through the Looking Glass: The Soviet Military-Technical Revolution and the American Revolution in Military Affairs,” *Journal of Strategic Studies* 31, no. 2 (2008): 257–294, here 263–265, 278.

¹³⁴ Raymond L. Garthoff, “Polyakov’s Run,” *Bulletin of the Atomic Scientists* 56, no. 5 (September/October 2000): 37–40; David Wise, *Cassidy’s Run: The Secret Spy War over Nerve Gas* (New York, 2001); Steven Block, “The Growing Threat of Biological Weapons,” *American Scientist* 89, no. 1 (January/February 2001): 28–37, here 31, <http://www.americanscientist.org/issues/feature/2001/1/the-growing-threat-of-biological-weapons>.

¹³⁵ Stephen Peter Rosen, “The Impact of the Office of Net Assessment on the American Military in the Matter of the Revolution in Military Affairs,” *Journal of Strategic Studies* 34, no. 4 (2010): 469–482; Adamsky, “Through the Looking Glass,” 268–270, 276–279.

WHILE THE END OF THE COLD WAR is usually presented as a triumph for the U.S., it is striking how few saw it coming. People who were paid to predict the course of the superpower competition had misjudged the likelihood of war, believing that neither side would peacefully accept defeat. They doubted that deterrence was sustainable, predicting that alliances would unravel and public support would wither. They also misjudged how war might come, fixating on the prospect of a Warsaw Pact invasion of Western Europe or a surprise nuclear attack. After the collapse of Communism, no evidence emerged of any such plans, while new information continues to come to light about nuclear accidents and near-misses.¹³⁶

For all the simulations of a surprise attack, and the risks inherent in putting nuclear forces on a permanent alert, Soviet war planners actually assumed that the United States would strike first.¹³⁷ Considering the long-running U.S. debates about “preventive” war, and plans that prized preemption, this was quite understandable. In fact, when China was close to developing its own nuclear weapons in the 1960s, the idea of preventive war was revived once again, to the point that the U.S. approached Moscow to determine whether it might support such an attack.¹³⁸ After underestimating how quickly the Chinese would build atomic and hydrogen bombs, U.S. analysts overestimated how quickly they would deploy survivable delivery systems, just as they had with the USSR.¹³⁹

U.S. forecasts have suffered from a basic flaw, whether in terms of “horizontal” proliferation to new powers or “vertical” proliferation in the arsenals of nuclear states. Since predicting intent was impossible, prevision focused on capabilities: countries that *could* build nuclear weapons *would* build nuclear weapons, and they would rapidly develop those forces to deter any conceivable attack—just like the U.S.¹⁴⁰ That is why JFK warned in 1963 that there might be as many as twenty-five nuclear powers by 1975. The classified estimate he worked from included Belgium, Norway, and the Netherlands.¹⁴¹ Ever since, analysts have had to continually post-

¹³⁶ One of the more eye-opening reports detailed how SAC subverted protocols requiring presidential authorization by setting each of the eight digits in ICBM launch codes to zero. Bruce G. Blair, “Keeping Presidents in the Nuclear Dark: The SIOP Option That Wasn’t,” *Defense Monitor* 33, no. 2 (2004): 1–3, 7. On the belief in the inevitability of war, see Mueller, *Atomic Obsession*, chap. 5. On the lack of faith in deterrence, see, for instance, Jervis, *The Meaning of the Nuclear Revolution*, 78. On the lack of evidence of invasion plans, see Jan Hoffenaar and Christopher Findlay, eds., *Military Planning for European Theatre Conflict during the Cold War: An Oral History Roundtable, Stockholm, 24–25 April 2006* (Zurich, 2007), 60–61; and Robert Jervis, “Was the Cold War a Security Dilemma?” *Journal of Cold War Studies* 3, no. 1 (2001): 36–60, here 59.

¹³⁷ John G. Hines, Ellis M. Mishulovich, and John F. Shull, *Soviet Intentions, 1965–1985*, vol. 1: *An Analytical Comparison of U.S.-Soviet Assessments during the Cold War* (McLean, Va., 1995); Pavel Podvig, “The Window of Vulnerability That Wasn’t: Soviet Military Buildup in the 1970s—A Research Note,” *International Security* 33, no. 1 (2008): 118–138.

¹³⁸ William Burr and Jeffrey T. Richelson, “Whether to ‘Strangle the Baby in the Cradle’: The United States and the Chinese Nuclear Program, 1960–64,” *International Security* 25, no. 3 (Winter 2000–2001): 54–99.

¹³⁹ “The Chances of an Imminent Chinese Communist Nuclear Explosion,” August 26, 1964, CIA FOIA, Document Number: 0001095915; “Communist China’s Advanced Weapons Program,” November 3, 1966, *ibid.*, Document Number: 0001090205; “Communist China’s Strategic Weapons Program,” August 3, 1967, *ibid.*, Document Number: 0001101531.

¹⁴⁰ Moeed Yusuf, *Predicting Proliferation: The History of the Future of Nuclear Weapons* (Washington, D.C., 2009). Astute analysts such as Schelling understood that predicting political change was more important, and more difficult; “A Report on Strategic Developments over the Next Decade for the Inter-Agency Panel,” October 12, 1962.

¹⁴¹ “The President’s News Conference,” March 21, 1963, *The American Presidency Project*, www.pres

pone the predicted debut of new nuclear powers and have been puzzled when other countries seem satisfied with small and vulnerable arsenals.¹⁴²

The repeated failure to predict the future does not mean that attempts at prevision failed to change history—quite the contrary. The sudden, disorienting realization in 1949–1950 that U.S. intelligence had misjudged Moscow’s intentions and capabilities helped to provoke a massive military buildup. The predicted opening and closing of windows of vulnerability and windows of opportunity shaped a momentous debate about preventive nuclear war. Increasingly sophisticated simulations gradually discredited the idea that it was possible to prevail in such a conflict. But testing deterrence against projections of Soviet forces and worst-case attack scenarios also provided rationales for an ever larger arsenal on hair-trigger alert, one that was inherently prone to accidents and false alarms. And notwithstanding the fact that accurate technology forecasts could be self-fulfilling prophecies, and designers of scenario exercises did not even pretend to predict the future, others adopted these techniques and applied them to a whole range of problems, from plotting industrial strategy to preparing for the next pandemic.¹⁴³

It can be difficult to prove that a particular forecast or scenario altered the course of events. In some cases—such as a reluctance to consult allies during a nuclear crisis, and the military’s insistence that politicians pre-delegate authority to preempt a nuclear attack—seemingly new and more sophisticated modes of prevision served to justify positions that might have been taken regardless. But their political value is apparent when we recall how fiercely the armed services fought to gain control of estimates, war games, scenarios, and computer simulations. The Pentagon’s general capacity for long-range planning has been a key asset in its ascendancy over the State Department in U.S. national security decision-making.¹⁴⁴

Whether plans or predictions proved correct was of secondary importance, as shown by the demise of the Office of National Estimates after its analysts disagreed with their superiors about Vietnam and Soviet ICBM deployments. Conversely, false predictions that served institutional interests—such as the bomber and missile gaps—were rewarded. But what might seem like a pattern of incorrect or incomplete

idency.ucsb.edu/ws/index.php?pid=9124; Richard Rhodes, *Arsenals of Folly: The Making of the Nuclear Arms Race* (New York, 2008), 71.

¹⁴² Brazil is a case in point. One 1975 National Intelligence Estimate predicted that it was capable of producing a nuclear device by the early 1980s. Ten years later, another NIE found that it was still five-plus years away, or “at least 1990.” “National Intelligence Estimate: The Outlook for Brazil,” NIE 93-1-75, July 11, 1975, CIA FOIA, Document Number: 0000753961; “Brazil: Prospects for the Regime,” April 5, 1985, *ibid.*, Document Number: 0000787522.

¹⁴³ The founding of the Institute for the Future in 1968 by former RAND analysts presaged an attempt through the 1970s to diffuse technology forecasting to civil and commercial applications. Olaf Helmer, “Future’s Future,” *Technological Forecasting and Social Change* 36, no. 1–2 (1989): 39–41, here 39. For examples of the literature of technological forecasting, see also James R. Bright, ed., *Technological Forecasting for Industry and Government: Methods and Applications* (Englewood Cliffs, N.J., 1968); Gordon Wills, David Ashton, and Bernard Taylor, eds., *Technological Forecasting and Corporate Strategy* (New York, 1969); Marvin J. Cetron and Christine A. Ralph, *Industrial Applications of Technological Forecasting: Its Utilization in R&D Management* (New York, 1971). On the importance of politico-military games in public health policy, see, for instance, James Colgrove, *State of Immunity: The Politics of Vaccination in Twentieth-Century America* (Berkeley, Calif., 2006), 241–245.

¹⁴⁴ Gordon Adams, “The Politics of National Security Budgets,” Stanley Foundation Policy Analysis Brief, February 2007, 10–11, <http://www.stanleyfoundation.org/publications/pab/pab07natsecbudget.pdf>.

forecasts, beginning with the Soviet A-bomb, was at least partly the product of inescapable tradeoffs: opening up lines of communication to “connect the dots” increases the risk of a system-wide security breach such as WikiLeaks; zero tolerance for surprise requires unlimited tolerance for false warnings; and a “non-political” estimate will likely be less relevant to the immediate concerns of policymakers. Even so, the record of intelligence analysts may be no worse than that of forecasters who do not face these constraints, including economists and political scientists.¹⁴⁵ What is more surprising is how, more generally, forecasters have managed to avoid a systematic review of the historical record. Only the most spectacular and public failures, such as the unexpected collapse of the USSR, receive serious scrutiny.¹⁴⁶ Instead, ignoring the record of previous forecasts is standard practice, since practitioners claim that starting with a blank slate makes new forecasts “unbiased.”¹⁴⁷

Some U.S. policymakers have become critical of “Next-War-itis,” the tendency to give priority to predicted threats over immediate needs.¹⁴⁸ And yet none have dispensed with forecasts, war games, and scenarios. They remain invested in prevision and rarely review the results. In times past, they turned to auguries, oracles, prophecy, and astrology. During the Cold War, they concealed any interest in the occult and justified decisions with more modern forms of divination, each one seemingly more “scientific” than the last, even if none proved more reliable. After all, if our leaders do not see further than we can, why would we follow them? In the end, power must cloak itself in the mystique of clairvoyance.¹⁴⁹

If forecasters believe that objectivity requires disregarding the past, most historians believe that it requires ignoring the future—even the history of how people try to predict the future. If they do review this record, historians might take satisfaction from the thought that most forecasts, scenarios, and simulations are simply wrong. But “lessons of the past,” such as the danger of an atomic Pearl Harbor or the Soviets’ purported willingness to endure mass casualties, could also be deceptive. History provided no precedent for such a prolonged period without war between the

¹⁴⁵ Philip E. Tetlock and Barbara Mellers, “Intelligent Management of Intelligence Agencies: Beyond Accountability Ping-Pong,” *American Psychologist* 66, no. 6 (2011): 542–554. The classic study of political scientists’ failure to predict the end of the Cold War, or even to seriously consider the possibility, is John Lewis Gaddis, “International Relations Theory and the End of the Cold War,” *International Security* 17, no. 3 (Winter 1992–1993): 5–58. Recent works that puncture economists’ claims to prevision are too numerous to mention.

¹⁴⁶ Intense scrutiny has revealed that some analysts recognized the Soviet Union’s decline, but they gave policymakers scant warning that it was on the verge of collapse. Once it began, estimates were quick to predict a Russian civil war, possibly with nuclear weapons. George Kolt is considered the most prescient analyst. See, e.g., Kolt, “The Soviet Cauldron,” in Eugene B. Rumer and Celeste A. Wallander, eds., *Russia Watch: Essays in Honor of George Kolt* (Washington, D.C., 2007), 84–92; and more generally Benjamin B. Fischer, *At Cold War’s End: US Intelligence on the Soviet Union and Eastern Europe, 1989–1991* (Washington, D.C., 1999).

¹⁴⁷ Sam J. Tangredi, *All Possible Wars? Toward a Consensus View of the Future Security Environment, 2001–2025* (Washington, D.C., 2000).

¹⁴⁸ Robert Gates, who coined the term, had been a veteran CIA analyst and later director of central intelligence before becoming defense secretary. “A Pentagon Battle over ‘the Next War,’” *Los Angeles Times*, July 21, 2008.

¹⁴⁹ Reports that the Reagans consulted astrologers for White House scheduling, even when choosing the date for signing the intermediate-range nuclear forces treaty, elicited an angry “non-denial denial.” Donald T. Regan, *For the Record: From Wall Street to Washington* (San Diego, 1988), 3; “Good Heavens! An Astrologer Dictating the President’s Schedule?” *Time Magazine*, May 16, 1988.

leading powers. The most alarming forecasts, on the other hand, were meant to help policymakers reduce risks. In the 1950s, systems analysis underscored the importance of a survivable retaliatory force, a concept that became the bedrock of deterrence and the best argument against “overkill.” In the 1960s, politico-military games trained policymakers in how not to start a nuclear war. And for the rest of the decade, computer-simulated exchanges continued to show that there was no conceivable way that either side could “win” World War III. Some of the most pessimistic forecasts, such as Kennedy’s prediction of twenty-five nuclear powers, were conditional: he was describing a world without a Nuclear Test Ban Treaty. And a particularly clever oracle, like Marshall, could deliberately plant false prophecies in order to tempt an enemy to choose the wrong future.

Thus, different modes of prevision—whether self-negating, imaginative, abstract, conditional, or deceptive—each in their own way helped regulate the relationship between the superpowers. Anticipating the future, perhaps even more than learning from the past, is what kept the Cold War cold. If historians still have archives to work in, and if those archives remain sites of anticipation and not just sites of memory, it may be because of the debt we all owe to futurology. A work of history, bound and preserved between covers—or backed up on remote servers—is itself a testament to certain expectations. This tale of how the world did not end is therefore another anticipation of things to come.

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