

Contingencies of the early nuclear arms race

Michael Gordin: Red cloud at dawn: Truman, Stalin, and the end of the atomic monopoly. New York: Farrar, Straus and Giroux, 2009, 416pp, US\$28 HB

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On July 16, 1945, the United States detonated a plutonium-core nuclear weapon in the desert of New Mexico. The test—"Trinity"—was secret, but the Soviet Union was well informed of it through espionage. In August 1945, the United States exploded two nuclear weapons above cities in Japan.

On August 29, 1949, the Soviet Union detonated a plutonium-core nuclear weapon on the steppes of Kazakhstan. The test was secret. Five days later (on September 3), an American B-29 weather plane, on its daily flight between Japan and Alaska to expose radioactive-sensitive filter papers to the air, recorded higher-than-usual levels of radioactivity. This in turn triggered additional probes. By September 19, a group of top-level nuclear scientists had concluded that the detected particles were undoubtedly the traces of an atomic bomb explosion, later

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dubbed “Joe-1”. On September 23, the news of the Soviet test was announced by President Truman.

Two detonations, two bombs: one signaling the beginning of the American atomic monopoly, one heralding its end, both involving complicated regimes of secrecy and publicity. They are the subject of Michael Gordin’s *Red Cloud at Dawn (RCaD)*, an exceptionally informative and focused history of nuclear weapons from 1945 through 1949. The Soviet explosion was the world’s ninth such nuclear blast, but the first not carried out by the United States. The loss of the American monopoly of the bomb, and how Americans—and the world—became aware of the loss, serves as the core and narrative frame of Gordin’s book. Until the detonation of Joe-1 the United States was the only nation in possession of nuclear devices capable of being exploded in tests or delivered as bombs with airplanes. The Soviet explosion constituted the first proliferation.

Gordin’s aim in *RCaD* is not to tell a story about atomic explosions but about know-how, knowledge, secrecy, and information—in particular, the gathering and interpretation of information about nuclear energy and the nuclear weapons that a nation deems vital to its security and interests.

RCaD can be considered a sequel to Gordin’s first foray into atomic history, *Five Days in August: How World War II Became a Nuclear War* (Princeton: Princeton University Press, 2007) (*FDiA*). In that book, Gordin used an even more microhistorical approach to deconstruct atomic history, focusing on the many different interpretations about what “the bomb” really meant during the period between its use over Hiroshima and Nagasaki and the eventual surrender of Japan. In *FDiA*, Gordin showed that the assumption that the bomb was a qualitatively different, “special” weapon, was itself a constructed (and often challenged) notion. In the period *RCaD* covers, the meaning of the bomb had stabilized, but the issue at stake is the question: When exactly is a country said to have the bomb to begin with? At what point has a nation “gone nuclear”? Or, as one US politician put it in 1949: “Well, the Russians didn’t know themselves that they had the bomb until it went off, did they?”¹

The subtitle of *RCaD* as published—*Truman, Stalin, and the End of the Atomic Monopoly*—places a focus on key individuals and on diplomacy, and there is much of that in the volume. The subtitle of an earlier draft—*Truman, Stalin, and the Flow of Atomic Knowledge*—might in fact more accurately describe what Gordin does uniquely well in this book: Applying the sensibilities of an historian of science to the question how “intelligence” is made, sustained, doubted, and ultimately used. Gordin tells a story of the early Cold War that is both subtle and nuanced in its treatment of knowledge. And knowledge plays a prominent role in that history, both the kind produced by spies as well as the kind produced by scientists working in a weapons laboratory. (And indeed, at times these two categories—government spies and lab scientists—overlapped.)

¹ Senator Tom Connally, quoted in a Joint Committee on Atomic Energy executive session transcript, “Report of the Central Intelligence Agency” (17 October 1949), on 51. Transcript is available online via the National Security Archive, at <http://www.gwu.edu/~nsarchiv/nukevault/ebb286/index.htm> (last accessed 20 July 2010).

The skill and capability to gather and keep secret information were critical factors in the United States' endeavor to maintain its monopoly on nuclear weapons and the Soviet Union's efforts to break that monopoly. As Gordin repeatedly stresses, gathering information in order to make decisions about how to interact with a feared opponent is a complex, crafty, and deceitful business since the opponent's explicit aim is to block access to that information. Moreover, whenever one party decides to divulge a particular bit of information, that very fact immediately raises questions: Is it misinformation? Disinformation? Why was the information divulged? Why this bit and not another? Is the information reliable? And why was it released at this time?

Gordin's cardinal example is Truman's attempt at the Potsdam Conference to "nonchalantly" indicate to Stalin that the United States "had developed a new bomb far more destructive than any known bomb, and that we planned to use it very soon unless Japan surrendered." (*RCaD*, 7–8) Notably, Truman deliberately did *not* say it was an atomic bomb. Stalin feigned uninterest. Everyone in Truman's entourage was surprised by Stalin's response; he only said that he was glad to hear of the bomb and that he hoped that the United States would use it. (*RCaD*, 8) Truman assumed that Stalin simply had not understood. But the truth went far deeper: through espionage, Stalin had known about the American atomic bomb program longer than Truman himself had, and he now also knew that Truman was not interested in telling Stalin very much about it. Thus, the trickiness of such knowledge games: Stalin learned far more from Truman's disclosure than had been planned, because Truman had no idea what Stalin already knew.

The narration in *RCaD* artfully shifts between American and Soviet points of view, drawing on both parallels and contrasts. Gordin makes a strong case that one cannot fully understand early Soviet nuclear history without indicating what the Americans were doing, how what they were doing was interpreted by the Russians, and what the consequences of that interpretation were for both the Americans and the Russians. And conversely, in order to recount the story of the American monopoly, one must take into account what the Americans thought the Soviets were doing, what their intentions were, and the imagined repercussions of those actions.

There is both symmetry and asymmetry in this history. At one level of description, the arms race as a whole was, until the 1980s at least, a largely symmetrical process, with the two nations mirroring one another in periods of buildups and negotiations. But at a finer level, the differences in the ways the two superpowers made decisions, and got information, are striking.

The United States–Soviet interactions were circumscribed by the fact that neither side knew how the other side knew what the other side knew about what the other side knew. Moreover, there was a crucial asymmetry in how each side gathered information about the other. The Soviet Union was able, very early on, to obtain extremely valuable atomic information by having spies and informants in the very heart of the British-American-Canadian operation. In the fall of 1941 they obtained the British Maud Report from John Cairncross almost at the same time as the Americans did. Later, from December 1943 until the summer of 1948, Klaus Fuchs transmitted from Los Alamos and from Harwell crucial aspects of the technology of uranium isotope separation, of uranium and plutonium bomb making, and of

hydrogen bomb mechanisms. However, as Gordin repeatedly reminds us, as far as the Soviets were concerned the value of information obtained by spying was always somewhat ambiguous because its reliability was uncertain: it was always possible that the information was made available in order to misinform.

By contrast, the US knowledge of the Soviet atomic work was largely based on technical intelligence—and technical indications could be vague and required careful expert interpretation and translation.² This was because the internal security infrastructure of Stalin's regime made it impossible for the West to obtain any information through spying. Information regarding the uranium ores available to the Soviet Union, the pace and status of its nuclear developments, let alone how Stalin was reacting to the political, military, and technological developments in the West had to be obtained through other, less reliable means, often delayed ones.

Red Cloud at Dawn is shaped by this ever-present ambiguity about the information each side had about the other's developments, capabilities, and intentions, and that makes Gordin's account of atomic history between Hiroshima and "Joe-1" both arresting and insightful. Each chapter is designed to illustrate how each side—given their respective political culture and their uncertain knowledge of the other—made decisions about what to divulge and what not to, and more importantly made decisions about their defense and foreign policy.

The United States, unlike the Soviet Union, had moments when it deliberately released atomic information. Just a few days after the bombing of Nagasaki and before the Japanese surrender, on August 12, 1945, the US government released the Smyth Report, a book-length account of the accomplishments of the Manhattan Project. For Gordin this is important both for what it said about the American political context—one in which some degree of transparency and civilian oversight were still valued, even in the "Top Secret" days of the war and the immediate postwar period—and for what it tells us about how the Manhattan Project leadership valued the pure "information" used in developing an atomic bomb. Gordin analyzes the factors that entered into the decision concerning what should be divulged about the American atomic bombs so as not to give away secrets that might enable other nations to build them. To arrive at a consensus the following questions had to be answered: How much of the physics could be made public without divulging technological "know-how"? What is the responsibility and obligation of the government in a democracy to inform its citizens of revolutionary developments? How much information can or should it divulge to the citizenry without endangering national security—recognizing that an informed citizenry is a vital element of national security?

In the end, most of the top-level Manhattan Project scientists took a dim view of the importance of individual technical "secrets," even in the days when they thought (incorrectly) that they had been well kept. Gordin illustrates this by offering new insights into the Acheson–Lilienthal plan to control atomic energy, much of which reflects J. Robert Oppenheimer's input. He points out that one of the assumptions that informed the plan was the belief that the United States could

² Examples of such technical means are the breaking of codes (as in the famous VENONA case), and, later, the detection of radioactive isotopes in the atmosphere by means of specialized planes.

control the availability of uranium ores—this without knowing very much about ore deposits in the Soviet Union. That is, the early American attempts at international control of atomic weapons were based not on an attempt to control secrets, but on attempts to control physical materials. The limited (and flawed) data available led important people like Leslie Groves to predict that the American atomic monopoly would last at least 20 years, since the Soviet Union would not be able to produce an atomic bomb in less time given the technological difficulties associated with purification, reactors, plutonium production, and implosions.

Gordin is equally informative in his presentation of what happened in the Soviet Union. The knowledge that atomic bombs could be made was of course an important piece of information for the Soviet physicists. Having decided to initially go the route of plutonium production (rather than uranium enrichment), the most valuable data the Soviet Union garnered from Klaus Fuchs and Ted Hall, their Los Alamos informants, was that a gun-style plutonium bomb would fizzle rather than fission.

From the Smyth Report, the Soviets had learned exactly what scope and general direction a successful atomic program would require. As Leo Szilard put it, the Report “clearly indicates the road along which any other nations will have to travel.” (*RCaD*, 97) But having the information is not the same thing as using it. To assemble their implosion-based plutonium bomb, the Soviets built a huge atomic complex under the lynx-eyed direction of Lavrentiy Beria, Stalin’s ruthless and feared right-hand man, who also oversaw the NKVD, the Soviet Union’s internal intelligence. Gordin narrates the intriguing story of how the information obtained from spying was disseminated. Only Beria and Igor Kuchatov, the head of the Soviet atomic bomb project, had access to all the intelligence materials thus gleaned. They controlled its dissemination extremely carefully. Since it was not clear how reliable the information was, parallel, totally separate, efforts were mounted to corroborate the validity of the information. German scientists and engineers who found themselves in the Russian occupied parts of Germany in June and July of 1945 were induced to join the Soviet atomic project, worked on many aspects of the design of a plutonium bomb, and formed the core of the parallel enterprise. Using important clues regarding the bomb’s implosion mechanism and its neutron initiator gathered from information transmitted by Fuchs and Hall, the Soviet designed and constructed their first explosive nuclear device, which they dubbed “RDS-1,” an acronym whose exact meaning is unknown. (*RCaD*, 164) The Americans initially called it “Vermont,” and eventually, in recognition of its ultimate author and inherently ordinal nature, “Joe-1.” RSD-1 was detonated on August 29, 1949.

A crucial and particularly perceptive part of Chapter 5 of *RCaD* deals with the particular means the United States used to obtain its hard intelligence about Soviet atomic developments. It carried out daily multiple aerial flights between Alaska and the Soviet Union to collect air samples that were analyzed for telltale signs of radioactivity produced in a nuclear explosion. Along with highlighting the aforementioned asymmetries in American and Soviet nuclear intelligence capabilities, the chapter also illustrates how personal ambition (in particular, that of Lewis Strauss), Congressional and institutional politics, and the rivalry between the

various branches of the armed forces, all interacted to produce the announcement by President Truman that “Joe-1” had been detonated. In addition, the chapter illuminates why it was Truman—and not Stalin or any one in the Soviet Union—who told the world of the Soviet achievement. Truman had reasoned that if the USSR announced their bomb test first, it would make the United States look hopelessly unaware. By announcing the test, the United States could show that it was still in control. (The Soviets, for their part, downplayed the announcement, and did not officially confirm its truth until 1951.) Gordin argues that the Soviets were not, in fact, planning to ever announce their success. It was antithetical to the secretive approach of Stalinist Russia to give the enemy information of that sort, and the Russians were baffled at the transparency that the Americans seemed to prefer. (*RCaD*, 239–243)

As should be clear by now, we believe that *Red Cloud at Dawn* is an extremely valuable contribution to atomic history. The amount of archival research that Gordin carried out in the United States and in Russia is extraordinary. His synthesis, presentation, and analysis of these materials make *RCaD* a most impressive scholarly accomplishment. Nonetheless, certain shortcomings of the book should be pointed out. Because Gordin is primarily concerned with developments in nuclear weaponry, and because the time span he focuses upon is delimited, a somewhat polarized view of Soviet–American interactions results. The impression this leaves is that the post-World War II tensions between the two antagonists had their origin in the war—the failure to open a second front on the part of the Allies, Soviet intransigence regarding the composition of the Polish, Czechoslovak, Finlandian, and Balkan governments, the Soviet occupation of Germany and Austria, etc.—when in fact the hostility and conflicts between them were of long standing, dating back to the 1917 revolution and the American interventions thereafter to aid the counter revolutionary forces. Surely, the United States’ post-World War II objective to secure global markets for its industrial and agricultural goods and the military and diplomatic policies that stemmed from that goal were likewise decisive factors in creating the Cold War.

Gordin’s intense focus on the detonation and detection of “Joe-1” makes for exceedingly good reading and plays an important narrative role, but it overstates the significance of this one important event in a history of many important events. From Gordin’s conclusion, one may get the impression that the rest of the Cold War followed, inevitably, from the detection of this single nuclear test. Historians are naturally and appropriately suspicious when new “prime movers” of history are championed. One can, of course, appreciate Gordin’s insights and points without accepting his conclusion on the primary significance of “Joe-1.”

Similarly, it would have been welcomed if some of the issues connected with the control over nuclear weapons and the authorization of their use after Hiroshima and Nagasaki had been addressed by Gordin. The diary of Secretary of War Henry Stimson contains the following entry for July 21, 1945 regarding what happened after he had received General Leslie Groves’s report on the July 18 Trinity test, had read it in its entirety to President Truman and Secretary of State James Byrnes, and had discussed it with them:

They were immensely pleased. The President was tremendously pepped up by it and spoke to me of it again and again when I saw him. He said it gave him an entirely new feeling of confidence and he thanked me for having come to the (Potsdam) conference and being present to help him in this way.

But the new feeling of confidence was manifested in his dealings with the Soviets—not with Congress. The imperial presidency had not yet been infected by the nuclear virus.

But these shortcomings do not lessen our admiration for what Gordin has accomplished. As an intervention into the extant historical literature, Gordin's important contribution is that he reintroduces a sense of contingency in the creation of the Soviet bomb, the specific circumstances that led to its detection by the United States, and the subsequent public announcement of its existence by Truman. He translates and weaves together narratives from intelligence history, diplomatic history, and the history of science and technology into a robust understanding of the complicated dynamics of nuclear knowledge and of American and Soviet policymaking. While a good deal of the story might be familiar to those who have read their way around the existing literature, Gordin's synthetic account combines to be much more than the sum of its parts.

RCaD is an ambitious approach to the history of nuclear weapons that, like *FDiA*, uses the particular attention given by historians of science to knowledge creation and use to produce a unique and in certain ways quite revisionist account of the bomb. For Gordin, the bomb is never a “known” thing—its meaning is always in flux, and depends on who is meant to be “knowing” it as well as on the context in which it is being considered. Gordin's work in this regard is especially timely, as (unfortunately) is any book that offers insights into why and how states proliferate nuclear weapons.

Ethan Pollock

According to a recent article in the *New York Times*, the “next big thing” for literary scholars concerns analyzing the “layered process of figuring out what someone else is thinking.” To illustrate, the author refers to the American television show “Friends”:

Phoebe and Rachel plot to play a joke on Monica and Chandler after they learn the two are secretly dating. The couple discover the prank and try to turn the tables, but Phoebe realizes this turnabout and once again tries to outwit them. As Phoebe tells Rachel, “They don't know that we know they know we know.”³

This “layered process” may be a boon for comedy writers and new ground for literary scholars, but it is old hat for analysts of national intelligence and counter-

³ Patricia Cohen, “Next big thing in English: Knowing they know that you know,” *New York Times*, March 31, 2010, accessed via the web on July 22, 2010 (<http://www.nytimes.com/2010/04/01/books/01lit.html>). The article discusses how some scholars are “cross-pollinating” English with cognitive science.

intelligence. Who knew what when? Do they know that we know? Are we sure that we know? And then there's the "Donald Rumsfeld twist": there are things that we know we don't know but there are also things we don't know we don't know—what the former US Secretary of Defense called "the unknown unknowns." These sorts of quandaries animate Michael Gordin's insightful and wise book, *Red Cloud at Dawn*, which focuses on the period immediately following the Second World War, when the United States had a "monopoly" on nuclear weapons but the USSR was not far behind (as we now know but few knew then.) The book should easily attract students and the general public who want to learn about the intricacies of the early years of atomic policy and intelligence from an entertaining and reliable source. But this is more than a book of synthesis and its importance for scholars and experts already fluent in the topic should not be overlooked. Gordin's major contribution comes from changing the angle from which we watch familiar stories unfold. Rather than the birds eye view provided by many histories, Gordin more often than not situates the reader on the ground, amid the confusion of the moment. The result is a book that is refreshingly short on claims about bringing to light new discoveries from the archives and provocatively long on questions. The book is less about presenting new information than it is about presenting new perspectives. In *Red Cloud at Dawn*, the confident hindsight of what we (historians) now know cedes ground to the fragmented uncertainty of what they (historical actors) knew at the time. In the process Gordin argues that many of the key features of the nuclear age—such as nuclear proliferation, the arms race, and an overwhelming emphasis on secrecy—were set in place in the 4 years between the first use of atomic weapons by the United States in the summer of 1945 and the first Soviet test of a nuclear device in the fall of 1949. These features did not emerge automatically from the circumstances. Instead, they came about as a result of specific assumptions, decisions, and reactions by key players on both sides of the descending iron curtain.

Gordin jumps right into the action. During the Second World War, the United States (with crucial assistance from Great Britain and Canada) was developing an atomic bomb but tried to keep that fact secret from its ally, the USSR. Atomic scientists scrambled to convince political leaders that they should inform the USSR about the bomb before it was used on Japanese cities. The politicians waffled. In the summer of 1945 at the Potsdam conference Harry Truman awkwardly hinted to Stalin that the United States was onto something big that might be used in the war against Japan. Stalin appeared not to understand the significance of what the American president was saying. Even if Stalin suspected that Truman knew that he already knew about the bomb, there was no reason to confirm it. And if he assumed correctly that Truman did not know that he knew, then feigning ignorance allowed him to play for time and perhaps also protect the sources that had passed information on to Soviet intelligence agencies in the first place. Stalin's performance (if it was one) was evidently convincing. Truman left the conference believing—and continued to believe—that at the time Stalin "knew no more about [the atomic bomb] than the man on the moon." (9) Truman thought that for Stalin the atomic bomb was an unknown unknown. But the discussion confirmed for Stalin that a nuclear weapon was a known unknown; the Soviet nuclear scientists working on building one would now receive unparalleled support. Truman had also

unwittingly revealed that the United States had no idea that Soviet scientists knew as much as they did.

Some historians have turned to this famous episode to emphasize a road not taken—a missed opportunity to avoid the arms race and the distrust that permeated postwar United States–Soviet relations. Gordin leans toward that position in recounting this and other episodes, but does so with less of an emphasis on diplomacy than on the nature and limits of intelligence—what he defines as “the dedicated gathering and interpretation of raw information about international matters.” As he notes, “The world of atomic weapons is shot through with espionage, secrecy, intrigue, misinformation, deception, and supposition.” Each side had to decide what to reveal and when, and each side had to interpret what the other side was saying and why. As Gordin puts it: “In any situation in which you have two or more parties (individuals, groups, nations) that are both trying to learn something about their opponent(s) and at the same time prevent the other(s) from learning anything useful, paradoxes of concealment and revelation abound.” This “dialectical dance” and its ramifications are the focus of Gordin’s analysis. (15)

Efforts at security and secrecy could easily backfire. For example, after the discovery of the fission of the uranium nucleus in 1938 made the idea of an atomic bomb feasible, American and British nuclear physicists stopped publishing their research lest it aid a German bomb project. When Georgii Flerov, a Soviet physicist, submitted a paper to the *American Journal of Physics*, wary editors decided to publish it out of fear that not publishing it would reveal that they were working on something in secret. Soon Flerov noticed that his article had not generated any response in US journals. Why had the exciting field of nuclear physics suddenly run dry? The implications were clear to Flerov. He wrote to a fellow scientist on the Soviet State Defense Committee making the case for Soviet atomic weapons research: “The stamp of silence has been laid on this question, and this is the best sign of what kind of burning work is going on right now abroad.” (31) He was so confident that the United States was working on a bomb that when his initial efforts did not elicit a response, he wrote directly to Stalin. In another instance, the US decision to bomb a key German facility tipped off Soviet scientists to the importance of uranium purification. My favorite example of someone “trapped by his own webs of intelligence and counter-intelligence” occurred during the war. Igor Kurchatov, the scientific director of the Soviet bomb project, sent a Lend-Lease request to the United States for eight tons of uranium oxide and eight tons of uranyl salts from the American War Production Board. General Leslie Groves was in a pickle. To grant the request would aid a potential Soviet atomic bomb project. To reject it might tip off the Soviets to the American project. He sent one thousand pounds of uranium salts and two pounds of unenriched uranium metal. He was too clever by half. The shipment helped Kurchatov with his experiments and the benefits of throwing the Soviets off the scent were negated by the fact that Stalin already knew about the American project. (124) *Red Cloud at Dawn* is full of similar stories. While many of them are familiar to experts, the cumulative effect is to place decisions about information, intelligence, and interpretation at the fore while the bread and butter of previous accounts—details of scientific research, technology, and diplomacy—fade to the background.

The USSR and the United States, of course, did not have the same intelligence gathering tools at their disposal. The Soviet Union depended for the most part on human intelligence—especially an espionage network that had infiltrated the Manhattan project. This does not mean that they had a blueprint of the American bomb. Instead, as Gordin aptly puts it, the United States was like a “black box” out of which came incomplete and potentially dubious data that only had value when they were properly integrated with open sources by experts. And even then the technological and industrial obstacles remained formidable. The USSR, in contrast, was more like a “black hole”—no matter what types of feelers or agents the United States sent in, no information ever seemed to come out. So the United States relied predominantly on technical intelligence, which proved crucial in determining whether the USSR had developed an atomic weapon of its own. Disinformation was less of a worry—instruments do not willfully deceive—but politics and funding certainly played a part in which systems were put in place and when. The story behind the American airborne atomic-test detection system that eventually picked up evidence of the first Soviet explosion is particularly fascinating. In general, Gordin’s chapters on the American steps in the “dialectical dance” struck me as more innovative, interesting, and convincing. This may be because I am a Russianist who knows less about the US project, but I suspect it has more to do with the richer extant materials in the United States. Despite the declassification of troves of archival documents in post-Soviet Russia, particularly in the 1990s, the end result is still a paucity of information on the strategic and intelligence decisions made inside the Kremlin. My impression—reinforced by Gordin’s book—is that the story from the point of view of key Soviet scientists has been worked out more thoroughly than Stalin and Beria’s view. In any case, both of these Soviet perspectives remain underdeveloped compared to what we know about how American scientists, politicians, and the public interpreted and acted on information at their disposal. This presents a bit of a paradox: Gordin is trained as a historian of Russian and Soviet science, but has produced a book that is more about the United States and US intelligence than it is about the USSR. (To be fair, Gordin obviously has broad areas of expertise; his book *5 Days in August* is also about the dawn of the nuclear age from a predominantly US perspective.) That said, Gordin’s background as a Russianist and as a historian of science pays dividends. His research and language skills allow him to take full advantage of the Soviet materials that have become available since David Holloway’s definitive account of the Soviet project, *Stalin and the Bomb*, was published in 1994.⁴ The ways Gordin’s knowledge of the history of science contributes to his account is a little harder to describe. It has to do with his overall disposition. To borrow and adapt Latour’s terms, this is a book about intelligence “in the making” rather than about “ready made” intelligence. Gordin seeks to downplay “what we now know” about the arms race, atomic espionage, and efforts to control atomic weapons so that we can learn how accepted knowledge was built on assumptions and constructed truths. As he repeats in the book, “It was not supposed to happen this way.”

No matter how well written and enlightening it is, there are limits to a book that relies so squarely on destabilizing what we now know happened in favor of what

⁴ David Holloway, *Stalin and the bomb* (New Haven: Yale University Press, 1994).

might have been. Gordin's emphasis on unintended consequences reminded me of E. H. Carr's observation that social forces produce "results often at variance with, and sometimes opposite to, the results which [individuals] themselves intended."⁵ Take the meeting at Potsdam. The argument seems to be that if Truman and his administration had disclosed information to Stalin about the atomic bomb differently, the USSR might have been less defensive and divisive in the postwar period. As Gordin suggests, in 1945 "strange as it might now seem ... agreement and cooperation between the Americans and Soviets did not seem utterly impossible." (61–62) The implication is that US policy rendered cooperation more difficult. But nothing here convinces me that Stalin would have worked with the United States or trusted his allies about nuclear matters under any circumstances. Holloway's conclusions still seem to hold: even if Truman had approached the situation differently, as Niels Bohr had suggested he do, "The bomb would still have affected the balance of power, and would still have been a symbol of the economic and technological might of the state. Stalin would still have wanted a bomb of his own."⁶ If "it was not supposed to happen this way," how do we know an alternative approach at any step of the way would have led to "better" outcomes? Wouldn't Bohr's approach also lead to results at variance with his intentions? History never works out exactly as it is supposed to.

Gordin stops his analysis in 1949, with the American reaction to the first successful Soviet test. By that point the book has made a solid case for how things might have turned out differently—if American policy makers had been more aware of the precarious nature of the monopoly, if the American government's response to a Soviet device had not been to increase hostility, if US military strategy had not relied so heavily on the monopoly of atomic weapons after 1945, etc. The conclusion maps out how the superpower arms race, the emphasis on secrecy, the types of intelligence utilized by the United States and USSR and other features of the Cold War can all be traced back to the construction and detection of the first Soviet atomic explosion and the aftershocks it left in its wake. It appears from Gordin's conclusion that alternative paths were possible only up to a point, but that after 1949 the structures for the Cold War were firmly in place. The shift is abrupt. The countless questions that pepper each of the preceding chapters suddenly give way to definitive statements. The conclusion is both more conventional in its approach and less exciting to read than the rest of the book. The black box has been closed shut. After a fascinating book about atomic intelligence in action up to 1949, it is hard to accept atomic history as ready made from that point forward. That in itself is a testament to what Gordin has accomplished and how much new thinking remains to be done.

Barton J. Bernstein

Michael Gordin has written a sophisticated volume dealing with (to use the subtitle) *Truman, Stalin, and the End of the Atomic Monopoly*. This eminently readable and

⁵ Edward Hallett Carr, *What is history?* (New York: Vintage Books, 1961), 64.

⁶ Holloway, *Stalin and the bomb*, 133.

pleasantly engaging book displays Gordin's considerable abilities as an astute historian of science and as a probing scholar (also able in Russian) of World War II and early Cold War history dealing with American and Soviet policy, their interactions, and the difficult interpretations of nuclear weapons knowledge.

Red Cloud at Dawn is highly intelligent, perceptive about epistemological issues, well researched, and reasonably fast paced. Apparently designed for both a lay and scholarly audience, the book is easily accessible to casual readers and usefully enlightening to A-bomb and Cold War scholars. Gordin intelligently uses the published scholarship, and most of the relevant archival and printed documentary materials, to offer a survey of United States–USSR atomic policy from 1945 into the early 1950s and to relate that to his chief interest—the development of the Soviet A-bomb, the 1949 American detection of that bomb's testing, and the meanings of those developments.

Surprisingly, both Harry S. Truman and Joseph Stalin appear, despite substantial commentary and narrative in *Red Cloud*, as somewhat elusive figures. Possibly, however, there was no need for the book to get deeply into Stalin's personality or even his foreign-policy thinking. Truman, while apparently receiving more attention in the book, is not really "fleshed out."

Unfortunately, rather fleeting in *Red Cloud* is the treatment of Truman's dealings with Joseph Stalin at the Potsdam conference in mid-1945, the issues and events of atomic diplomacy, and the nature of the Acheson–Lilienthal plan for international control of atomic energy. More basic, and inadequately addressed, are the fundamental questions of what difference the American nuclear monopoly in 1945–1949 made in American foreign policy, in Soviet foreign policy, and in the origins and development of the Cold War in 1945–1949. Probably because of *Red Cloud's* intended primary focus, these issues are not treated in the depth they should warrant.

Lamentably, *Red Cloud* is also marred by various small errors, but in this brief review-essay they will not be treated. They are minor, and this review-essay is conceived to discuss larger matters of evidence and interpretation.

Wartime and early postwar dealings with Stalin and the USSR regarding the A-bomb

Rather troubling interpretively in *Red Cloud* is that book's general avoidance of the question whether the Truman administration employed "atomic diplomacy"—implied threats—in 1945 after Hiroshima in dealing with the Soviet Union.

The subject of "atomic diplomacy" is important because its treatment can explain much of the essential context, and significant quality, of Soviet-American relations in post-Hiroshima 1945 and the tactics in Soviet–American disputes over Eastern Europe. Did the United States seek to use such policy to roll back Soviet influence? Is there decent evidence, even when mixed with enterprising inference, that the Soviet Union in late 1945, after Hiroshima, eased some of its Eastern European policies because of American implied threats?

In considering the Acheson–Lilienthal and Baruch plans, there are important questions, largely unaddressed in *Red Cloud*: What, by late 1945 and early 1946, did

Truman believe were the great advantages and the serious liabilities to the American nuclear monopoly? For Truman and Secretary of State James Byrnes, in their somewhat differing judgments, had the A-bomb helped sour Soviet–American relations?

For reasons not adequately explained, or perhaps not understood, in *Red Cloud*, the Acheson–Lilienthal plan of early 1946, despite the sincere intentions of J. Robert Oppenheimer, David Lilienthal, and others, was basically unacceptable to the Soviets. That plan’s provisions for stages, and with inspection occurring very early, meant that the Soviets would have had to give up secrecy, allow penetration of their security, and trust at a later stage that the United States would share secret atomic-energy information. What would happen, under Acheson–Lilienthal, if the Americans seized the advantages allowed by the early (but not clearly specified) stages, and then reneged before the later stages, which required sharing? In effect, the American nuclear monopoly would have been protected and prolonged.

In the early postwar years, after the 1946 failure at the UN of the Baruch plan, the A-bomb, as *Red Cloud* briefly indicates, was not generally viewed by American military planners as the “winning weapon.” Unlike much of the American press, and closer to the understanding by the notable American columnist Walter Lippmann and the significant physicist/strategist P.M.S. Blackett, American military planners usually recognized that the bomb would not be *the decisive* weapon. It would not produce speedy victory if war erupted on the European continent against the USSR. In much of the military thinking, the A-bomb was simply an important asset, but a European war, it was assumed, would be lengthy, enervating, significantly involved with conventional weapons, and *also* using nuclear weapons.

As *Red Cloud* makes clear, heavily building on the established literature, Truman was very uneasy about the atomic bomb. Notably, to the dismay of his advisers and especially Secretary of Defense James Forrestal, Truman would not endorse planning for the A-bomb’s use during the 1948 Berlin crisis. He ordered that war planning stick to conventional weapons. In various ways, the atomic bomb did not seem usable, although there was often the sense—really, a highly suspect conclusion—that it constituted a powerful deterrent to Soviet military expansion.

Judged in retrospect, it seems highly questionable that Stalin had any real intention of conducting military expansion, and thus it seems highly likely that the bomb was, in an important way, not a deterrent, because there was nothing significant that it was deterring.

Anticipating the Soviet A-bomb breakthrough

Red Cloud usefully explores the likely value to the Soviets of the disclosures in the August 1945 Smyth report (*Atomic Energy for Military Purposes*). The British, as *Red Cloud* notes, were uneasy about the report, but they deferred to the Americans. What *Red Cloud* does not mention is that the important science-adviser James Conant, who had long been close to the A-bomb project, argued strongly in early August 1945 for issuing the Smyth report.

But according to critics, including physicist Leo Szilard, the report gave away too much information. Exactly how much the Smyth report speeded the Soviet bomb,

and exactly how it assisted the Soviets, still seems rather unclear, because so much of the Soviet pursuit of the first bomb, modeled on the American plutonium weapon, is still not known. David Holloway in his magisterial book (*Stalin and the Bomb*), Gordin, and others have pieced together parts—important parts—of that convoluted story, but good chunks are apparently still shrouded in secrecy.

Red Cloud makes very clear how widely the high-level American estimates after Hiroshima tended to range on when the Soviets would develop their bomb. Certainly among the most knowledgeable about the development of the American bomb, General Leslie Groves himself was notably uncertain in his estimates for development of a Soviet A-bomb. In September–November 1945, for example, as *Red Cloud* stresses, Groves variously estimated 10 years, 5–20 years, and 15–20 years with (he said) “more likely” 20 years.

Even a rigorously conceived effort in 1945–1949 at analysis of what the Soviets could do and when they could do it, as Gordin perceptively sketches, was full of significant contingencies, important speculations, and really near-guesses. What did the Soviets actually know about building the needed industrial plants, about the technique of producing the required plutonium, about the basic and applied physics and mathematics for designing a workable bomb? Could they gather adequate ore and put together a successful team or teams? These were complicated matters involving science, mathematics, industry, and the state.

What leading American physicists did know, however, was something that Groves seemed not to recognize—the Soviets had world-class mathematicians and major physicists. In many ways, the Soviet Union was backward—but not in those key intellectual areas of mathematics and physics.

Dealing with detection

Over the years, after Joe-I, the information on the development of the long-range American detection system slowly emerged into the public domain. Very small pieces became available in the 1954 Oppenheimer hearings, some appeared in Truman’s 1955 memoir, and some in Lewis Strauss’s self-serving 1962 memoir. A burst of declassification in the mid-1970s provided substantial archive sources on the development and functioning of the detection system.

Using those materials intelligently, and in a critical-mined way, requires an understanding of the underlying science, the nature of warranted inferences from the data, and the probabilities—often implicit—in drawing useful conclusions about Soviet events.

Much to Gordin’s credit, he thoughtfully explains these problems, and the multiple detection systems that were developed. In mid-September 1949, after highly suggestive evidence of a Soviet nuclear test was picked up on the 3rd, and more evidence was gathered, a special four-man panel, headed by the stalwart Vannevar Bush, concluded that, indeed, this had been a Soviet A-bomb test.

That August 1949 Soviet test occurred earlier than was generally expected or predicted. The conclusion that the Soviets had developed the *bomb* was unsettling and unnerving. The American monopoly had ended.

Skillfully piecing together much of the available evidence, frequently based in Truman Library and Atomic Energy Commission (AEC) files, *Red Cloud* makes clear that President Truman was greatly reluctant to make an announcement of the Soviet test and that he claimed then, and afterward, to be unwilling to believe that the Soviets had an atomic weapon.

Perhaps surprisingly, Gordin does not dwell on Truman's behavior. Most likely, Truman's behavior can be explained as his choosing emotionally to cling to a satisfying belief (no Soviet A-bomb) at the same time that he cognitively took actions that assumed that the Soviets had, in fact, broken the American monopoly by developing an atomic bomb.

Red Cloud does deal with the American decision on September 10, apparently made well below the presidential level, to alert British authorities to the unsettling nature of the early surveillance evidence and to urge the British to begin monitoring atmospheric material north of Scotland.

Undoubtedly far more important, and clearly understandable to Truman, was the September 20 or 21, one-page report (on the Soviet test) submitted by General Hoyt Vandenberg, the air force chief of staff. Though surprisingly unmentioned in *Red Cloud*, that Vandenberg report was addressed to Secretary of Defense Louis Johnson and was probably rather promptly read by Johnson and Truman. As point 1 in that five-point memorandum, General Vandenberg bluntly stated, "I believe that an atomic bomb has been detonated over the Asiatic land mass during the period 26 August–29 August 1949." He provided in his brief statement a non-technical summary of the evidence and stressed that the conclusions that there had been a Soviet A-bomb test "have been confirmed by scientists of the AEC, United Kingdom and Office of Naval Research."

Presumably helping to clinch this case, Vandenberg attached the 10-line supporting conclusions, dated September 20 and signed by the special four-man panel headed by Bush. The other three members were as follows: Oppenheimer; the former AEC commissioner Robert Bacher, a Caltech physicist; and Rear Admiral William Parsons, who had been the weaponeer on the 1945 Hiroshima bombing mission.

The four men had formally endorsed the more technical report (Tech. Memo. No. 37), dated September 19, which the panel had read and that Vandenberg had provided with his own report. There was no explanation why the four-man group met on the 19th, but did not date and apparently sign their brief report until the 20th.

Perhaps they met again on the 20th, after the 19th, to discuss the evidence and to phrase their brief report, but that interpretation of the 1-day lag is speculative and has not been closely checked against archival materials. The 1-day gap is unmentioned, and thus unexplained, in *Red Cloud*.

Why the Bush panel did not meet until the 19th is not fully clear, and most likely, as the available records suggest, there were scheduling problems for the members. By the 19th, it appears that the necessary data-gathering and data-assessment work had been done. It is unclear how much the four-man panel added of intellectual substance, but they did legitimize the earlier conclusions.

Though *Red Cloud* is deeply and thoughtfully interested in the epistemology of evidence, and in the related difficulties of decision-making in dealing with various

kinds of evidence, the book, perhaps surprisingly, did not deal in detail with Tech. Memo. 37 and the reports by Vandenberg and the Bush panel. Gordin, with his rich knowledge, thoughtful concerns, and clear capacity for subtlety, probably missed a useful opportunity by not focusing in depth in *Red Cloud* on those three important documents.

On September 23, Truman did publicly announce the Soviet test, but as only an atomic “explosion,” not an atomic *bomb* explosion. To much of the world press, and to most of the American public, that seemingly evasive euphemism did not deceive. Many understood: The Soviets had an atomic bomb and had broken the American nuclear monopoly.

AEC chairman David Lilienthal put the matter pungently in his journal: It was “bunk” that the Soviet test had been expected, and he noted that there was indeed some sense of panic in official Washington, despite the government’s public claims to the contrary.

Some results of Joe-I and developing NSC-68

Probably in order to hold *Red Cloud* to a very manageable length, the volume does not extend significantly, in depth and in detail, into 1950 and the development of NSC-68. That now-famous paper was mostly written by Paul Nitze. It was a paper of which Secretary of State Dean Acheson was the spiritual architect, and it was a key part of Dean Acheson’s 1949–1950 campaign within the Truman government for a much larger American military/defense budget. NSC-68, alarmed by what was deemed the Soviet threat, desired approximately tripling the nation’s military/defense budget in the next few years.

Unlike President Truman, both Nitze and Acheson, both of whom accepted various Keynesian notions, believed that the American economy could sustain such large spending, not impair growth, and actually promote significant economic growth.

Despite the significant scholarly literature on NSC-68 and on American policy after Joe-I, there might have still been advantages to *Red Cloud*’s focusing sharply on American thinking, at various levels, in the approximately 9-month period (September 1949–June 1950) between the announcement of the Soviet “explosion” and the outbreak of a large-scale shooting war on the Korean peninsula with the American ground-force commitment in June.

In discussions leading to NSC-68, Oppenheimer in February 1950, in meeting with Nitze and other State Department officials, rued the emphasis on nuclear weapons. If “one was honest,” Oppenheimer said, (in the official minutes’s possibly paraphrasing words), “the most probable view of the future is that of war, exploding atomic bombs, death, and the end of most freedom.”

Indirectly pleading for more government openness in discussing such nuclear-weapons matters, Oppenheimer stated (again in the minutes’s likely paraphrasing words), “The people must see this and only then will they do what must be done.” Such evocative thinking, as so often by Oppenheimer, who had helped expand the nuclear arsenal, was rather vague on what he thought should be done.

In contrast to the agonizing Oppenheimer was physicist Ernest Lawrence, by then an Oppenheimer enemy and critic. Meeting with Nitze and others from the State and Defense Departments, Lawrence criticized the public foes of the H-bomb. He insisted that working scientists were supporters and noted that many scientists criticizing the effort to develop an H-bomb were publicly supporters of an A-bomb arsenal. He thought they were caught in a strange inconsistency, since a number of them, by his reckoning, had earlier been critics of the A-bomb.

Lawrence said that the government's present spending on nuclear weapons was "chicken feed," and he thought the United States should spend ten times as much. He contended that secrecy and security constraints had not impaired the recruitment of nuclear-weapons scientists.

The national-security state as an interpretive framework

Placed in a broader conceptual framework than *Red Cloud* chooses to employ, the nuclear-policy events of 1949–1950—with Truman's H-Bomb decision announced on January 31, 1950, Truman's secret (unannounced) speed-up order on the H-bomb of early March 1950, and the secret work leading to the then-secret NSC-68 of April 1950—can be meaningfully understood as the further expansion of the national-security state.

In that expanding national-security state, Congressional leaders periodically chafed as government-imposed secrecy barred them from gaining important knowledge that they deemed essential to sound decision-making. Such data as the size of the American nuclear arsenal, and the high-level estimates on the size of the developing Soviet arsenal, were systematically kept from the Congress. How then, some Congressmen, like Senator Brien McMahon, chairman of the Joint Committee on Atomic Energy, complained, could Congress make intelligent decisions on the size of the military budget, the allocation of money to the three military services and to particular activities, and on the budgetary hopes and needs of the AEC?

It was the Korean War that transformed matters and made the NSC-68 program generally a matter of presidential policy. As Acheson later remarked, that war had rescued NSC-68 from the ash heap of history. Under NSC-68, and the war, the American military/defense budget roughly tripled within a few years.

That meant not simply far more spending, but also far more military procurement. The results in America were large military-goods contracts for manufacturers, a significant spurt in aircraft production and electrical goods, and the further nurturing of what some would term a "military-industrial complex." Amid such substantial growth, the AEC budget, benefiting from Joe-I, NSC-68 and the Korean War, also significantly increased, new plants were added or expanded, and nuclear arms production greatly jumped. In 1949, the United States had about 170 A-bombs; in 1951, about 435, and in 1952, about 830.

A final (but brief) commentary

To point out the important broad implications of *Red Cloud* is not to minimize the book's explicit contributions. Written with intelligence, displaying knowledge of

both the Soviet Union and the United States, and with a deep understanding of the history of science and of epistemological problems, Michael Gordin's often subtle book has valuably contributed to nuclear history and suggested fruitful questions for other scholars.

Author's response: Michael D. Gordin

After years of researching about uncertain information, garbled communiqués, and ever increasing suspicion between writers and readers, it is a real pleasure to come in from the Cold War and engage with such thoughtful, careful readers like those who have written the preceding reviews. The authors come from very different perspectives, and I have personally learned a great deal from their collective writings: from Alex Wellerstein and Sam Schweber, on the history of nuclear secrecy and the history of modern physics; from Ethan Pollock, on the history of Soviet science; and from Barton J. Bernstein, more about the history of American foreign policy than I could ever possibly hope to recount. Their essay reviews push the argument of *Red Cloud at Dawn* in interesting directions, and I am grateful for the opportunity to clarify my arguments and my approach. Their analyses seem to cluster around the issues of contingency, emphasis, and explanation, all of which are intimately bound up with each other.

The first general point, raised in some of the reviews, was about opening up contingency in the early history of the nuclear arms race, specifically in the period between 1945 (the Trinity test in the deserts of New Mexico that July and then the dropping of atomic bombs on both Hiroshima and Nagasaki in early August) to the summer of 1949, when the Soviet Union tested its first nuclear device in the deserts of Kazakhstan. Distinctive about this period is the fact that the Americans were the only ones to actually have any nuclear bombs, posing a unique quandary for international relations, for domestic civil–military relations, and for the relationship between American scientists and their state. The reason I consider this period “unique” is that the various actors—from leaders of nations to political pundits to military officers and physicists—believed that it was a time when momentous decisions needed to be made that would shape the fate of humanity for decades to come—or, if the wrong decisions were made, perhaps only for a few years before atomic devastation destroyed the species. Their views may seem hyperbolic, ill-informed, or occasionally plain strange to us today, but the central message of *Red Cloud at Dawn* is to begin (as Ethan Pollock helpfully put it) by “changing the angle” of analysis so that we are among the actors and their perspectives. That is, to quote Pollock: “In *Red Cloud at Dawn* the confident hindsight of what we (historians) now know cedes ground to the fragmented uncertainty of what they (historical actors) knew at the time.”

The major way I try to do this is by stressing information and how information flowed either between opposing sides in the Cold War or among different parties on the same side. All four reviewers agree that this has added some elements of contingency to the story, although—and here I agree—not without some costs. Bernstein provides a particularly revealing example of this. Chapter 2 of *Red Cloud*

at Dawn chronicles the various estimates by Americans for how long the atomic monopoly might last. Since the most obvious nation to attempt to develop its own nuclear bomb was the Soviet Union, this was identical to predicting how long until the Soviet Union proliferated. Estimates ranged from 2 years at the very shortest to 40 years or never at the far end, but by 1949 most estimates clustered between 5 and 10 years—not because information had become any better, but simply because time had ticked forward and one needed to develop an estimate in order to formulate realistic policy. (If the time for the monopoly was estimated to be long, then the United States could rely on a nuclear deterrent to offset the Soviet Union’s vastly superior conventional forces; if the time were short, then the United States needed to think about force restructuring rather more rapidly.) Since no hard information was coming out of the Soviet Union, the American prognosticators had to filter what little there was through the American experience of the Manhattan Project (and, to a lesser extent, the abortive German uranium program), and their views of the capacity of the Soviet Union to accomplish the various tasks involved in the construction of a nuclear device.

General Leslie R. Groves, the administrator of the Manhattan Project, famously predicted that it would be roughly 20 years before the Soviets developed a nuclear device. (He actually offered a range of predictions, but twenty was his final number.) Bernstein points out something that Groves did not factor into his assumptions: the excellent quality of Soviet physicists and other scientists. This is true as far as it goes, but I think there is a deeper lesson here. It is not that Groves ignored the potential intellectual resources among Soviet scientists; it was that he thought pure science was irrelevant to making a bomb next to advanced engineering. (Groves, by training, was an engineer, and also did not care for many of the physicists working under him.) These long-term estimates thus enable us to see how individuals processed the limited information that came into their hands. In general, everyone weighted personal experience heavily: Groves directed a vast industrial engineering enterprise, so he thought this central; J. Robert Oppenheimer had met several of the Soviet physicists during the 1930s, so he elevated their capacity (and his own) as crucial to the bomb; and military personnel discounted Soviet capacities because of their highly negative interactions with Soviet officers during the European theater of World War II. (Hostility, as Schweber and Wellerstein point out, actually had deeper origins, which I do not wish to discount, although they are not an emphasis of the book.) The point is not to catalog who was right and who was wrong, but that we all need a filter to process information, and we usually do not know what our assumptions are.

As a result, I pay particular attention to how information was packaged, who wrote it up, and how people made decisions based on intelligence as it moved around various bureaucracies. Therefore, I tended to stress in the book documents that began early in the “intelligence pipeline”—raw intelligence or scientific analyses that were later repackaged and presented to politicians. Bernstein and I differ here. He criticizes me for not using certain specific documents in my analysis of how the Americans converted a series of positive radioactivity counts in the troposphere into a verdict that in fact the Soviets had tested a nuclear device. I use a variety of documents, but I emphasize the Naval Research Laboratory (NRL)

analysis of radioisotope levels in precipitated rainwater and the British analysis of atmospheric radioactivity. I use these instead of Tech Memo 37 and the Vandenburg report cited by Bernstein (although I do discuss the results of the Bush panel), because the NRL and British reports were the primary sources for the conclusions offered in the documents he mentions. I stress the process of intelligence gathering rather than the final result. Bernstein comments that it is “unclear how much the four-man panel”—of Vannevar Bush, J. Robert Oppenheimer, William Parsons, and Robert Bacher, who were assembled to analyze the results of all the various reports—“added of intellectual substance, but they did legitimize the earlier conclusions.” That is the whole point of my discussion of this panel in the book: all they were required (and expected) to do was ratify for Truman what the earlier technical reports had already said. It was a tool of legitimization, and as such quite important, but they also entered the picture after the potential results became a whole lot less contingent.

Something is, however, sacrificed in this focus on contingency. One major angle that I admit gets short shrift in the book, and which both Bernstein and Pollock point out, is the human dimension. Bernstein notes, quite correctly, that Truman and Stalin are “somewhat elusive figures” in the book. As the documents get shuffled and moved around, the people who produce them are in sharper focus than those that consume them—and Truman and Stalin were the ultimate consumers in their respective countries. I was able to get much closer to David Lilienthal, the first chairman of the U.S. Atomic Energy Commission (AEC), and even Igor Kurchatov, the scientific director of the Soviet atomic project, than to either leader. Sometimes, I was able to get deeper insight into some individuals’ actions, but not often. Bernstein criticizes me for not “dwell[ing] on Truman’s behavior” in his delaying of the announcement of the Soviet test for several days before he finally announced the detection on 23 September 1945. On the contrary, I devote half of Chapter 6 to precisely this question, connecting his decision to the devaluation of the British pound, the fact that there had been at least two previous Soviet proliferation scares, and also the fact that the CIA had predicted *during* the month of September 1949 (and thus after information about the radioisotopes was flowing through the intelligence pipeline) that 1951 would be the earliest it would happen. Truman weighted these facts perhaps much more heavily than, with hindsight, we now would. I do not discount Bernstein’s hypothesis of Truman’s “choosing emotionally to cling to a satisfying belief (no Soviet A-bomb),” but I do not feel we have enough information to get into his head, psychologically speaking. Nonetheless, Truman does remain a somewhat closed-off figure in the narrative of the book.

But his remove is nothing compared to Stalin’s. Ethan Pollock notes the asymmetry between the Soviet and the American sides in *Red Cloud at Dawn*, and I cannot but agree. The historian of the Soviet nuclear program is extremely limited in his or her sources. Many of the participants (interviewed by David Holloway in his seminal *Stalin and the Bomb*) are now dead, but we now have several large maroon-bound volumes of released documentation from the Ministry of Atomic Energy, all redacted for secrecy but still quite useful for the historian, particularly for the 1940s. (The limitations on secrecy dramatically reduce the volumes’ utility for the 1950s, which partly accounts for the scope of *Red Cloud at Dawn*.) Unfortunately,

following the trail of documents automatically reduces Stalin's role in the picture, not because he was irrelevant to the major decisions (far from it!), but because those decisions were not made on paper in Stalin's hand. Considering how hard it is to figure out what went on in Truman's mind, even with reams of evidence, Stalin's true views on the bomb remain a cipher. I wish I had been able to resolve this, but the available sources just do not permit the same texture of evidence as for the Americans. The same is true, to a certain extent, for Soviet scientists. American atomic physicists wrote memoirs and left copious personal papers; their Soviet counterparts had to be very guarded about what they could say until at least the end of the Soviet Union, and by then memories had faded or become colored by the experience of the collapse of the Soviet project. Evidentiary concerns aside, I am still convinced that the Americans have to dominate a transnational book of this sort, because the decisions made by the Americans—to develop a bomb, to use it, to approach international control the way they did, to set up a detection system for a Soviet blast, to announce the blast, and to react to that announcement the way they did—demonstrably shaped Soviet decisions.

They did not, however, determine them. Pollock and Bernstein both attribute to me a view I do not hold: that had the Americans shared more information with the Soviets, or adopted a conciliatory approach, a nuclear arms race could have been averted. I do not believe this is true, and I do not argue it in the book. I point out instead that many individuals at the time thought that there were several possible paths, and—in their ignorance of Soviet actions—made choices based on how they weighed the evidence. The decisions they made shaped Soviet choices in the sense that they created an environment in which the Soviets had to move, and they became pretexts cited by the Soviets to defend their actions. It is entirely possible that the Soviets would have made those choices no matter how the Baruch Plan was presented, or if it had been closer to the Acheson–Lilienthal proposal. (Bernstein, in his comments, somewhat conflates the two; the staging of information release and disarmament was more prominent in the Baruch emendation to the original Oppenheimer-inspired plan.) But I have no way of knowing it. Another way of putting this is that I resist the use of counterfactual reasoning, employed by all four reviewers. I do not speculate anywhere in the book about “how things could have turned out differently.” Nuclear historians are particularly fond of counterfactual reasoning because it is a way to add contingency to a story that is all too drearily determinist; I add that contingency by looking at the uncertainty of information. I feel this is a more historically accurate way of depicting the events. More specifically, I am looking for a way of adding a different kind of contingency than causal contingency (i.e., things could have been different), more like an uncertainty that serves a similar function in destabilizing received narratives about the past. Pollock is unconvinced that “Stalin would have worked with the United States or trusted his allies about nuclear matters under any circumstances,” and I am inclined to agree. But that does not mean that David Lilienthal or even Harry Truman were of the same mind.

If one eschews counterfactuals, however, it becomes very difficult to offer a causal account. Any causal account (“He died because I shot him in the head”) has an implied counterfactual behind it (“Had I not shot him in the head, he would not

be dead”). If we as historians do not use these devices, then what happens to causal explanation? The point motivates many of Bernstein’s acute comments. He is very interested in the *effects* various weapons and choices had. I am more interested in what people knew about them at various points in time. His emphasis on results is why he wants to know whether Truman used atomic diplomacy. It is a good question—in fact, it has been the central question of all nuclear history of the Truman years. For precisely that reason, I designed the parameters of this study to avoid it. We know that Truman thought about the atomic bomb a great deal when making foreign-policy decisions, yet we can never determine a causal relationship between his thinking and actions he took. But if we focus on layers of uncertainty, on the *process* of decision-making, we abandon causation and instead seek explanations in the form of what it was like to be making decisions in a certain political and informational environment. What we end up with might be less of a traditional “explanation” in the rigorous sense, but that does not mean that we emerge without historical *understanding*, albeit of a different form. I am sure Bernstein and other historians of foreign policy are disappointed that I do not try to prove one way or the other “what difference the American nuclear monopoly in 1945–1949 made in American Foreign policy, in Soviet foreign policy, and in the origins and development of the Cold War.” But that is simply not the project of the book.

I would like to conclude with Schweber and Wellerstein’s worry (echoed by the others) that I overstate the impact of this single event—the atomic explosion that became known as “Joe-1”—in the history of the Cold War. I hope the discussion about causal history puts it in better focus. I do not want to claim that Joe-1 “caused” the escalation of the Cold War. In fact, I explicitly state the opposite: that every policy which was later attributed to Joe-1 was in the works before the detection of the bomb. Joe-1 became a pretext, an excuse for mobilizing political energy behind decisions that some people (such as Lewis Strauss) had wanted to do for a long time. Bernstein mentions, for example, the increase of the AEC budget as a result of Joe-1. But how would we know whether Joe-1 caused the increase or not? All we can say for certain is that the two were correlated in time. Joe-1 was used as an argument, for example, for massively expanding fissile fuel production. But we can be certain that Joe-1 did not “cause” that increase, because those plans had been ready for months before the detection of the Soviet blast. Likewise, Joe-1 provided a pretext for raising the conversation about the “Super”—the hydrogen bomb. Bernstein and I, in short, differ about how one should explain historical events. *Red Cloud at Dawn* is built along a different model than the one he would presumably have used, but I contend that adding a different approach can be a helpful supplement to a history of foreign-policy literature that already has plenty of the other.

My goal, in short, was to illustrate why those policies made sense as responses to Joe-1, which is not the same thing as saying it caused them. But of course Schweber and Wellerstein are right that 1949 is not a universal break point, or, if it was, that that breaking was not necessarily all about Joe-1. One could write an analogous story about how the “loss” of China in October 1949 was mobilized as an argument for the same ends, and one would be perfectly correct. The narrative does, as

Pollock points out, change rather abruptly after 1949 to become much more determinist, much less uncertain. Some of that is indeed my fault, but some of it is the historical reality. The main point of uncertainty that motivates the book—when would the Soviets get an atomic bomb?—was no longer uncertain. There were plenty of new uncertainties (how many bombs did the Soviet have? what were the effects of nuclear fallout? was there a bomber gap?) that stormed into the breach, but those are the subjects for another historian, who I hope is working on those questions right now.