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Introduction by Chester Pach

Christopher J. Bright. *Continental Defense in the Eisenhower Era: Nuclear Antiaircraft Arms and the Cold War*. New York: Palgrave Macmillan, 2010. ISBN: 978-0-230-62340-8 (hardcover, $84.00).

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Introduction by Chester Pach, Ohio University

Many Christmases ago, when the Space Race was an important part of U.S.-Soviet Cold War rivalry, one of my gifts was a Cape Canaveral space set. There were missiles and launch pads, space capsules and satellites, and an authentic mission control center. To protect all this sophisticated equipment from devastating attack, I had a model BOMARC missile, which was then an essential component of the U.S. air defense system. The model BOMARC was made of sleek, black plastic, with decals on its stubby wings, and it surged into the air from a spring-loaded launcher. It was an impressive toy, but I never appreciated what was surely the BOMARC's most notable characteristic: it carried a nuclear warhead that was designed to explode in the atmosphere and destroy Soviet airplanes and the atomic bombs they carried.

It was no accident that many children in the late 1950s and early 1960s had model BOMARCs as part of their toy collections, as Christopher J. Bright explains in his detailed and fascinating study of nuclear antiaircraft weapons during the presidency of Dwight D. Eisenhower. When Eisenhower came to office in 1953 there were fewer than one thousand nuclear weapons in the U.S. arsenal. Eight years later, when the president gave his famous Farewell Address warning about the "military-industrial complex," there were more than 18,000. One-fifth of those weapons were warheads for the BOMARC or other missiles and rockets that protected the United States against an enemy bomber attack. While the studies that made the BOMARC a central part of U.S. defenses began during the administration of Harry S. Truman, it was during Eisenhower's presidency that atomic antiaircraft weapons were developed and deployed. The meetings in the White House and Pentagon about how to protect the United States against surprise attack were, of course, secret, and Bright has conducted extensive research in archival and manuscript collections that contain those records, many of which have only been recently released. There was no way to keep secret, though, the dozens of sites, some of which were in or near large cities, where the Air Force's BOMARCs or the Army's Nike-Hercules missiles were positioned. As Bright explains, military and civilian officials conducted ambitious publicity campaigns to make sure that these new weapons had "a positive effect on national morale" (60) and to inspire confidence that weapons that produced nuclear explosions in the skies over U.S. soil could protect the American people from catastrophic atomic attack. Two toy companies produced BOMARC models, although their designs diverged in significant ways from the real thing. Lassie, the canine star of the popular television show, made a visit during an episode in 1961 to a Nike-Hercules site and saw "one of the most effective weapons in America's defense arsenal." (125) While children like me might have gained reassurance from "Lassie," adults might have paid more attention to Miss BOMARC, a contestant in a 1958 Salt Lake City beauty contest, whose hairdo, inspired by the air defense missile, suggested a "nuclear payload." (131)

The roundtable reviewers praise Bright for his meticulous study of a topic in U.S. defense policy that has previously received only slight attention. David L. Snead, for example, declares that Bright has written an "important" book, partly because "America's strategic nuclear arsenal has been closely examined," but "the military's creation of nuclear

antiaircraft defense systems has not." As Bright explains, his book "does not address the entire panoply of continental defense preparations" during the 1950s. Instead, it concentrates on "how and why atomic charges came to be fitted to antiaircraft weapons." (2) He maintains that Eisenhower and his top aides "believed that weapons that could help protect the nation from a devastating bomber raid were commonsensical necessities." (4) The president and his advisors concluded that a high-altitude, small-scale nuclear explosion would destroy the atomic cargo of incoming bombers, without endangering U.S. civilians. As one scientific advisory panel asserted, "The radioactivity which would be added to the atmosphere" would be "of no consequence at all." (39) To assure the public, five Air Force officers, wearing "only their regulation summer uniforms" stood in the Nevada desert in 1957 directly beneath the detonation of a nuclear warhead on a Genie air-to-air rocket while photographers and reporters observed them. The volunteers experienced "a clap like thunder" but "the radioactive fallout was almost undetectable." (77)

Bright blends cultural and policy history in his study of nuclear antiaircraft defenses. Chapters examine the development of continental defense plans that relied on these armaments as well as the evolution of each major weapons system–the Genie and Falcon air-to-air rockets and the BOMARC and Nike-Hercules ground-to-air missiles. Each had an important, but brief history. Deployed in the latter half of the 1950s, they were obsolete by the mid-1960s, when intercontinental ballistic missiles replaced long-range bombers as the main Soviet strategic threat to the United States. As Bright explains, "The design, development, and deployment of these weapons was an expensive, time-consuming, and fleeting exercise based on honest yet imperfect intelligence about Soviet capabilities and intentions, but driven by a desire to protect the nation." (160)

Despite their favorable assessments, the reviewers raise questions about the larger significance of Bright's study. Benjamin Greene points to four important areas that Bright's book addresses: Eisenhower's leadership and management style, the ways that experts and consultants influenced defense policy, the administration's effort to build public support for nuclear aircraft defense, and presidential control over nuclear weapons. Most of the reviewers give Bright high marks forhis contributions to each of these central subjects, although they also sometimes call for deeper or more extensive analysis. David Krugler, for example, appreciates Bright's "careful, detailed, and well-documented" analysis of policy decisions about continental defense. Yet he also wishes that the author had done more to explain why James Killian, who became Eisenhower's first science advisor in 1957, proved more influential than Robert Sprague, a consultant who played a major role in the development of the early plans for nuclear antiaircraft defense. Benjamin P. Greene lauds the perceptiveness of Bright's discussion about how "nuclear antiaircraft weapons became cultural artifacts." Still, he believes that the author missed a chance "to extend his examination a little further" by probing how the administration's efforts to sell continental defense related to official efforts to replace popular "fear of nuclear war with some sort of hope for the future." Similarly, Steven Call, while praising Bright's "informative and convincing style," suggests that the author might have tried to discover how much nuclear air defense arguments trickled down "to the average person on the street."

One of Bright's central arguments is that atomic antibomber defense policies did not have a larger strategic significance. "There is little evidence," Bright declares, "that Eisenhower and his advisors considered how atomic antiaircraft defenses might fit into broader nuclear policies." (3) Bright maintains that the president's view was "apt." Some of the reviewers disagree or wonder, as Greene argues, whether Bright failed to assess how decisions about nuclear strategy influenced "the development of tactical nuclear weapons." Bright's book, then, has produced spirited discussion, as this roundtable reveals. It has also given us important new information about one of the most neglected parts of the U.S. nuclear arsenal in the 1950s.

Participants:

Christopher J. Bright is an independent diplomatic historian. He received his Ph.D. in 2006 from The George Washington University, under the direction of Leo Ribuffo, Bill Burr, Jim Hershberg, David Alan Rosenberg, and Bill Becker. A selection of photographs and declassified documents related to *Continental Defense in the Eisenhower Era: Nuclear Antiaircraft Arms and the Cold War* can be found at www.ChristopherJohnBright.com

Chester Pach is director of graduate studies in the Department of History at Ohio University. He holds a Ph.D. from Northwestern University. He is the author of *The Presidency of Dwight D. Eisenhower*, rev. ed. (University Press of Kansas) and is editing *The Blackwell Companion to Dwight D. Eisenhower*.

Steven C. Call is an associate professor at Broome Community College and received a Ph.D. at Ohio State University in Military history. His books include *Danger Close: Air Force Tactical Air Controllers in Afghanistan and Iraq*, Texas A&M University Press, (2007); *Selling Air Power: Military Aviation and American Popular Culture after World War II*, Texas A&M University Press, (2009); "Popular Culture Depictions of Air Power in the Pacific," *Establishing Hegemony: The American Military in the Pacific Basin and East Asia, 1940-1950*, Hal Friedman, ed., (forthcoming). His current project is a monograph on the 3rd Squadron, 7th Cavalry Regiment during the invasion of Iraq.

Benjamin P. Greene is assistant professor of history at the United States Naval Academy. He received his Ph.D. from Stanford University and is the author of *Eisenhower, Science Advice, and the Nuclear Test-Ban Debate, 1945-1963* (2007). He is currently working on a study of nuclear strategy and arms control during the Reagan administration.

David Krugler is professor of history at the University of Wisconsin--Platteville. His publications include studies of the domestic political difficulties of the Voice of America and the Cold War's effects on Washington, D.C. His book *This Is Only a Test: How Washington, D.C., Prepared for Nuclear War* appeared in 2006 (Palgrave Macmillan). Currently he is completing a book on racial conflict in the United States after the First World War.

David Snead earned his Ph.D. at the University of Virginia where he studied U.S. national security policies in the Cold War. He is currently professor of history and the chair of the history department at Liberty University. His major publications include *The Gaither*

Committee, Eisenhower, and the Cold War, *An American Soldier in World War I*, and *John F. Kennedy: The New Frontier President*. He is currently working on a study of the Seabees in World War II.

Review by Steven Call, Broome Community College

'The best defense is a good offense.' Most people have heard this statement sometime in their lives – usually many times – but why? I would argue it is because the thought expressed is so counter-intuitive; the more intuitive notion is that the best defense is a good defense, so some feel we must be continually reminded of the 'wiser' logic lest we fall into the 'trap' of erroneous thinking. The ever-present debate between these two strategies gets to the heart of the differing perspectives of Christopher J. Bright's outstanding study and my own book *Selling Air Power*[1]. Bright examines the fight for a strong defense – nuclear air defense weapons – to protect America from a Soviet bomber attack, while I focus on those who argued that the best way to defend against such an attack was to deter it with a strong offense – an overwhelming American nuclear blitz. The behind-the-scenes studies of two diametrically opposed approaches to defending the U.S. from the same threat are two sides of the same coin.

I am grateful for the chance to comment on this important and intriguing book. Though I am a military historian with a background in air power history, my thinking runs more toward the intellectual and cultural history veins, and that is what predominated in my mind as I read this work. While the details of political and institutional infighting are its great strength, I couldn't help wondering about the fundamental attitudes toward air power, particularly strategic bombing, that must have been coloring the thinking of key policy shapers and decision makers during the period Bright examines. To further clarify my perspective, while the personal motives of key players undoubtedly reflected the usual mix of patriotism, civic virtue, personal ambition, and/or institutional loyalty, those motives were also shaped by each individual's attitude on the air power debates of that period and claims made for or against strategic nuclear bombing. How individuals felt it was best to deal with the threat of Soviet air attack was certainly shaped by their attitudes toward air power and the bomber in general. I mention this because as important as I see both Bright's work and my own to the study of American national defense in the Cold War era, I realize they are both incomplete studies of the important question of how the U.S. intellectually, politically, and culturally chose and pursued its approach to dealing with the threat of a Soviet nuclear attack. I know Bright was working under the same constraints I was – setting boundaries to his study – but our two partial pictures of such a vital subject only emphasize that more work needs to be done.

With that in mind, I would like to start with my very first observation: 'Boy is that title understated!' First, "Continental Defense in the Eisenhower Era" takes up so much more than just the author's main subject of nuclear-tipped air defense missiles. More importantly, though, is the fact that the very thought behind Bright's real story – that the U.S. decided to use nuclear weapons detonated over its own territory to defend against Soviet bombers – is so riveting in and of itself that it should take pride of place. For one thing, a more direct title would, I suspect, have greatly increased book sales. Seriously,

[1] Steve Call, *Selling Air Power: Military Aviation and American Popular Culture after World War II* (College Station: Texas A&M University Press, 2009).

though, Bright's main topic *is* riveting, and therein lays its greatest contribution. When I first learned as a grad student that back in the fifties U.S. officials had authorized nuclear-tipped missiles to stop Soviet bombers I couldn't believe it – 'who in their right mind would authorize such a seemingly ludicrous policy?' I asked myself. Talk about the cure being worse than the disease! And I couldn't help but wonder who had sold such a crazy notion on U.S. policy makers, what had been the logic behind it, had the American public known about this outrageous plan, and if so, how had they been convinced to live with it? Bright addresses all of these questions and more in a generally strong and illuminating fashion.

Relying primarily on a wealth of newly-declassified material ranging from defense studies, to committee reports, to the personal papers of key players, Bright does a remarkable job of piecing together the inner workings of defense policymaking, industrial efforts to harness cutting-edge technology, defense analysts' thinking, and political infighting; two illustrative examples bear this out. First, the reader can feel the frustration of those who worked so hard to find the technological solutions needed to create workable models of weapons that had been designed while the capability for such weapons was just emerging, then to get decision-makers to endorse, fund, and field the weapons, only to then see the very threat these weapons were meant to counter fade away as the Soviets turned to greater reliance on ICBMs. Similarly, Bright outlines so clearly the political, military, and industrial wrangling going on around Eisenhower, who was wrestling with his own doubts and worries, that we can see where – if nowhere else – he gained the wisdom to warn America of the Military-Industrial Complex. The reader can genuinely feel the man's pain.

I should add, while talking of Bright's masterful use of his sources, my own wonderings whether we will ever get our hands on all the sources. Bright makes clear where there are gaps in his sources owing to still-classified material, and it is also clear that given the very nature of the subject matter and the ultra-high levels of secrecy surrounding it that much of the relative material may never see the light of day. In fact, I wonder if anyone even knows the full extent of what is out there still waiting to be declassified. In short, how can we ever be sure we know what happened when we don't even know what we don't know?

One aspect of Bright's study I found particularly effective is his examination of the role played by Robert Sprague. Bright not only details his centrality as an air defense thinker and strategist and his work within the system fighting for defensive weapon systems, he also gives us a window into the man's mind: Sprague fought so hard for an effective air defense system because he deeply believed in the need for, as well as the efficacy of, a system to stop a concerted bomber attack. Having studied extensively the work of those who took as an article of faith that bombers could not be stopped, it is refreshing and informative to learn the detailed thinking of someone who believed they could. Air power historians have made much of Stanley Baldwin's famous phrase 'The bomber will always get through' as a backdrop for studying those who advanced strategic bombing theories and capabilities. We usually forget, however, that Baldwin's comments were not meant as an affirmation of strategic bombing's superiority, rather it was a cry from the heart of a man who despaired that little could be done to stop the bombers. Perhaps it is time we started focusing equal attention to those like Sprague who sought to fight Baldwin's fear.

Another area where Bright's work rewarded my attention was in answering my question 'Who in their right minds would think that detonating nuclear weapons over America would be a good idea for stopping a Soviet nuclear attack?' Well, the answer is, as Bright reveals, a lot of people and for very sound reasons. First, the warheads were much smaller than offensive nuclear weapons; so small, in fact, that the evidence seemed to suggest to those at the time that given the altitudes at which the weapons would be used, their effects – radiation as well as blast – would be negligible at ground level (10-11, 29, 39-40, 43-44, 57, 62-63, 74). Bright convincingly backs up this conviction by detailing how a group of volunteers stood directly under a test blast of an air defense warhead (73-78). That their demonstration was caught on film and in print and widely reported, and that their good health was attested to years later, strengthens the contention that many at the time were justified in believing that these weapons were safer than the modern casual observer might think (79-80, 82-85, 93-94). Moreover, Bright reveals the primary logic used to advocate relying on nuclear air defenses: first, that if one small nuclear blast could bring down one, two, or a whole squadron of inbound nuclear bombers, then that one small blast would have obviated the many larger blasts that would have occurred had those bombers reached their targets (7-10, 32, 36-37, 44-45, 57, 61, 74, 85, 87, 102-03, 122-23, 138). Moreover, Bright illustrates that air defense advocates also argued that the air defense nuclear blast would not only destroy the planes, it would also so thoroughly destroy the nuclear material in the warheads on board that little or no radioactive debris would remain (8, 74-75, 93-94, 102). Simply shooting down bombers with conventional weapons would stop the bombers from reaching their targets, yes, but the aircraft's crash would not only scatter the nuclear material at the crash site, it could quite possibly set off the high explosives in the warheads, which would have atomized the nuclear material, leaving the surrounding area strewn with microscopic radioactive debris (38, 93-94, 102, 157).

All of this and more Bright does in fine informative and convincing style. My only question concerns how much the average American knew about the nuclear air defense policies and how did they *really* feel about them? Having studied and written on air power debates in popular culture myself, I know these types of questions can never really be answered, but I know that the advocates of strategic bombing were putting on a full-court press in popular culture throughout this period with their message that the best defense against the threat of a Soviet bomber attack is a good offense made up of American nuclear bombers. Moreover, following the news in 1949 that the Soviets had detonated their first atomic bomb, a key part of that media blitz specifically warned U.S. citizens not to put their faith in the false hope of air defense because, as bombing advocates assured the public, 'The bomber will always get through.' This 'the best defense is a good offense' message appeared in countless numbers in a wide array of media, but most prominently in high-profile Hollywood movies, such as *Strategic Air Command* and *Bombers B-52*, in mass circulation general interest magazines such as the *Saturday Evening Post* and *Reader's Digest*, and in popular radio and television shows, for example the hit radio and TV shows of Arthur Godfrey. The 'pro-bomber' side even had Air Force Chief of Staff Hoyt Vandenberg pointedly disabusing the public of any hope in air defense in a 1951 *Saturday*

Evening Post article.[2] Bright gives adequate evidence that key decisions and developments for the 'pro-air defense' movement were reported in major newspapers of the era – the *New York Times* and the *Washington Post* to name just two – but how far down did that percolate to the average person on the street? Information also appeared in prominent news weeklies such as *Time* and *U.S. News & World Report*, but these and the newspaper accounts mostly deal with straight-forward reportage of developments and controversies. While Bright convincingly demonstrates that the American public could hardly have claimed it didn't know nuclear weapons were going to be used over American territory to stop enemy bombers, I was left wondering if there had been any real debates of key safety issues or the pros and cons of nuclear air defense versus conventional air defense; I also wondered if there had been any head-to-head addressing of the diametrically opposed postures of offense versus defense for dealing with the Soviet air threat. More basically, I was left wondering if the side that argued 'the best defense is a good defense' message had anywhere near the success that pro-bomber advocates achieved in getting their message out to the public. Bright does show that military, political, and industry leaders went to great lengths to win public support (60-61, 80, 82-87, 95, 116-17, 131-32), that personnel working at nuclear air defense sites did yeomen's work trying to maintain support and goodwill in local communities, (104-05, 121-22, 130-31) and that defense contractor ads reassuring the public that their weapons were safe and effective were so prominent that congressional inquiries were launched to determine if their real intent hadn't been to drum up public pressure for Congress to buy their systems (102, 138-39). Bright even hit me with a big surprise in revealing that Lassie and Timmy had been enlisted in the effort to build public support when a 1961 episode of *Lassie* featured my two childhood heroes visiting a Nike site (124-25).

But how did this popular culture effort stack up against the 'pro-offense' one vying for the public's hearts and minds?

Christopher Bright has done a remarkable job of delving into a too-neglected field, and he does so through both diligent attention to the many military, industrial, and political details of the debate and in dredging through recently declassified – some by his own efforts – records that shed much insight on this secretive subject. I hope this will serve as a catalyst to more such work in this and related fields, for there is still much to learn. I also hope that in presenting what I consider to be a vital part of this subject – the effort to enlist public support for competing military theories through the media of popular culture – that this work will encourage others to follow Bright's lead. As important as it is to tease out the sequence of events in military and political decision making, it is also important to explore how those decision makers thought, or how their thinking was shaped, and how the decision makers convinced the public to follow them in their policies.

[2] Hoyt S. Vandenberg, as told to Stanley Frank, "The Truth About Our Air Power," *Saturday Evening Post* (17 February 1951): 101-02.

Review by Benjamin P. Greene, United States Naval Academy

The recent fiftieth anniversary of President Dwight D. Eisenhower's farewell address once again drew attention to the 34th president's cautionary warning about the rise of a "military-industrial complex." Although the origin of the term, Eisenhower's reasons for including it in his final address, and the warning's contemporary relevance remain in dispute, scholars agree that, despite his warning, Eisenhower oversaw the massive buildup of the nation's nuclear arsenal from 841 to 18,686 weapons. As H.W. Brands has argued, Eisenhower's farewell address could be read more as an admission of defeat rather than a warning for future generations.[1]

Christopher Bright's thorough study of antiaircraft arms examines a category of atomic weapons that has received relatively little scholarly attention despite comprising about "about one-fifth" of those 18,686 warheads. (p. 1) Bright makes very clear in his introduction to *Continental Defense in the Eisenhower Era* that he will not attempt to "address the entire panoply of continental defense preparations during Dwight Eisenhower's term"(p 2). Instead, he focuses his scope very sharply on one category of air defense systems designed to counter the very specific threat posed by Soviet bombers. His solid research and measured analysis examines decisions, policies, and actions associated with the few years that constituted the "heyday" of nuclear antiaircraft weapons as one component of the Eisenhower administration's defense of the continent. (p. 3)

The author succeeds in his objective of revealing each stage of the lifespan of these weapons systems from their conception to their retirement. Most impressively, he uncovers important linkages between the technologies and their cultural manifestations. Although he does not go far enough, in my view, to situate his study within the political and strategic contexts, his study of these lesser-known systems still has important implications for several broader themes that have been the subject of much greater scholarly scrutiny.[2] Bright's analysis, either directly or indirectly, provides insight into Eisenhower's management style, the role of experts and consultants in forming aspects of his national security strategy, the administration's effort to sell its strategy to the American public, and the predelegation of authority to launch nuclear weapons.

[1] H. W. Brands, "The Age of Vulnerability: Eisenhower and the National Insecurity State," *American Historical Review* 94 (Oct. 1989): 963–89.

[2] The standard account of Eisenhower's management style is Fred I. Greenstein, *The Hidden-Hand Presidency: Eisenhower as Leader* (New York: Basic Books, 1992). A recent study of Eisenhower's use of outside consultants is Valerie L. Adams, *Eisenhower's Fine Group of Fellows: Crafting a National Security Policy to Uphold the Great Equation* (Lanham, MD: Lexington Books, 2006). For an account of the administration's effort to sell its strategy, see Kenneth Osgood, *Total Cold War: Eisenhower's Secret Propaganda Battle at Home and Abroad (*Lawrence, Kansas: University of Kansas Press, 2006). An example of works that examine predelegation is Peter J. Roman, "Ike's Hair-Trigger: U.S. Nuclear Predelegation, 1953-1960" *Security Studies* 7 (Summer 1998): 121-64.

Surprisingly, Bright discovers that administration officials did not consider how nuclear antiaircraft defenses fit into their broader nuclear strategy. He concludes that it was appropriate that they did not do so. Some readers may reject the author's assertion that it "is difficult to relate the actions, attitudes and outcomes surrounding strategic weapons during Ike's term to the nation's atomic anti-bomber defenses."(p. 3) Eisenhower may have distinguished between strategic weapons designed for an offensive strike and tactical arms designed for defensive purposes. Yet others, both in the U.S. and abroad, could not so easily dissociate these smaller defensive warheads from the highly charged issues related to all nuclear weapons over matters such as morality, safety, and civil defense that were so interrelated and the source of such domestic and international controversy.

Developments related to offensive strategic nuclear weapons certainly influenced efforts to design and deploy nuclear antiaircraft arms. These weapons shared the same pool of fissile material and competed for the priorities of scientists at the nation's nuclear weapons labs. Bright's own analysis reveals how issues such as the mounting domestic and international opposition to the testing of strategic nuclear weapons influenced the development of nuclear antiaircraft weapons. Yet the author declines to assess how the decisions over the nation's nuclear strategy and arsenal shaped and often inhibited the development of tactical nuclear weapons.

Bright's examination of how nuclear antiaircraft weapons became cultural artifacts is very perceptive. I was struck, for example, by his treatment of how quickly model kits of several of these weapons systems became available for children to assemble, decorate, and add to their bedroom arsenals. His discussion of how local communities welcomed and supported these systems, including a hairstyling competition that featured a "Miss BOMARC," whose hairdo and attire reflected the physical characteristics of the weapon system, is particularly rich and illuminating. Bright also uncovers and describes several corporate advertisements lauding the advantages of these defensive nuclear weapons. (pp. 87, 102, 117, 138-139) These examples bolster Bright's argument that basic information about such weapons was readily available and widely circulated to garner public support of their employment and potential use.

The advertisements also underscore a development that troubled Eisenhower, even if he may have been partially responsible for their appearance. His farewell address included a second warning, since overshadowed by the first, that is seldom quoted and even less understood. The departing president cautioned Americans that the growing influence of government-sponsored scientific research risked making public policy the "captive of a scientific-technological elite."[3] Asked at a news conference the day after his address to clarify what he meant by the second warning, Eisenhower indicated that he was troubled, in part, that advertisements for missiles filled the pages of popular magazines. In his view, this led to "an almost insidious penetration of our own minds" that American science was only involved in developing armaments.

[3] "Farewell Radio and Television Address to the American People," 17 January 1961, *Public Papers of the Presidents of the United States: Eisenhower, 1960-1961* (Washington, DC: U.S. Government Printing Office, 1961): 1035-40.

For Bright, the advertisements reflect the administration's effort to sell its concepts for continental defense to the American people. Fundamental to Eisenhower's nuclear age anxiety was how to replace the American public's fear of nuclear war with some sort of hope for the future, a theme developed in considerable detail in Ira Chernus's *Eisenhower's Atoms for Peace* (2002). How did Eisenhower's approach to continental defense fit into these broader concerns? Bright discusses how the Operations Coordinating Board (OCB) tried to shape public opinion regarding the risks of nuclear arms for defensive purposes, (pp. 41-44) but I believe he misses an opportunity to extend his examination a little further to ask how these efforts related to Eisenhower's struggle to inform the American public of the implications of the nuclear age.

Although assessing Eisenhower's management style is not one of the author's stated objectives, Bright's analysis of the decisions and policies associated with nuclear antiaircraft weapons sharpens our understanding of Eisenhower's decision-making. The Eisenhower that emerges in Bright's examination of a series of policy debates within the National Security Council (NSC) is a president who preferred a consensus on matters of routine defense policy, but was often unwilling to demand it. Consider how Eisenhower chastised the service chiefs for their failure to present him a consensus view to decide between the Army's Nike-Hercules system and the Air Force's BOMARC system. Despite his preference for unanimity and his concerns about restraining defense spending, Eisenhower ultimately yielded to the service chiefs and agreed to pursue both systems. In Bright's view, Eisenhower accepted the chiefs' argument that both systems were necessary to provide a layered defense in depth, an operational concept that resonated with a former ground commander like Eisenhower. Yet there are also parallels with Eisenhower's response to other situations where inter-service rivalries clashed over competing high-tech weapons systems. In those cases, Eisenhower lamented the redundancy and requested a unified view on a highly complicated matter, but ultimately pursued both systems. In his study of nuclear antiaircraft arms, Bright superbly details how these redundant systems became the source of House inquiries into the undue influence of defense contractors, resulting in investigations on advertisement campaigns and the common practice of retired officers working for defense corporations. (pp. 135-139)

Another important aspect of *Continental Defense in the Eisenhower Era* is its discussion of the way in which private industry and expert consultants interacted with administration and defense officials to develop highly technical systems. Bright lists as one of his study's main contributions the revelation of the importance of Robert Sprague, the chief executive of a firm that produced electrical components, many of which had military applications. Sprague served as a consultant on several congressional and administration panels, including some that promoted using nuclear warheads for antiaircraft defense. Bright succeeds in detailing Sprague's role as an advocate for these weapons systems. Yet Bright's account also reveals that Sprague was far from indispensable, as the industrialist began his work as a defense consultant by advocating a development program that was already in progress.

Eisenhower in 1953 considered Sprague to be his Under Secretary of the Air Force. In an episode that reveals congressional concern with connections between industry experts and the military contracts, Sprague's refusal to sell his $5 million interest in his Massachusetts-based electric company convinced Eisenhower's Chief of Staff, Sherman Adams, to advise the president that it would be imprudent to press Sprague's nomination upon the Senate Armed Services Committee.[4]

Previous scholarship that examined the Eisenhower administration's concerns with a surprise attack and its deliberations over preparations for continental defense often focussed on the Technical Capabilities Panel, known as the Killian Committee after its chairman, MIT president James R. Killian, Jr.[5] The emphasis on this ad hoc group of scientists and engineers from government, industry, and universities is appropriate, as its study and conclusions resulted in several initiatives that had an enduring strategic impact, such as the U-2 spy plane and the Corona reconnaissance satellite. Significantly, Bright reveals that Sprague, who was a member of Killian's Committee, had already directed an earlier study that antedated Killian's. (pp. 24-26) Indeed it was Sprague's panel that encouraged the accelerated development of nuclear antiaircraft arms. Yet if Sprague's earlier actions were so significant and successful, then why did the Killian Committee take up the matter again later? In fact, the committee focused on the topic as a major shortcoming that was in need of greater prioritization within the weapons labs.

Importantly, it was the Gaither Committee, where Sprague assumed responsibilities as director from the ailing Rowan Gaither, that made Eisenhower "allergic" to consultants. Shortly after the series of leaks and public comments by members of the committee infuriated Eisenhower, he took the advice from Sprague, oddly enough, to form another, but much smaller group of consultants to advise John Foster Dulles on disarmament. Curiously**,** although Sprague raised the idea of convening the group, he was not asked to join it. Despite the negative experience of the Gaither Committee, the administration appointed outside scientists and engineers to serve on the President's Science Advisory Committee (PSAC), formed after *Sputnik* and chaired by Killian. Significantly, Sprague, despite his earlier participation in previous studies, was not asked to serve on the committee or participate in its ad hoc study groups. Did the sudden end of Sprague's activities as a consultant reflect the administration's anger with him over the sloppy management of the Gaither Committee? Had they tired of his fixation on the Soviet bomber threat even after *Sputnik* shifted attention to concerns about intercontinental ballistic missiles (ICBMs)? Or had Sprague developed a poor relationship with Killian and several of the other scientists and engineers who regularly advised the administration? Bright indicates that the security lapses angered Eisenhower, but he emphasizes Sprague's focus on defense preparations at the expense of other matters that ultimately placed him at odds

[4] "The Administration: Round Trip," *Time* (23 February 1953): 24-25.

[5] See for example Richard V. Damms, "James Killian, the Technological Capabilities Panel, and the Emergence of President Eisenhower's 'Scientific-Technological Elite,'" *Diplomatic History* 24 (Winter 2000): 57–78 and Adams, *Eisenhower's Fine Group of Fellows*.

with the administration. Nevertheless, Sprague's public criticism in February 1960 of Eisenhower's defense policies during congressional testimony likely eliminated any chance of a return to his earlier role as an active consultant.

In my own work on the administration's nuclear testing decisions, Lewis Strauss, Chairman of the Atomic Energy Commission from 1953 to 1958, appeared as the administration's most vociferous advocate for testing advanced nuclear warhead designs.[6]

Viewing nuclear testing through the narrower lens of antiaircraft arms, Bright's work presents Strauss as the most significant roadblock to conducting additional tests on these specific systems. Strauss' refusal to advocate strongly for additional tests of antiaircraft warheads suggests he felt either the designs were sufficiently proven, or that the weapons themselves had relatively little significance within the nation's rapidly expanding nuclear arsenal. In fact, Secretary of State John Foster Dulles had recently confronted Strauss, asking him if the "refinement" of nuclear weapons was worth the price of the "moral isolation" that would result from additional testing.[7] Bright's account of the 1957 "Plumbob" test series initially leaves the impression that Strauss was the central figure blocking additional tests of nuclear antiaircraft warheads. (pp. 71-72) Only later does Bright touch on the broader strategic and international context. (pp. 108-115) Responding to concerns over the harmful effects of testing, Eisenhower and Dulles increasingly imposed limitations on Strauss' comprehensive test program.

The fascinating account of the five Air Force officers who volunteered to stand below a detonation of a Genie nuclear antiaircraft rocket to demonstrate their confidence in the safety of such weapons richly illustrates the perceived public anxiety over the potential risk to the civilian population. Through this example and others, Bright provides a superb analysis of the efforts to counter concerns about safety, but one wishes that he would have gone further in examining the sources and arguments of those concerns and asked how critics responded to the government's efforts. He notes that test advocates claimed nuclear antiaircraft arms minimized the risk of collateral damage. Yet it is not clear how they portrayed the residual risk or how test opponents responded to such high detonation tests.

Experts in the scientific and medical communities in 1957 disagreed about the nature of the health hazards resulting from nuclear testing. Curiously, it was Lewis Strauss in 1958 who asserted that the greatest dangers of fallout resulted from high-altitude detonations. Killian, who supported the pursuit of a test ban agreement with the Soviet Union, countered that PSAC believed that it made no difference if such warheads were "clean" or not. In their view, the global fallout hazard was a result of nuclear detonations near the earth's surface that pulled irradiated ground debris into the stratosphere. Most air and missile defense weapons were detonated at too high of an altitude to irradiate and

[6] Benjamin P. Greene, *Eisenhower, Science Advice, and the Nuclear Test-Ban Debate, 1945-1963* (Stanford: Stanford University Press, 2007).

[7] Ibid., 151-152.

transport ground debris.[8] It is unclear if Strauss really believed otherwise, or if he was simply emphasizing that residual risks involved in defending the nation with nuclear antiaircraft weapons justified continued testing of his elusive "clean bomb." For Eisenhower, the public perception of the risk of radiation was initially more central than the scientific arguments. By the end of his term in office, however, Eisenhower had become convinced, largely by the members of PSAC, that that atmospheric testing was unacceptably dangerous. He imposed in 1958 a unilateral test moratorium and initiated negotiations with the Soviet Union to ban nuclear tests. Despite significant pressure from the AEC and Defense officials, Eisenhower extended the test moratorium to the end of his presidency.[9]

Bright makes several notable contributions in his examination of the predelegated authority to launch nuclear antiaircraft arms. Predelegation was a hotly contested topic within the administration. Yet the defensive nature of these particular weapons appeared to make the decision less controversial. Conversely, the likelihood that a Soviet bomber attack would cross Canadian airspace complicated matters. Bright reveals how the administration reconciled this concern by limiting predelegated authority only to those weapons that would not transit Canadian airspace.

What happened to nuclear antiaircraft arms and did they alter Soviet nuclear strategy? Bright concedes that intelligence garnered from U-2 flights, which significantly reduced estimates of Soviet bomber strength, lowered the priority of air defense systems, but he maintains that these revelations did not immediately eliminate concerns about the bomber threat. He presents their decline as simply a result of broader budgetary restraints, rather than the shift in focus to defending the nation against ICBMs. Bright's very brief analysis of the strategic impact of these weapons responsibly concludes that there is little evidence that these antiaircraft nuclear arms had any influence on Soviet nuclear strategy. In his view, Soviet breakthroughs in developing ICBMs, rather than fears that their bombers were increasingly vulnerable to improved U.S. air defenses, explain their shift from bombers to missiles.

Bright's comprehensive study clearly demonstrates that nuclear antiaircraft arms played an important, if fleeting, role in plans to defend the continent against Soviet bombers. For Bright, the use of nuclear weapons in an antiaircraft capacity "made sense" to policy makers as well as the general public. (p. 1) Remarkably, Bright's account reveals that their development and deployment transpired with relatively little debate or controversy. How and why some of these systems were deployed abroad and how the international public reacted to them remains an open topic for an international history of these weapons.

[8] Ibid.

[9] Ibid., 220-232.

Review by David Krugler, University of Wisconsin-Platteville

Today, Chicago's Montrose Harbor, on the shore of Lake Michigan, is a popular destination for bicyclists, sunbathers, soccer players, and fishermen. No traces remain of the decidedly non-recreational program which the harbor "hosted" during the Cold War: a nuclear antiaircraft missile base. In 1958, the U.S. Army deployed four Nike-Hercules missiles at a battery in Montrose Harbor, making Chicago one of the first U.S. cities to have such a base. More than 120 additional Nike-Hercules sites were soon located near cities and Air Force bases in 25 states. Designed to target and destroy Soviet bombers carrying nuclear bombs, the Nike-Hercules missiles were themselves armed with tactical nuclear warheads. Indeed, by 1961, approximately one in five of the United States's nuclear weapons could be found on antiaircraft missiles. They were an essential part of U.S. continental defense prior to the deployment of intercontinental ballistic missiles (ICBMs); however, they have not received much scholarly attention.

Christopher Bright successfully remedies this deficiency in his new study, *Continental Defense in the Eisenhower Era: Nuclear Antiaircraft Arms and the Cold War*. Bright meticulously documents the development and deployment of the antiaircraft missiles and their nuclear warheads. Studies undertaken by the Air Force and the National Security Council (N.S.C.) during the last years of the Truman presidency established the need for antiaircraft defense but offered few specific proposals. Responsibility for designing a workable (and affordable) system, no easy task, fell to Eisenhower and his national security advisers. Like their predecessors, Eisenhower and his team "believed that weapons that could help protect the nation from a devastating bomber raid were commonsensical necessities" (p. 4).

During Eisenhower's first term, Robert Sprague helped lead the executive branch's effort to design and implement a continental defense program. Sprague, like many of the national security advisers Eisenhower consulted during his presidency, was a successful industrialist with a background in science and technology, in Sprague's case, electrical and radio components. Although Eisenhower apparently paid close attention to Sprague's work, the part-time N.S.C. consultant was not initially told of the military's project to develop nuclear antiaircraft weapons. Delayed briefing on this essential point did not, however, greatly impede Sprague, who submitted a plan to the military to deploy the first nuclear antiaircraft missile, the MB-1, nicknamed "Genie," by January 1957 (pp. 23-32). Genie was one of the three major defensive nuclear weapons fielded by the U.S. military during the 1950s and 1960s.

Genies were air-to-air missiles, carried by interceptor jets like the F-89D "Scorpion." By the late 1950s, the Air Force had fielded approximately 3,100 Genies in twenty states. At first the Genie squadrons were stationed near urban areas but were later reassigned to protect Strategic Air Command (SAC) bomber bases. The Nike-Hercules and BOMARC were surface-to-air weapons. (Nike-Ajax missiles, deployed in 1954, were similar to the Nike-Hercules missiles but did not carry nuclear warheads.) The Army deployed Nike-Hercules; the Air Force, BOMARC. Not surprisingly, the two services competed to secure the lion's

share of funding for their respective weapons. Right after the Army brought prominent Chicago officials to Montrose Harbor to tour the Nike battery, unnamed Air Force officials fed criticisms about the Nikes' range to the Chicago *Sun-Times*, which reported, "Nike-Hercules . . . cannot cope with Russia's fast new bombers" (p. 116). Such wrangling exasperated Eisenhower, who, in May 1959, asked the N.S.C., "Why do we have to have two armed services of the U.S. shooting two different missiles?" (p. 135)

As presidential science adviser George Kistiakowsky indicated later that year, the United States had a much bigger problem than overlapping defensive programs: the advent of ICBMs. Kistiakowsky's ad hoc panel concluded that strategic bomber forces and ICBMS would be comparable threats until 1963, then ICBMS would become the greater threat. In other words, the antiaircraft nuclear missiles, designed only to destroy bombers, became obsolete shortly after deployment. The Air Force began phasing out BOMARCs in 1964; the Army began dismantling the Nike-Hercules batteries defending SAC bases in 1966. Deactivation of all but a few of the Nike batteries in and around urban areas was completed in 1974 (the remainder were closed within five years). A modest number of Genies remained in service through the 1980s, until deactivation of the F-106 (the lone interceptor outfitted to carry them), but they had long ceased to be an essential component in continental defense (pp. 156-60).

In addition to providing the first full-length history of the antiaircraft nuclear missile program, *Continental Defense in the Eisenhower Era* offers a detailed examination of the military's multi-faceted public relations campaign for the weapons. Unlike the nation's strategic nuclear weapons and delivery systems, the antiaircraft missiles could not be hidden from the public eye. The armed services, recognizing an opportunity to bolster support for a growing nuclear arsenal and to allay concerns about the proximity of nuclear weapons to residential areas, broke with the *modus operandi* of secrecy and silence. The colorful Colonel Arthur "Barney" Oldfield led these initiatives. He scheduled interviews for reporters with high-level Air Defense Command officers, spoke to a variety of civic organizations, and even developed a television program (never completed) about the 1957 domestic nuclear test called Shot John, which detonated a Genie rocket. To convince the public that the tests and the Genies were safe, Oldfield had five Air Force officers, wearing just their summer uniforms, filmed as they stood beneath the Genie detonation--none were harmed. Showing his flair for the dramatic, Oldfield posted a hand-lettered sign beside the men which read "Ground Zero Population: 5" (p. 76). In 1960, the television show *Lassie* filmed an episode in which an awed Timmie and his canine companion toured the Los Angeles Nike-Hercules base. Bright concludes that such public relations efforts brought positive results. The vast majority of residents living near Nike-Hercules bases, for example, either welcomed them or at least did not voice opposition. Bright's treatment of this topic thus provides a valuable understanding of the American public's response to the presence of nuclear weapons on the home front.

Another strength of the book is its careful, detailed, and well-documented reconstruction of the Eisenhower administration's actions. Bright takes the reader through each major policy discussion, study, and decision relating to the missile program. Bright convincingly establishes Eisenhower's hands-on role in planning and executing continental defense. The

president amended deadlines, recommended specific revisions to key continental defense policy papers, and lined up Congressional support. One of Eisenhower's most important decisions concerned predelegation of authority to use nuclear weapons. What if a surprise Soviet attack wiped out Washington, D.C., while the president was there? By December 1956, just before the deployment of Genies, Eisenhower had signed orders authorizing military commanders to use nuclear antiaircraft weapons without presidential approval, though only under strict rules of engagement. This order coincided with another Eisenhower decision to shift custody of nuclear weapons from the Atomic Energy Commission to the armed services and predated a predelegation for the use of strategic nuclear weapons (pp. 50-54).

Bright's scrupulous attention to procedure and policy minutiae occasionally inhibits explanation of the larger historical importance of the antiaircraft missile program. As Bright makes clear, the president and his team did not believe it necessary to formulate an underlying strategy for the nuclear antiaircraft weapons. Even the deployment of Nike-Hercules to defend SAC bases was not "motivated by counterforce thinking or any other nuclear strategy as the term is presently understood. Rather, a straightforward and apparently commonsensical fear that the mainstay of the American military could be destroyed by a surprise attack led Air Force installations to be defended" (p. 101). If the history of the missile program does not add to our understanding of the Eisenhower administration's overall nuclear strategy, what then can this history tell us about Eisenhower's methods and priorities, particularly concerning his use of civilian scientists and technology advisers and panels?

Some of the evidence Bright presents shows Eisenhower keeping Sprague at arm's length. The president resisted Sprague's urgent call to accelerate deployment of the Genies and rejected many of the findings of the 1957 Gaither Committee, of which Sprague was a prominent member. Among its recommendations, the Gaither Committee proposed a national shelter program and a bigger strategic bomber force. By the end of 1958, James Killian, the president of M.I.T. and leader of a 1954-55 presidential advisory panel, had supplanted Sprague, who ended his work as a civilian adviser believing that Eisenhower and Secretary of State John Dulles were not as supportive of air defense and the Gaither Committee as they should have been. Bright shies away from evaluating the merits of Sprague's complaints. Did Sprague fail to understand air defense's part in the overall national security program? Was he unaware of the President's fiscal priorities? Likewise, Bright could have said more about why Killian proved to be more influential than Sprague in the long run. What, exactly, did Eisenhower look for in his science and technology advisers? Benjamin Greene argues that Eisenhower's reliance on scientific advisers obstructed completion of a nuclear test ban treaty while Eisenhower was in office.[1] Was the president similarly dependent on Killian and Kistiakowsky when making decisions about nuclear antiaircraft missiles? By more directly addressing these questions, Bright could have better situated his study of the antiaircraft nuclear missile program in the body of scholarship on Eisenhower's national security policies and programs.

[1] Benjamin P. Greene, *Eisenhower, Science Advice, and the Nuclear Test-Ban Debate, 1945-1963* (Stanford: Stanford University Press, 2007).

That said, *Continental Defense in the Eisenhower Era* provides an important and thoroughly-researched history of a previously neglected component of the U.S nuclear arsenal during the Cold War. Scholars of nuclear weapons will find it useful, as will historians interested in learning about the U.S. military's unprecedented public relations campaign to build support for the missiles.

Review by David L. Snead, Liberty University

The 1950s was a challenging time as the Cold War intensified and the arms race moved from long-range bombers to missiles and nuclear warhead technology evolved to even more deadly capabilities. Starting with President Harry Truman and continuing with President Dwight Eisenhower, the United States struggled to address the potential threat posed by Soviet long range bombers to North America. The advent of nuclear weapons made the dangers of a surprise attack greater—a definite fear only a decade after the Japanese attack on Pearl Harbor. The concern in the 1950s was that only one bomber needed to evade U.S. defenses to cause devastating damage. Since traditional antiaircraft defenses were inadequate to meet this threat, the United States implemented new weapons systems that relied on nuclear armaments. In *Continental Defense in the Eisenhower Era*, Christopher Bright concludes that "The design, development, and deployment of the weapons was an expensive, time-consuming, and fleeting exercise based on honest yet imperfect intelligence about Soviet capabilities and intentions, but driven by a desire to protect the nation. (160) His fine study tells the story of these short-lived defense systems.

Bright opens with a review of the development of antiaircraft weapons in the late 1940s and early 1950s and describes the military's growing realization of the inadequacy of ground-based guns. American military planners assumed that the Soviet Union was developing long-range bombers comparable to those being produced in the United States and feared there was little in the country's defensive arsenal to stop an attack. Beginning in the early 1950s, both the Air Force and Army began researching and developing the BOMARC and Nike-Hercules surface-to-air antiaircraft missiles respectively. While both military branches initially believed these missiles would carry conventional warheads, studies quickly revealed that they would have only limited success at best. By the time of Eisenhower administration, the Air Force and the Army both planned to mate their missiles with lower yield nuclear warheads that would detonate in the air to destroy approaching Soviet bombers and their munitions.

After this background, Bright proceeds to explore the further development of the surface-to-air missiles and air-to-air nuclear missiles in the Eisenhower administration. He emphasizes the role of Robert Sprague in shaping U.S. policies and the difficulties of developing and deploying the various weapons systems. His discussion of Sprague is particularly enlightening as other scholars have shown the influence of the Massachusetts industrialist during the Eisenhower administration but not to the degree that Bright does.[1] He argues that more than almost any other adviser, Sprague "proved influential in plotting the scope and timing of American nuclear antiaircraft defenses." (35) While Sprague's influenced waned in the late 1950s as Eisenhower came to believe he was putting too much emphasis on defensive weapons, Bright clearly shows the importance of this little-known government consultant.

[1] See David L. Snead, *The Gaither Committee, Eisenhower and the Cold War* (Columbus: Ohio State University Press, 1999); and Valerie L. Adams, *Eisenhower's Fine Group of Fellows: Crafting a National Security Policy to Uphold the Great Equation* (Lanham, MD: Lexington Books, 2006).

Bright spends the majority of the book exploring the four major nuclear antiaircraft missile systems—the Air Force's Genie, BOMARC, and Falcon, and the Army's Nike-Hercules. The BOMARC and Nike-Hercules were surface-to-air missiles, and the Genie and Falcon were air-to-air missiles. He further explores the evolution of nuclear warhead design as both services sought a warhead that produced an optimal yield at a minimal size. He clearly shows the technical difficulties the services had to overcome ranging from the targeting of the missiles to how to safely store them. Further, the continuing bureaucratic fighting to a gain a larger share of the defense budget under a fiscally conservative president was a constant refrain.

The Genie became the nation's first nuclear antiaircraft weapon when the Air Force rushed it into service in January 1957. Over the next several years, the other three missile systems became operational but their usefulness was short-lived. While the efforts to produce them were spurred by fears of a growing Soviet bomber capability, the realization after 1957 that intercontinental ballistic missiles would soon be the main threat made them virtually obsolete by the mid-1960s and the military began to withdraw the missiles from service. The Army and Air Force had retired most of the missiles by the early 1970s with the last Genies being removed in 1986. Bright's study clearly addresses an often unrecognized fact that "for nearly thirty years, the United States had fielded one or more types of antiaircraft nuclear weapons." (159)

This is an important book for numerous reasons. While America's strategic nuclear arsenal has been closely examined, the military's creation of nuclear antiaircraft defense systems has not. According to Bright, close to one-fifth of America's nuclear arsenal in the early 1960s consisted of warheads for antiaircraft defense. Further, Eisenhower authorized the use of these weapons without express presidential permission, unlike the procedures for deploying strategic warheads. The policy authorized the use of the weapons if any Soviet military aircraft entered U.S. air space without permission. (53) Bright's descriptions reveal just how completely engrained nuclear weapons were in U.S. national security policies.

Bright's study also adds to the understanding of several other important issues from the Eisenhower era. While many look back with horror at the thought of using nuclear weapons in defense against a Soviet attack, real fears drove U.S. policies. As Bright effectively argues, "The president and his military and civilian aides believed that weapons that could help protect the nation from a devastating bomber raid were commonsensical necessities." (4) Further, he offers another example of bureaucratic waste resulting from duplicating weapons' systems.[2] Finally, Bright shows how integrated the nuclear antiaircraft weapons were in American society. His description and picture of the "Miss BOMARC" contest in Salt Lake City is almost worth the cost of the book by itself. (131-2)

[2] For examples of the bureaucratic fighting within the Eisenhower administration influencing decisions to deploy nuclear missiles, see Philip Nash, *The Other Missiles of October: Eisenhower, Kennedy, and the Jupiters, 1957-1963* (Chapel Hill: University of North Carolina Press, 1997), 53-57 and 88-90; and Peter J. Roman, *Eisenhower and the Missile Gap* (Ithaca: Cornell University Press, 1995), 124-128 and 172-193.

As strong a study as this is, there are several areas that could be improved. Bright's descriptions of the missiles and warhead development are excellent, but at times, more context for the 1950s would have been helpful. For example, while he accepts that Eisenhower and many of his advisers feared a Soviet attack, he does little to evaluate this fact. A more nuanced description of why there was so much fear would have been helpful. He also needed to explore how American citizens viewed the weapons. He emphasizes that communities generally welcomed the placement of weapon systems near them as the previous example of "Miss BOMARC" indicated, but more evidence of the actual feelings of local residents would have made his arguments more convincing.

Prior to Bright's book, scholars knew relatively little about the weapon systems that accounted for almost one-fifth of America's nuclear arsenal in the early 1960s. Their development and actual deployment marked a time of real fear of Soviet capabilities and an era still living in Pearl Harbor's shadow. Preoccupied with this fear, Eisenhower and his advisers were willing to use nuclear weapons to achieve a level of security that would have been unavailable otherwise. Whether their perceptions were accurate or not, Bright clearly articulates how these intelligent and reasonable men decided to place their trust in new and dangerous technology with the tacit approval of the nation.

Author's Response by Christopher J. Bright

As Steven Call nicely summarizes, *Continental Defense in the Eisenhower Era* aims to answer the question, "[w]ho in their right minds would think that detonating nuclear weapons over America would be a good idea for stopping a Soviet attack?" As he reports, the book concludes that "a lot of people did." Indeed, this is the story I sought to explore.

During Dwight D. Eisenhower's administration, the nation's defense leaders feared the prospect of a surprise nuclear air raid on the continental United States. They also believed that existing conventional antiaircraft arms were insufficiently accurate and lethal to blunt such a strike if it occurred. Consequently, they oversaw the development of thousands of relatively low kilotonage Air Force and Army nuclear air defense weapons and deployed them around dozens of American cities and defense installations. As preposterous as it may seem today, targeting attacking aircraft with nuclear missiles and rockets was considered an efficient and apt response to a perceived pressing and difficult defense conundrum.

Each participant in this roundtable has produced an important related book that has informed my scholarly approach. For this and other reasons, I am delighted to receive their perceptive critiques of my work. Their assessments spurred me to consider anew some of the specific elements included in *Continental Defense in the Eisenhower Era*, as well as the general tenor of my analysis. However, two recurring topics in these evaluations deserve particular engagement: the role of defense experts in the administration, and the scope and depth of the public's assent to the arms these individuals helped bring about.

Robert Sprague, the Massachusetts industrialist and continental defense advisor to Ike's National Security Council, was extraordinarily influential in spurring the development of nuclear antiaircraft weapons and their introduction into the military's inventory. Sprague endorsed nuclear air defense arms as an NSC consultant in 1954 and saw to it that the Killian Committee, on which he served a year later, echoed the recommendation (28-31, 38-39). This repetition underscored his belief in the need for these weapons, rather than demonstrating that elements of the government needed to be goaded into accepting them.

Dwight Eisenhower agreed nuclear defenses were required. In 1956, for example, the president told Admiral Arthur Radford, the Chairman of the Joint Chiefs of Staff, that he "would certainly" use nuclear antiaircraft arms once they were perfected, "against any aircraft attacking the United States" (54). Shortly thereafter Ike granted subordinate military commanders the advance authorization to discharge the weapons if approaching planes appeared "manifestly hostile in intent," yet more senior officials could not be contacted (53).

Eisenhower seemed genuinely fond of Sprague and valued his advice. The president described the consultant as a "top flight," "hard worker" (30) who provided "excellent services" in a "highly important field" (36). By late 1957, however, the Gaither Committee

had soured Ike on the wisdom of seeking advice from large panels of outsiders in general, and on Sprague's continued recommendations in particular. The president's views changed in the course of his administration. His did not discount the wisdom of designing, deploying, or potentially using nuclear antiaircraft weapons, but by the time he left office he had come to question the centrality that they (and civil defense measures) should play in an increasingly expensive American military apparatus grappling with a foe that was beginning to develop intercontinental ballistic missiles.

Sprague's advocacy for nuclear air defense arms was not apparent to me until I began researching the dissertation that became this book. Although Sprague's father has been the recent subject of a biography and scholars have addressed the son's activities, a longer exegesis on Robert Sprague remains to be written.[1] Such an overview may well reinterpret assessments of Eisenhower's interaction with outside defense advisors, especially in matters pertaining to nuclear arms. For many years, the Dwight D. Eisenhower Presidential Library has held a modest collection of Sprague's papers, but the documents have not yet been processed and the collection remains closed. Hopefully, when they are opened further attention will be turned to this important figure.

More has been written about Lewis Strauss, the man who led the Atomic Energy Commission during most of the Eisenhower years.[2] A Jewish Republican patrician from Virginia at a time when fealty to the Commonwealth's Democratic Party machine was typically a precursor to social and political success, Strauss had earned considerable achievements by the time he was tapped by the president. Although Strauss supported Robert Taft early in the 1952 presidential campaign, he grew close to Ike, a process that culminated in his being awarded the Presidential Medal of Freedom and nominated albeit unsuccessfully, as Secretary of Commerce (114, 177-8 note 34).

Strauss was dedicated to his assigned task. But he did not favor merely the rote production of increasing numbers of warheads as if he saw a numerical competition with the Soviet Union as an end it itself. His commitment to the development of nuclear antiaircraft weapons demonstrated that he sought to deliver to the military the arms it asserted were necessary for specific purposes. In an NSC meeting with Eisenhower in 1954, Strauss explained that he opposed a nuclear test moratorium because the Joint Chiefs of Staff believed nuclear air defense arms were "almost indispensable." Because their development was "still in a primitive stage," Strauss said that testing was required to validate future designs (28-29).

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[1] Frederick Dalzell, *Engineering Invention: Frank J. Sprague and the U.S. Electrical Industry* (Cambridge, MA: MIT Press, 2010); Valerie L. Adams, *Eisenhower's Fine Group of Fellows; Crafting a National Security Policy to Uphold the Great Equation* (Lanham, MD: Lexington Books, 2006); and David Snead, *The Gaither Committee, Eisenhower and the Cold War* (Columbus: Ohio State University Press, 1999).

[2] See, for example, Richard Pfau, *No Sacrifice Too Great: the Life of Lewis L. Strauss* (Charlottesville: University of Press of Virginia, 1984); and Benjamin P. Greene, *Eisenhower, Science Advice, and the Nuclear Test Ban Debate, 1945-1963* (Stanford: Stanford University Press, 2007).

The president found this argument persuasive. In August 1954, Ike gave approval for the Teapot test series, based upon Strauss' explanation that it was intended to confirm "ideas which are highly important" to the "air-defense application" (41). Two years later, in the midst of the 1956 election, Eisenhower told reporters the U.S. was striving to field nuclear weapons which would be "useful in defensive purposes" such as "shooting against a fleet of airplanes." Shortly thereafter, Ike declared that nuclear tests "have helped us to develop—not primarily weapons for vaster destruction—but weapons for defense of our people against possible enemy attack" (55). In the summer following his reelection, the president told Strauss at a cabinet meeting "[y]ou've been giving us a pretty darn fine arsenal of atomic weapons," and asked why the AEC sought nonetheless to expand its production capabilities. When Strauss answered that an increase was necessary because the "[b]ulk of the effort is now on small weapons," such as "for air defense" for which "great numbers" of nuclear warheads "are required," the president was satisfied (69).

The AEC chairman's later objections to "proof tests" of deployed nuclear air defense arms do not indicate Strauss' opposition to their adoption by the military, or any skepticism about nuclear testing. Strauss believed the launching of Nike-Hercules missiles and Genie rockets at target drones flying over the Gulf of Mexico, as proposed by the Army and Air Force in 1958, was unnecessary and burdensome operations. To him, detonations of validated nuclear warheads were akin to military training exercises or public relations stunts. He thought any public dissent sparked by these operations might weaken the case for conducting required diagnostic tests of preliminary versions of other warheads that were still being developed. In arguing against some proof shots while favoring design tests, Strauss was advancing the mandate he had been given by the president: deliver the nuclear weaponry that the administration had determined American national security required.

By way of official statements, government press releases, and corporate outreach efforts, information about the existence and purpose of nuclear antiaircraft arms was widely disseminated to American audiences. Although characterizing the attitudes of a large and diverse national population is difficult, it appears that most citizens in the United States assented to the existence of these armaments. When the Defense Department announced in February 1957 that it had "begun deployment of nuclear weapons within the United States for air defense purposes," the response of the *Washington Post and Times-Herald* was typical. "From a defense standpoint," the newspaper editorialized, "the plan makes sense" (62-63).

A few months later, there were widespread and approving press reports of the carefully choreographed test firing of a stockpiled Genie rocket three miles above the Nevada test site. In that instance (despite the AEC's ambivalence) , five Air Force officer volunteers stood in their shirtsleeves on the ground below, garnering newspaper and magazine coverage and sparking a series of public appearances and a proposed screenplay (76-80). In subsequent years, the Army and Air Force nuclear air defense arms were displayed at fairs and similar events. They were visible otherwise, too, including being replicated in model kits, and featured in cereal trading cards, publicity films, and even a *Lassie* episode.

When U.S. Rep. Charles Porter (D-OR) wrote to the AEC in 1958 to object to an unrelated aerial nuclear test planned for the Pacific, he cited the success of the Genie operation from the year before as undercutting the need for the proposed operation. This prominent test ban proponent did not oppose, in his correspondence or otherwise, the initial Air Force shot or raise concerns about deployment of the weapon it demonstrated (86-87). Similarly, when the Air Force briefed Cape Cod residents about its BOMARC surface-to-air nuclear antiaircraft missile in 1957 before commencing construction for a nearby emplacement, no one in the audience objected (130-131). Certainly the absence of specific examples of opposition to nuclear air defense arms in the United States does not necessarily indicate widespread acceptance of them. But, the extent to which these weapons were uncontroversially visible in official, commercial, and cultural realms five decades ago suggests broad concurrence to their deployment.

Although these arms, of course, have long since been retired, some people remain fascinated with them and their past physical and symbolic presence in the United States. Scores of abandoned surface-to-air missile sites across the country, for example, continue to attract the attention of historic preservationists, military enthusiasts, veterans, and the merely curious. At least one person remains connected to these arms in a vicarious fashion. In 1958, Frances Frost was dubbed "Miss BOMARC" in a beauty contest in which she dressed to mimic the appearance of the Air Force's weapon. Frost's hairstyle was said to resemble the missile's "nuclear payload" as it went "into super action" (131-132). After the National Security Archive released a collection of annotated documents in 2010 in conjunction with the publication of *Continental Defense in the Eisenhower Era*, a blogger who read the documents located Frost. Fifty-three years after the competition, she is alive and well in Utah.[3]

[3] Bill Geerhart, "Meet Miss Bomarc," *Conelrad Adjacent* [blog], 13 January 2011. Accessed 31 January 2012. http://conelrad.blogspot.com/2011/01/meet-miss-bomarc.html .