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Atomic governance: Militarism, secrecy, and science in post-war America, 1945-1958

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ATOMIC GOVERNANCE: MILITARISM, SECRECY, AND SCIENCE
IN POST WAR AMERICA, 1945-1958

by

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Bachelor of Arts
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1997

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A dissertation submitted in partial fulfillment of the requirements for the

Doctor of Philosophy in History
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THE GRADUATE COLLEGE

We recommend the dissertation prepared under our supervision by

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ABSTRACT

Atomic Governance: Militarism, Secrecy, and Science In Post War America, 1945-1958

by

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This history of America's post-World War II atomic program examines the institutional impulses that drove its evolution from 1945 through the 1958 moratorium on atmospheric weapons testing. Based on archival research and methodologies borrowed from sociologists and legal theorists, it focuses on the motivations of and decisions made by military officers, program managers and affiliates in the private sector, their relationships, and the alliances they formed with congressmen. This analysis identifies a two-stage process of self-interested decision-making through which the armed forces, seeking to mitigate postwar loss of funding and influence, gained *de facto* control of the atomic program that it maintained throughout the atmospheric era.

During Militarization (1945-1948), officers capitalized on the political instrumentality of weapons testing at *Operation Crossroads* and benefited from the organizational expertise of Manhattan administrators, consolidating their authority and monopolizing program resources and production. This culminated in Atomic Governance (1949-1958), when officers, pro-military program officials, affiliates, and congressmen combined their institutional and political influence to marginalize the civilian authority of

the Atomic Energy Act. During both phases, officers used strategies of control adopted from the Manhattan Project to deceive elected officials and the public about the hazards of testing and the utility of nuclear weapons.

These findings significantly revise the standard Cold War narrative of atomic testing. First, the significant turning points and officers' use of strategies of control demonstrate that it was not national security imperatives, but the combined effects of self-interested behavior by historical actors with their own institutional goals that most influenced the program's development. Second, the way the armed forces used the program shows that it was the engine, and not an aspect, of Cold War mobilization. Third, the hazards of the program were not due to ignorance but rather understanding of the boundaries between dosages known to cause acute injury and those expected to cause illness only in the long term. Officers and officials used that scientific knowledge to conduct tests they expected would cause illness years later, but would not result in immediate, acute injury.

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helped me become better student and a better teacher, and encouraged me in the educational and confidence-building experiences through which I became a historian. Dr. T. helped me find the meaning in history and dared me to dream that my scholarship might have value beyond the classroom.

I have completed this project with financial help from UNLV and the Department of History. Graduate assistantships covered my tuition while providing me with opportunities to research and teach. Fellowships and grants from the Graduate College, Alumni Association, and the Graduate Student Association helped fund archival work. I am especially thankful for the President's Graduate Fellowship, which helped finance archival work and sustained me during a year in which I developed the framework for my dissertation and completed several chapters.

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It is with love and admiration that I dedicate this effort to the memory of my parents, Grover and Ann Edmondson.

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LIST OF ABBREVIATIONS

AEA	Atomic Energy Act of 1946
AEC	Atomic Energy Commission
AFSWP	Armed Forces Special Weapons Project
CDA	Civil Defense Administration
DOD	Department of Defense
GAC	General Advisory Committee
HUAC	House Un-American Activities Committee
JCAE	Joint Committee on Atomic Energy
JCS	Joint Chiefs of Staff
LASL	Los Alamos Scientific Laboratory
MLC	Military Liaison Committee
NAS	National Academy of Scientists
NCRP	National Committee on Radiation Protection and Measurements
NME	National Military Establishment
NSA	National Security Act of 1947
NSC	National Security Council
NTS	Nevada Test Site
PPG	Pacific Proving Ground

CHAPTER ONE

INTRODUCTION

The horrific devastation of Hiroshima and Nagasaki changed the world. The use of atomic weapons ended the war with Japan, drove a wedge into the wartime alliance, and elevated the United States to the most powerful nation on earth. Advanced technology, and the wherewithal to use it, not only shifted the balance of international power relationships, but it also profoundly transformed American society and politics.¹

Maintaining nuclear superiority helped to fuel anti-communism,² chiseled away at the notion of government transparency and at traditional liberties such as freedom of the press and privacy,³ and instigated an expansion of defense facilities and capability that

¹ For the longstanding ideological and political factors that shaped diplomatic efforts and the consequences of early Cold War failures to forestall the arms race, see Michael J. Hogan, *A Cross of Iron: Harry S. Truman and the Origins of the National Security State, 1945-1954* (Cambridge, UK; New York: Cambridge University Press, 1998). See also Gregg Herken, *The Winning Weapon: The Atomic Bomb in the Cold War 1945-1950* (New York, NY: Knopf, 1980). For the most recent analysis of how the early thinking about the bomb, particularly as it was considered the penultimate weapon, constrained diplomacy throughout the arms race, see Gerard J. DeGroot, *The Bomb, A Life* (Cambridge: Harvard University Press, 2005). For the Cold War's effect on the profession of history; administrative history, and the rise of "public" history, see Peter Novick, *That Noble Dream, the "objectivity question" and the American Historical Profession* (Cambridge, UK: Cambridge University Press, 1988), 511-514.

² David Cauter, *The Great Fear: The Anti-Communist Purge Under Truman and Eisenhower* (New York: Simon & Schuster, 1978), 17-22, 54-81.

³ Early analysts argued against extremism and drew from American political philosophy in their efforts to strike a balance between liberty and security. For a legal and social perspective on the ramifications of security regulations on scientific collaboration and potential progress, see Walter Gellhorn, *Security, Loyalty, & Science* (Ithaca: Cornell University Press, 1950). For a sociopolitical perspective on the consequences of overreaction and the rhetorical political strategies that fueled it, see Edward A. Shils, *The Torment of Secrecy: the Background and Consequences of American Security Policies* (Glencoe, IL: The Free Press, 1956). For a journalist's perspective, see James Russell Wiggins, wartime intelligence officer and later executive editor of the Washington Post, who drew correlations between the public's right to know and freedom of the press in *Freedom or Secrecy* (New York, NY: Oxford University Press, 1956). See also Daniel Patrick Moynihan who assessed the tradeoff of liberty for security during the Cold War and argued that it had been excessive and permanently detrimental, see Daniel Patrick Moynihan, *Secrecy: The American Experience* (New Haven, CT: Yale University Press, 1998).

altered everything from regional economies to family life.⁴ Between 1945-1962, the U.S. detonated 259 aboveground nuclear weapons, including at least 100 at the Nevada Test Site, and others at various sites in the U.S., the Marshall Islands, Christmas Island, Johnston Atoll in the Pacific, and in three areas over the South Atlantic.⁵ All but thirty of these resulted in radioactive fallout that extended beyond the boundaries of the testing facility.⁶ The costs of nuclear development that began to tap the treasury at the end of

⁴ A confluence of fear and security initiatives led one historian to portray the U.S. during the early Cold War years as “The Insecurity State”. See H. W. Brands, *The Devil We Knew* (New York, NY: Oxford University Press, 1993), 31-58. Such insecurities cannot be separated from the bombings that led to Japan’s surrender. For the psychological effects, and particularly for the cultural underpinnings of Cold War hopes and anxieties, see Spencer R. Weart, *Nuclear Fear: A History of Images* (Cambridge, MA; London: Harvard University Press, 1988), 103 ff.; for the fears and controversies of the post 1949 era of above-ground testing, see Allan M. Winkler, *Life Under a Cloud: American Anxiety About the Atom* (New York, NY: Oxford University Press, 1993). The best analysis of how the Cold War affected family life remains Elaine Tyler May, *Homeward Bound: American Families in the Cold War Era* (New York, NY: Basic Books, 1988), 9-15. For the anti-communist movement in universities generally, see *The Cold War and the University*, Andre Schiffrin, ed. (New York, NY: The New Press, 1997); for the influence of state-funded science on universities, see Stuart W. Leslie, *The Cold War and American Science: the Military-industrial-Complex at MIT and Stanford* (New York, NY: Columbia University Press, 1993) and *Big Science: The Growth of Large Scale Research*, Peter Galison and Bruce Hevly, eds. (Stanford, CA: Stanford University Press, 1992).

The expansion of the military into the West was more akin to empire by invitation than it was to a takeover. For a case study that examines the fundamentals and intricacies of patronage and lobbying by boosters, see Roger Lotchin, *Fortress California, 1910-1961: From Warfare to Welfare* (New York: Oxford University Press, 1992). For the West generally, see Ann Markusen, *The Rise of the Gunbelt: the Military Remapping of Industrial America* (New York: Oxford University Press, 1991). For the transformative effect of the Manhattan Project on its surroundings in New Mexico see, Hal Rothman, *On Rims and Ridges: The Los Alamos Area since 1880* (Lincoln, NE: University of Nebraska Press, 1992), 207-257; and, for Colorado’s Rocky Flats facility, see Ken Ackland, *Making a Real Killing* (Albuquerque, NM: University of New Mexico Press, 1999).

For some consequences of the program on the West and its people, see Mike Davis, *Dead Cities* (New York: The New Press, 2002), 33-35; Ward Churchill, *Perversions of Justice, Indigenous Peoples and AngloAmerican Law* (San Francisco: City Lights Books, 2003), esp. 153-200; Gregory Hooks and Chad L. Smith, “The Treadmill of Destruction: National Sacrifice Areas and Native Americans,” *American Sociological Review* 679 (2004): 558-575.

For the fetishization of the program and testing, see Joseph Masco, *The Nuclear Borderlands: The Manhattan Project in Post-Cold War New Mexico* (Princeton and Oxford: Princeton University Press, 2006), esp. 20-23.

⁵ I use the terms “above-ground” and “atmospheric” interchangeably. Both describe those atomic and nuclear explosions that were designed to be detonated above the surface of the earth, whether they were tower, balloon, airdrop, or surface detonations.

⁶ United States Department of Energy, “Announced United States Nuclear Tests, July 1945 through December 1988,” September 1989, Office of External Affairs, U.S. Department of Energy, Nevada Operations Office, NO-209, 2-13.

World War II have continued to mount. Postwar development and production combined have exceeded \$5.5 trillion,⁷ and remedying the environmental wreckage in and around production facilities will likely cost \$179 billion.⁸ The human costs are, of course, impossible to measure in dollars alone. Nevertheless, a rough estimate of the extent of injury and death believed to have been caused by the program is illustrated by the at least \$1.2 billion paid to downwinders, uranium miners and millers, and on-site participants.⁹

Since 1989, the program’s history has become part of the national narrative celebrating the fall of the Soviet Union. Historians, political scientists, lawyers, journalists, and participants have all contributed to furthering our understanding of the program’s rise. They have also considered the issues at the heart of this dissertation: the military’s influence on the program’s development, including how secrecy shielded the program (and its history) from scrutiny. They have explained those factors in the same way that they explain the program itself: as attributes of the Cold War. As for the program, it is overwhelmingly understood as a single strategic thread in the matrix of national security policies; its human and environmental costs explained, and often criticized, as Cold War artifacts. It is through the lens of policy—as the corpus of executive and legislative-level initiatives to direct the program in accordance with the

⁷ A 1996 estimate made “in constant 1996 dollars”. Stephen I. Schwartz, ed., *Atomic Audit: The Costs and Consequences of U.S. Nuclear Weapons since 1940* (Brookings Institution Press, Washington, D.C., 1998), 3. For a discussion of the hazards, injuries, and funds spent to address them, see also Arjun Makhijani and Stephen I. Schwartz, “Victims of the Bomb,” *Atomic Audit*, 395-431.

⁸ “A Report to Chairman Hobson and Ranking Minority Member Visclosky, Subcommittee on Energy and Water Development, Committee on Appropriations, House of Representatives” GAO-05-764, July 2005, 45.

⁹ My use of the term “program” refers to the postwar atomic weapons complex and is intended to include administrative-level governmental agencies, their administrators, both civilian and military, together with the influential private laboratories and entities that partnered with the government to produce atomic material and weapons. For the figures on compensation, see the Government Accountability Office Report to ranking members of the Senate and House Committees on the Judiciary, September 7, 2007. Government Accounting Office, “Radiation Exposure Compensation Act Status” GAO-07-1037R, 3.

preservation of national security—that nearly all, including those most critical, explain the evolution and hazards of the atomic program. According to the conventional wisdom, the best way to understand both the direction and consequences of the postwar nuclear program during the atmospheric era is in light of its role in the Cold War.

This dissertation challenges the assumptions and the conclusions of this body of Cold War scholarship. It argues that based on the domestic history of the program, its political value in the early postwar years, and what we have learned from scholars in other disciplines about the operation of institutions and the behavior of individuals involved in them, that the expense, hazards, and influence, of the postwar program cannot be explained by geopolitics alone. Accordingly, the questions that drive this analysis are: How did the program’s wartime history, and its relationship with the military then and afterwards, affect the postwar, peacetime, program? How did the program’s relationship with the military influence how bombs were produced and tested? What factors caused that production and testing to become, as some experts at the time believed them to be, exceedingly and unnecessarily hazardous? And, what were the program’s effects on American society? Finally, this analysis provides insight into why the bomb was so readily accepted as an instrument of national authority, an issue raised more than fifty years ago by the respected author and essayist for *The New Yorker*, E. B. White. In 1954, when the stakes of the arms race reached into the possibility of human extinction, White was less concerned with superpower politics and the potential for nuclear war than he was with the process that had preceded it. “The terror of the atom age is not the violence of the new power,” White wrote, “but the speed of man’s adjustment to it.”¹⁰ The

¹⁰ E.B. White, “The Age of Dust,” *Second Tree from the Corner* (New York: Harper & Brothers Publishers, 1954), 115.

adjustment that bedeviled White cannot be found by viewing the program through a Cold War lens, but it can be found by coming to terms with the program in light of its origins and evolution, by understanding the centrality of the program and of the bomb to domestic politics, the extent to which the Cold War provided a rationale for atmospheric testing, and recognizing the atomic program and the atom bomb not only as products, but as engines, for postwar state building.

This new way of understanding the 1945-1958 program finds that domestic institutional imperatives did more to shape the direction—militarization—and to establish the nature of the postwar program than did diplomatic failures and Cold War objectives. It deals with the development of the national security state, the political and economic influence of the military-industrial complex, as well as the expansion of military authority in peacetime society, to show that all were concentrated in and found expression through the postwar atomic program. There are no smoking guns in this analysis. Instead, it re-evaluates the historical record in light of uncustomary (insofar as the history of the atomic program is concerned) methodological and theoretical approaches. It draws on a multidisciplinary range of secondary literature, the findings of historians and sociologists who have evaluated institutional culture and human behavior, and is grounded in the archival collections of Presidents Truman and Eisenhower; records of the Atomic Energy Commission (AEC), National Security Council (NSC), and the Manhattan Project; manuscript collections of scientists associated with the program; Nevada Test Site records, and documents submitted as trial evidence.¹¹

¹¹ Especially *Prescott vs. United States*, consolidated, Civil Action No. CV-8-80-143 PMP, United States District Court, District of Nevada [*Prescott v. U.S.*]. Also, *Allen v. United States*, 588 F. Supp. 247, 258 (D. Utah 1984), 816 F.2d 1417 (10th Cir. 1987), [*Allen v. U.S.*]; *Bulloch v. United States*, 95 F.R.D. 123 (D. Utah 1982), 721 F.2d 713 (10th Cir.1983) [*Bulloch v. U.S.*].

I make two substantive diversions from convention. First, I have abandoned the traditional division separating World War II from the postwar era, and thus between the wartime and peacetime programs, to evaluate how the program's wartime origins influenced its peacetime history.¹² Second, because this analysis is focused on the motivations and goals of individuals, and because individual preferences align in ways that are not well defined by occupation or professional affiliation, I have broadened the definitions of "military" and "civilian" to extend beyond the usual connotation of profession to include categories of interest.¹³ Given that one characteristic of the period was the merging of civilian and military interests, this re-conceptualization makes analytical sense. It also makes practical sense. Civilian administrators and program managers routinely supported goals that might be considered to be strictly "military" in nature. And, according to the self-reporting of military officers, boundary shifting and blurring across the lines of prerogative and responsibility are common practices, and routinely contingent on individual interpretation of circumstances.¹⁴

I have limited this examination to the period between the end of the war and the unofficial moratorium on aboveground testing reached between the U.S. and the U.S.S.R. in 1958. Although part of my argument rests on the connections between the wartime

¹² As Elizabeth Borgwardt has pointed out, one of the lessons drawn from World War I was the importance of planning for peace before the end of war. *A New Deal for the World* (Belknap Press of Harvard University Press: Oxford, MA; London, 2008), 14.

¹³ The term "military" is admittedly too broad to describe the non-monolithic armed forces. Nevertheless, within the context of this analysis there are enough commonalities between service goals—desire for postwar influence and budgetary concessions, for example, and the effort to capitalize on World War II's technological advances. In this dissertation, "U.S. military" refers to uniformed officers charged with authority that will become clear from the text. References to specific services—as in "U.S. Navy" or "Army officers"—should pose no difficulties.

¹⁴ I have made every effort to make my meaning clear from the context, or by way of reference, "military-style", for instance. For the studies on civil/military relationships and responsibilities, see Peter D. Feaver, *Armed Servants: Agency, Oversight, and Civil-Military Relations* (Cambridge, MA: Harvard University Press, 2003), 128-133, esp. 132.

Manhattan Project and the peacetime program, I have not made an effort to re-evaluate the wartime history of the program. The characteristics of Manhattan that are integral to this argument are, in fact, already well developed in the vast secondary literature. While I do make some assertions about the wartime program based on archival research, my investigations into Manhattan's archives were limited and far from comprehensive. And, although the U.S. did not discontinue atmospheric weapons tests until July 1962, the endpoint of my study is 1958 and the unofficial moratorium on weapons testing. The reason for this is that from a domestic perspective, weapons tests conducted prior to the 1958 moratorium had domestic political value as instruments of persuasion or demonstration, whereas experiments conducted after September 1961 were unquestionably provoked by national security objectives following the decision by the Soviets to resume atmospheric weapons tests and thus to break the unofficial agreement reached in 1958. Beginning with *Operation Crossroads* in 1946 and especially after 1951 with the advent of testing in Nevada, the military's elaborately staged weapons tests and troop maneuvers became routine events that generated excitement and enthusiasm. By 1958, however, they paid diminishing returns as the American public, politicians, and members of the press corps, became increasingly wary about the dangers of radioactive fallout and skeptical about the continuation of aboveground testing.

This is a history that includes scientists—not a history of science, technology, nor a study of knowledge production.¹⁵ My primary concern with science and scientists is to

¹⁵ Though not directly, this study engages with themes in the history of technology and technological culture—literature in the tradition of Arnold Pacey, *Culture of Technology* (Cambridge, MA: MIT Press, 1983); Thomas P. Hughes, *American Genesis: A Century of Innovation and Technological Enthusiasm* (New York, NY: Penguin, 1989); Bryan Pfaffenberger, "Social Anthropology of Technology," *Annual Review of Anthropology* 21 (1992): 491-516; and David E. Nye, *Technology Matters: Questions to Live With* (Cambridge, MA: MIT Press, 2006).

show how the military's interest in atomic science divided experts into cooperative and dissenting groups. This distinction was an important one, I argue, because those members of the expert community that held, and expressed, opinions that supported military goals became the sole arbiters of program safety. Oppositional experts were at first marginalized and then, for most of the period examined here, left out of the official decision-making process altogether. Military officers and supporters disregarded the opinions of experts who disagreed with cooperative scientists, ridiculed them in the press, and attacked their integrity by calling into question their competence and loyalty. While aware that scientists hardly comprise a unified group, I use the term "scientists" in a general sense to refer to those experts who by education or experience were uniquely qualified to evaluate technical, theoretical, or practical aspects of the program.¹⁶ Where I do discuss individual scientists, I have identified them with reference to their field of expertise. I have not overlooked the possibility that scientists who cooperated with procedures that were known at the time to pose long-term risks to participants and downwinders may have been influenced in part by "technological optimism," the notion that problems expected to arise in the future would be prevented from occurring because of scientific or technological developments.¹⁷ It was, however, not a phenomenon reflected in the private or public comments of those scientists investigated for this study. At the time, those scientists who endorsed risky or hazardous weapons testing differed little from their precautionary brethren among the program's advisors and

¹⁶ As Ian Hacking has recently pointed out, except for administrative "educational purposes," exactness as it pertains to the sciences is misleading: the sciences are "always crossing borders and borrowing from each other." "Making up People," *London Review of Books* 28 (August 16, 17, 2006): 23.

¹⁷ James E. Krier, Clayton P. Gillette, "The Un-Easy Case for Technological Optimism," *Michigan Law Review* 84 (1985): 405-429.

experts, admitting the potential for future illness while publicly downplaying the dangers and arguing that they were necessarily imposed in the interests of national security.

Although I argue that national security policy was less important than the military's domestic goals in establishing the direction and character of the atomic weapons program, policy does make an occasional appearance in this argument. However, I have made no attempt to re-assess the findings included in the vast literature on Cold War national security policy that already exists and have purposefully disentangled my study of the program from Cold War policy concerns.¹⁸ From a practical level, substantial documentation about the program and military planning remains classified and it would be impossible at this time, even for teams of researchers, to render meaningful a comparison between domestic and diplomatic impulses. More importantly, however, the decision to de-emphasize the national security policy side of the story is a logical one. There is, for example, abundant archival evidence that reveals the routine use of exaggeration, euphemism, and deception, to mask individual or institutional goals with national security rationales. Logically, none of these less-than-forthright tactics would have been necessary had the interests of the military and its supporters been anchored in genuine efforts to achieve policy objectives.

One final qualification: my goal has been to get at the history of atmospheric weapons experimentation as it unfolded. Thus, I have adopted the viewpoints and opinions of historical actors as they were expressed at the time. This means that I have generally not taken into account the growing collection of latter day recollections of program participants nor tried to evaluate the continuing controversies about radioactive

¹⁸ John L. Gaddis, *The United States and the Origins of the Cold War, 1941-1947* (New York, NY: Columbia University Press, 1972); Melvyn P. Leffler, *A Preponderance of Power: National Security, the Truman Administration, and the Cold War* (Stanford, CA: Stanford University Press, 1992).

exposure and illness/injury.¹⁹ The problems of trying to recapture history through remembrances can only have been made more difficult by the attention drawn to the program and the atmospheric weapons testing era by lawsuits, congressional investigations, and compensatory legislation. provided for participants, contract employees, and downwinders. As much as any other historical issue, the program's participants, contract employees, and downwinders, have all had reason to "appeal for popular support by claiming the sanction of the past" and have certainly "form[ed] and re-form[ed] conclusions."²⁰ Similarly, the danger of radioactive fallout and weapons production remain topics of considerable debate. But the historical question is not what we now can prove, or disprove, about the effect of radioactive exposure on human health, but rather what experts at the time believed the dangers were.

Following the critical assessment in this Introduction, the historiographical essay in Chapter Two examines the character and reasons for the resilience of the policy-centered explanation of the program—the Cold War Narrative. The remainder of this study divides the program's history into two parts. The first—Militaryization—examines the pre-1950 process through which military officers and their supporters gained control over the program and its resources. The second—Atomic Governance—analyzes the use of the program and weapons testing by military officers and AEC officials, evaluates the consequences of the autonomous authority they wielded, and the implications of what amounted to extra-constitutional overreach. I conclude this critical study by summarizing

¹⁹ Among the most recent compilation is the digitized collection of interviews at *The Nevada Test Site Oral History Project* at the University of Nevada, Las Vegas. Available at <http://digital.library.unlv.edu/ntsohp/>.

²⁰ David Thelen, "Memory and American History," *Journal of American History* 75 (1989):1117-1129, quote at 1127. For an expanded discussion, see Kerwin Lee Klein, "On the Emergence of Memory in Historical Discourse," *Representations* 69 (2000): 127-150.

the significance of the institutional motivations, relationships, and wartime strategies of control that contributed to making the atomic program the engine for post World War II mobilization. The Conclusion includes a discussion of the distortions of the typical Cold War Narrative and the present-day significance of recognizing and correcting them. This analysis demonstrates, for example, that it was not ignorance, but what AEC officials and military officers knew, about the hazards of radioactive exposure that gave them the ability to conduct unnecessarily hazardous weapons tests during the 1940s and 1950s. Understanding that officials and officers during the earliest years of the Cold War arms race relied on the boundaries known to exist between radiation dosages that would cause short-term illness and those expected to produce illness and death in the long term to mischaracterize the value of nuclear bombs and tactical nuclear weapons has the potential to provoke contemporary discussions about issues that range from the importance of independent oversight to the direction of national security policy.

“Militarization” begins with an analysis of the domestic institutional and political factors that allowed military officers and their supporters to first monopolize and then assert autonomy over the program and its resources (Chapter Three). Chapter Four (Integration) examines the 1945-1947 phase of Militarization during which the military’s efforts to retain control of atomic science corresponded with the Navy’s *Operation Crossroads*. During those maneuvers, military officers set a precedent for the peacetime employment of wartime-style, Manhattan Project strategies of control—including military urgency, secrecy, and manipulation of media and scientists. Using them, officers at *Crossroads* established a model for the use of the program and testing to achieve domestic political goals that continued through the atmospheric weapons testing. After

the Atomic Energy Act stripped the military's Manhattan Project of its monopoly over the program and its resources, military officers from all branches united in the goal to reclaim the authority it had lost. As explained in Chapter Five, provisions in the AEA and in the National Security Act, organizational expertise supplied by former Manhattan Project administrators, and support from pro-military congressmen, AEC member Lewis L. Strauss, and influential backers in the private sector, all helped the military monopolize atomic resources and expand a network of industry and university affiliates dependent on military development and production. Chapter Six examines Consolidation, the final phase of Militarization during which military officers and their congressional supporters accumulated enough political and institutional power to influence foreign and domestic policymaking.

The era of Atomic Governance began when Truman acquiesced to the goals of the JCS, pro-military congressmen and AEC affiliates within the AEC's network. His retreat from his earlier commitment to civilian authority contributed to the H-bomb decision and was marked by his decision to elevate pro-military Gordon Dean to AEC Chairman (Chapter Seven). The implications of this turning point are the subject of Chapter Eight, which examines the formation of a partnership between the AEC and the DOD and Dean's use of Manhattan-style strategies of control to secure permission for continental weapons tests. It reveals the significance of those same strategies to AEC officials and military officers who conducted weapons tests as demonstrations to generate support for self interested, institutional, goals. But neither the AEC nor the DOD would have been able to capitalize on the political instrumentality of weapons tests without the support of a pro-military cadre of scientists and the selective use of Atomic Secrecy to restrict the

flow of information about atomic science. Chapter Nine examines the 1945-1958 history and significance of Atomic Secrecy and a community of scientists who cooperated with the military's exploitation of the program. As described in Chapter Ten, the insularity and coherence of that community became especially important during President Eisenhower's first term when the fallout controversy erupted and threatened the authority and autonomy of AEC Chairman Lewis Strauss and his military partners. To protect his authority over the program and atmospheric weapons testing, Strauss relied on that community of AEC affiliated scientists to downplay the hazards of radioactive fallout. Simultaneously, he consolidated his authority within the administration and drew the State Department into the AEC/DOD alliance to discredit disarmament proposals and postpone a moratorium on atmospheric tests until 1958, when Eisenhower, influenced from advisors outside his cabinet and pressure from the international community, agreed with Soviet Premier Khrushchev to halt atmospheric weapons tests.

The history of aboveground nuclear testing verifies what historians learned long ago: that there are many ways to explain the past. In presenting a new way to understand the program and its history, I hope also to encourage the timeworn notion that the past offers some lessons for the future. Under a veneer of celebratory accounts, the suspicions expressed during the early Cold War years by those who witnessed and found reasons to be skeptical of the military's postwar ambitions, of increasing governmental secrecy, and of the safety of above-ground nuclear testing, are becoming harder to recognize. In the familiar telling, the "Wise Men" who were "Present at the Creation" made the tough choices that allowed America to win the early Cold War "race" for nuclear supremacy and set the stage for the Soviet Union's 1989 collapse. In one sense, it is unsurprising that

the history of the aboveground nuclear program and its role during the early Cold War years have been shaped by selective perception. The Cold War and the mushroom clouds that characterized the conflict's early years have, after all, assumed significance in the stories Americans tell themselves about their nation's role in shaping the post World War II world. And yet, while the impulse to gloss over some of the more uncomfortable or even sordid details of the past is a natural one and not necessarily deliberately deceptive, such glorification is not without its drawbacks. Casting the past in such a positive light may, as Nietzsche explained of the French Revolution, rob future generations of the lessons that might have otherwise been learned:

[t]hough noble and enthusiastic spectators from all over Europe contemplated [it] from a distance and interpreted it according to their own indignation and enthusiasms for so long, and so passionately, that the text finally disappeared under the interpretation—could happen once more as a noble posterity might misunderstand the whole past and in that way alone make it tolerable to look at.²¹

In the conventional history of the postwar nuclear program, there are no lessons to be learned. If we accept what has become the conventional analyses, then we must acknowledge that the program was shaped solely by national security objectives; that within the context of their presidencies and in consultation with a handful advisors each, Truman and Eisenhower had no alternative but to direct that the program proceed with the development of an ever-larger class of nuclear weapons and to expand production and above-ground experimentation. Moreover, we must also accept that both Truman and Eisenhower knew that doing so would involve a number of known radioactive risks that would likely threaten the health and lives of thousands (if not tens of thousands) of uninformed production workers and unwary American citizens. This stark summary is

²¹ Friedrich Nietzsche, *Beyond Good and Evil*, trans. Walter Kaufmann (New York, NY: Vintage Books, 1989, 1966), 49.

what the conventional Cold War narrative boils down to. But we are not stuck with it. The history in this dissertation offers an alternative.

In the standard portrayal, the atomic program began to unfold at the close of World War II and evolved in close alignment with national initiatives, postwar diplomatic failures, and subsequent arms escalation.²² The immediate postwar period was one of unprecedented challenges and uncertainty as national leaders, scientists, and a large percentage of the American public discussed the atom's potential and debated international and domestic options for atomic weapons.²³ As diplomatic negotiations got underway, Congress took up the problem of domestic control. The central issue was whether the military should retain its authority over the program or whether civilians should be assigned to control it. After nearly a year of negotiation and in the midst of the broader postwar effort aimed at coordinating and strengthening the nation's defenses, Congress passed the Atomic Energy Act in August 1946. It established a five-member civilian commission, the Atomic Energy Commission (AEC), to replace the wartime Manhattan Project and, on January 1, 1947, the AEC assumed authority over atomic resources and science. The Act reduced the military's role to a consultative one and

²² For how the bomb played into the strategic maneuvering at the end of World War II, see Greg Herken, *The Winning Weapon*; Martin J. Sherwin, *A World Destroyed* (New York, NY: Knopf, 1975). For a more intimate account, see McGeorge Bundy, *Danger and Survival: Choices about the Bomb in the First Fifty Years* (New York, NY: Random House, 1988). For US/Soviet relations generally, see Melvyn Leffler, *A Preponderance of Power*; Daniel Yergin, *Shattered Peace: The Origins of the Cold War and the National Security State*, rev. ed. (New York, NY: Penguin, 1990); John Lewis Gaddis, *The United States and the Origins of the Cold War*.

²³ For the activism of scientists, see Jessica Wang, *American Science in an Age of Anxiety* (Chapel Hill, NC: University of North Carolina Press, 1999) and "Scientists and the Problem of the Public in Cold War America, 1945-1960," *Osiris*, 17 (2002): 323-347; Alice Kimball Smith, *A Peril and a Hope: The Scientists' Movement in America, 1945-1947* (Chicago, IL: University of Chicago Press, 1965); Don K. Price, *Government and Science: Their Dynamic Relation in American Democracy* (New York, NY: Oxford University Press, 1962).

minimized presidential authority by directing that the AEC would answer to Congress.²⁴ The Act closed the book on the wartime Manhattan Project, codifying the hopes of many in Congress as well as President Truman that atomic science be put to beneficial use by “improving the public welfare.”²⁵ Before long, however, the fall of China to communists, the Soviet’s successful detonation of an atom bomb in 1949, and the North Korean invasion of South Korea the following year stimulated military expansion.²⁶ Truman approved the development of a hydrogen bomb, and the AEC’s primary focus officially shifted to weapons development. To streamline that development, Truman eliminated the logistical and economic burdens posed by Pacific testing with the approval of a Nevada site for the continental testing of nuclear weapons on December 18, 1950.²⁷ As the arms race gained momentum through the 1950s, the atomic weapons program became central

²⁴ The most comprehensive history of the AEC available is the official one: Richard G. Hewlett and Francis Duncan, *Atomic Shield, 1947-1952, A History of the United States Atomic Energy Commission, Vol. II* (University Park, PA: The Pennsylvania State University Press, 1969). For a summary of the political and operational challenges facing the new civilian commission see especially 1-95. For a social and political contextualization of the issues of international and domestic control, see the first person account of the Commission’s first Chairman, David E. Lilienthal, in *The Journals of David E. Lilienthal, The Atomic Energy Years, 1945-1950* (New York, NY: Harper & Row, Publishers, 1964). For the scientists’ perspective, see Alice Kimball Smith, *A Peril and a Hope*, 301-327.

²⁵ “The significance of the atomic bomb for military purposes is evident. The effect of the use of atomic energy for civilian purposes upon the social, economic, and political structures of today cannot now be determined Accordingly . . . the development and utilization of atomic energy shall be directed toward improving the public welfare, increasing the standard of living, strengthening free competition among private enterprises so far as practicable, and cementing world peace.” Section 1(a), the McMahon Bill, Atomic Energy Act of 1946, U. S. Congress, 79th Congress, Pub. L. 575 (1946).

²⁶ Henry L. Stimson with McGeorge Bundy, *On Active Service in Peace and War* (New York: Harper & Bros., 1947); Dean Acheson, *Power and Diplomacy* (Cambridge, MA: Harvard University Press, 1959); Herbert Druks, *Harry S. Truman and the Russians 1945-1953* (New York: Speller, 1966); Dean Acheson’s memoir captures the frantic diplomatic front during the early Cold War before the invasion of South Korea: *Present at the Creation: My Years in the State Department* (New York: W.W. Norton & Company, Inc., 1969), 88-382. For an analysis of the domestic political implications of such crises, see Hogan, *A Cross of Iron*, 112-208.

²⁷ Barton Hacker, *Elements of Controversy, The Atomic Energy Commission and Radiation Safety in Nuclear Weapons Testing 1947-1974* (Berkeley: University of California Press, 1994), 39-44; A. Constandina Titus, *Bombs in the Backyard: Atomic Testing and American Politics*, second ed., (Reno: University of Nevada Press, 1986, 2001), 54-58, 167.

to Cold War posturing and mobilization: the keystone to the Eisenhower administration's concept of Mutual Assured Destruction.²⁸ Atomic development then proceeded in tandem with Cold War mobilization until Dwight D. Eisenhower and Nikita Khrushchev agreed in 1958 to a moratorium on aboveground weapons testing.²⁹

This policy-centered narrative forms the backbone of nearly all of the histories of the program, its evolution and Cold War role, and the ways it affected communities around which its complexes were located as well as broader American society.³⁰ The Cold War narrative's endurance is surprising, even for a program so shrouded in secrecy, given the changing historiographical trends of the last thirty years and the critical attention spawned by revelations of its many hazards. Its stability would be more understandable if it accurately portrayed the forces that drove the program's evolution or if it explained, or provided some mechanism for understanding, why atomic development

²⁸ For the twentieth-century trends of defensive mobilization away from the Northeast, the alliances between the armed forces and congressmen in the South and West, see Ann Markusen, *The Rise of the Gunbelt* and Roger W. Lotchin, *Fortress California, 1910-1961*. John Foster Dulles was the primary architect of the doctrine known as Mutual Assured Destruction (MAD). For Dulles's personality and influence as Eisenhower's Secretary of State, see Richard H. Immerman, *John Foster Dulles: Piety, Pragmatism and Power in U.S. Foreign Policy* (Wilmington, DE: Scholarly Resources, Inc., 1999). See also his edited collection, *John Foster Dulles and the Diplomacy of the Cold War* (Princeton, NJ: Princeton University Press, 1990), 27-45.

²⁹ See Henry Kissinger, *Nuclear Weapons and Foreign Policy* (New York, NY: Council on Foreign Relations by Harper, 1957); Cecil V. Crabb, *American Foreign Policy in the Nuclear Age* (Evanston, IL: Row, Peterson, 1960); John L. Gaddis, *The United States and the Origins of the Cold War, 1941-1947*; Robert A. Divine, *Blowing on the Wind: The Nuclear Test Ban Debate, 1954-1960* (New York, NY: Oxford University Press, 1978); David Holloway, *The Soviet Union and the Arms Race* (New Haven, CT: Yale University Press, 1983); Walter LaFeber, *America, Russia, and The Cold War 1945-1984*, Fifth ed. (New York, NY: Alfred A. Knopf, 1985), 195-199.

³⁰ Exceptions include works by historians explicitly interested in cultural phenomena and forces. For examples, see Joseph Masco, "'Survival is Your Business': Engineering Ruins and Affect in Nuclear America," *Cultural Anthropology* 23 (2008): 361-398. For studies about how federal investment shaped Westerners' ideas about the AEC, its military affiliates, and federal investment generally, see Masco *The Nuclear Borderlands*; John M. Findlay, "The Nuclear West: National Programs and Regional Continuity Since 1942," *Journal of Land, Resources, & Environmental Law* 24 (2004): 1-15. See also journalists Tad Bartimus and Scott McCartney, *Trinity's Children: Living Along America's Nuclear Highway* (San Diego, CA: Harcourt Brace Jovanovich, 1991).

and experimentation were such dangerous ventures. But it does neither. In fact, when used as an explanatory mechanism, the Cold War narrative lends an air of inevitability to the program's evolution and one of unavoidability or necessity to its hazards, obscuring rather than shedding light on the program's history.

The conventional explanations seem to make sense because, as John Passmore noted in his discussion of the varieties of historical narrative, they “refer to modes of connection which have come to be familiar to us.”³¹ To borrow his words, we have “got used to” understanding the hazards of atomic development through a Cold War lens. The historians, journalists, and sociologists interested in the ramifications of atmospheric atomic testing who have greatly expanded our understandings of the program's intricacies have relied, for the most part, on a common explanatory framework. Almost all have taken what is generally known about radioactivity—that it is inherently harmful—and linked it with what is generally known about the Cold War—that it increased in intensity after 1949. Moreover, most have idealized the Atomic Energy Act (AEA), taking for granted the principle of civilian leadership written into it and assuming that the civilian commissioners or the president effectively exerted their authority over the military. The resulting narrative sequence and the apparent correlation between the program's expansion and the intensification of Cold War animosities have affirmed the assumptions about both. It is a scenario that depends simultaneously on (a) avoiding the fact that known safety precautions could have reduced the risks of production and testing and (b) the appeal of patriotism and national self-sacrifice. Thus, for the program's apologists and its critics alike, the big question—Why was the atomic weapons program

³¹ John Passmore, “Explanation in Everyday Life, In Science, and in History,” *History and Theory* 2 (1962): 112.

of the postwar 1940s and 1950s so hazardous?—receives an answer firmly rooted in national security imperatives: that surviving and winning the Cold War security depended on developing, accumulating, and testing a dangerous class of weapons. The result is a teleological explanation that the creation of the post World War II atomic program itself simultaneously explains its evolution, administration, and hazards.

The following discussion presents an alternative for understanding the program and its consequences, analyzing the program's evolution in light of its domestic history and relationship with the military, the political affiliations and influence of individuals within the program and its supporters without, and the goals and aspirations of officers and others who achieved authority over its human and material resources.

A Critical Assessment

This traditional line of reasoning should be abandoned as a mechanism for understanding the atomic program, its evolution, and its hazardous nature. One element of the policy-centered interpretation that is beyond dispute is that the Cold War was relevant from an authorizational standpoint: that the program was funded to meet the challenges of the Cold War. Beyond that, however, evidence from the history of the program calls into question the Cold War justifications for key aspects of the program's evolution and its attributes. As Rosenberg pointed out in 1983, during the program's formative years there was little correlation between the policy of the Truman administration and the atomic program. In fact, Truman's failure to develop a comprehensive atomic policy in the immediate postwar years meant that the incorporation of atomic weapons into the nation's arsenal by the National Security

Council and the Joint Chiefs of Staff was often an uncertain, ad hoc, affair.³² Also, the conventional analysis is silent about why the 1945-1958 program so often diverged from the prescriptives of Cold War policy as laid out by elected officials. Similarly, it does not take into account the suspicions expressed at the time that the military was capitalizing on the program for reasons other than national security. Finally, it neglects entirely the cultural, institutional, and domestic political influences that contributed to the 1945-1958 aboveground era.

First, the Cold War narrative fails to explain the disjunctions between policy objectives and defense initiatives during the era of aboveground weapons testing. For the 1945-1958 era that is the focus of this analysis, the legendary problems that Presidents Truman and Eisenhower had in trying to limit military spending can be added as one of the disparities between policy and the program's growth.³³ Also, before late 1949, and in accordance with the AEC's charge to develop peacetime, and not solely military, applications for atomic energy, both President Truman and the Joint Committee on Atomic Energy (JCAE) sought to curtail the military's monopolization of atomic resources. Truman's preference and support for peacetime development can be inferred from his refusal to grant the military's requests for custody of the atomic weapons and components, and those it routinely made in 1946, 1947, and 1948 for a continental testing

³² Rosenberg, *Toward Armageddon*, 73. See also Rosenberg's explanation of the program's expansion: "[It] seems to have been less a function of any conscious decision by the Truman administration, than the single outcome of technological progress unhindered by policy." 113.

³³ For Truman, see Hogan, *A Cross of Iron*, 119-120, 304-313. For Eisenhower, see Martin J. Medhurst, ed., *Cold War Rhetoric: Strategy, Metaphor, and Ideology* (E. Lansing, MI: Michigan State University Press, 1997), 24.

site.³⁴ Additionally, in 1948 Truman rejected the Joint Chiefs' "atomic war plan," insisting instead that they re-evaluate their strategies and prepare war plans that relied upon conventional methods and troops.³⁵ Finally, Truman's support for AEC Commissioner Lilienthal against oppositional military leaders and their supporters in Congress was absolute.³⁶ The JCAE likewise sought to rein in the military's atomic enthusiasm by resisting demands that would have stifled peacetime development. In response to a 1947 estimate that the military required 400 "Nagasaki-type" bombs, Brett Hickenlooper, Iowa's conservative Republican Senator and JCAE Chairman, asked the Joint Chiefs of Staff to explain a demand that would require "a preponderant part of the Commission's activities and expenditures."³⁷

Nor does the policy-centered narrative address the fact that some military leaders, acquainted with defense potential and national security requirements, cast suspicion at the time about the armed forces' designs for the atomic program. President Eisenhower's warnings about the military/industrial complex are well known, but he was not the only esteemed military officer to cast a wary eye at the military's designs for atomic energy. It

³⁴ The requests for a test site were refused because of "unresolved questions" about off site safety. See Chapter Seven, below.

³⁵ David Alan Rosenberg, "Constraining Overkill, Contending Approaches to Nuclear Strategy", Seminar 9, *Colloquium on Contemporary History*, Naval Historical Center, at <http://www.history.navy.mil/colloquia/cch9b.html> (8/9/2006) 1.

³⁶ Lilienthal, *The Atomic Energy Years*, 121-123, 217-219, 233-234, 348-351, 373-377.

³⁷ Fleet Admiral Leahy's estimate of October 29, 1947: "If a decision is made by competent authority to use atomic bombs, the Joint Chiefs of Staff have determined that for war a military requirement exists for approximately 400 [handwritten] atomic bombs of destructive power equivalent to the Nagasaki type bomb." ("29 October 1947 Memorandum for Chairman, Atomic Energy Commission: Thru: The Military Liaison Committee from Leahy" RG 218 Records of the U.S. Joint Chiefs of Staff, Central Decimal File 1948-1950, 471.6 (8-15-45) Sec. 7-10; Box No. 223, HM1994.) Hickenlooper requested clarification from Defense Secretary Forrestal. ("1-15-48 B.B. Hickenlooper, Chairman, Joint Committee on Atomic Energy to The Honorable James V. Forrestal, Secretary of Defense" RG 218 Records of the U.S. Joint Chiefs of Staff, Central Decimal File 1948-1950, 471.6 (8-15-45) Sec. 8; Box No. 223.)

is extremely difficult to account for 1945-1949 demands for military development given the authoritative opposition to those demands raised by leaders of the era familiar with the civilian and military sides of national security and policymaking. Generals George C. Marshall and Omar Bradley both opposed expanding the military's authority in the postwar years, and each expressed doubts that civilian leaders would be able to prevent the defense establishment from capitalizing on atomic science to increase its own influence.

The conventional analysis also neglects the cultural dimension through which the program achieved, and ultimately lost, prominence. This is a significant oversight in light of the importance of electoral politics during the early Cold War and the related tendency of leaders during the early Cold War years to inflate or exaggerate diplomatic crises to suit domestic purposes.³⁸ It is also a surprising oversight given the attention historians in other fields have paid to the persuasive power of aboveground weapons experimentation. To historians of foreign policy, "atomic diplomacy" is commonly used to describe the diplomatic utility of experimentation in studies of the Cold War and its arms race.³⁹ As

³⁸ The best analyses of the phenomenon are decades old. See Lloyd Gardner, *Architects of Illusion: Men and Ideas in American Foreign Policy, 1941-1949* (Chicago, IL: Quadrangle Books, 1970); Daniel Yergin, *Shattered Peace: The Origins of the Cold War and the National Security State* (Wilmington, MA: Houghton Mifflin, 1978; New York, NY: Penguin Press, 1990); Thomas G. Paterson, *On Every Front: The Making of the Cold War* (New York, NY: Norton, 1979). This is also the thrust of Michael J. Hogan's argument in *A Cross of Iron*. More recently, Michael A. Bernstein has investigated the economic incentives to bipartisanship and Cold War expansion. As he has pointed out, the Cold War playing field was shaped by factors such as bipartisan coalition favoring growth. In his words, "bipartisan pursuit of unprecedented amounts of peacetime public spending was the essential economic ingredient not only of the military success of the Cold War but also the rise of the "mixed private/public economy." "Cold War Triumphalism and the Deformation of the American Economy" in *Cold War Triumphalism: The Misuse of History After the Fall of Communism*, Ellen Schrecker, ed., (New York: The New Press, 2004), 126.

³⁹ The most bizarre example of this occurred between AEC Commissioner Lewis Strauss and his Soviet counterpart in 1954, when hypothetical scenarios describing destruction of New York, Moscow, and other large population centers covered the front pages of most major newspapers as measures of the atomic prowess of the U.S. and U.S.S.R. For the exchange, see *New York Times*, March 27, 1954, and April 1, 1954.

one historian has concluded, it was not the numbers of weapons possessed by either side, but rather the awe-inspiring detonations that mattered most during the early Cold War years.⁴⁰ And, just as the electorate could be persuaded, it could be dissuaded: domestic anxieties raised by scientists who warned of the dangers of H-bomb fallout provoked politicians to launch a congressional inquiry;⁴¹ and the controversy that culminated in the 1958 moratorium on above-ground testing. During the early postwar years, however, it was easier to demonstrate that American scientists were making progress on the atomic front with mushroom clouds than with medical or industrial applications that took place on the molecular level. As Brian Balogh pointed out in a study examining the drive for nuclear power generation, the continued support for any large-scale endeavor in postwar America depended on its potential to produce visible, *demonstrable*, results. Balogh found that AEC Chairman David E. Lilienthal was unable to generate enthusiasm for a number of intriguing peacetime applications for atomic energy because they did not lend themselves to exciting demonstrations.⁴² That Lilienthal himself sought ways to overcome this failing provides yet another reason to examine the evolution of the peacetime program in light of its domestic political utility to the military.

An example from 1956 shows how domestic politics, institutional goals, and the affiliation of program managers, influenced a decision to continue atmospheric testing

⁴⁰ Situationist Guy Debord discussed the persuasive power of spectacle in the modern state in *The Society of the Spectacle*, Donald Nicholson-Smith, trans., 9th ed (New York: Zone Books, 1994), 19-20. See also Scott Kirsch, "Watching the Bombs Go Off: Photography, Nuclear Landscapes, and Spectator Democracy, *Antipode* 29 (1997): 227-255.

⁴¹ "The Nature of Radioactive Fallout and Its Effects on Man", *Hearings Before the Special Subcommittee on Radiation of the Joint Committee on Atomic Energy*. 85th Congress (Washington, D.C.: United States Government Printing Office, 1957.)

⁴² Brian Balogh, *Chain Reaction*, 78, 84-85.

after respected scientists and experts had come to the conclusion that fallout posed health hazards, particularly to children. The decision to continue testing was made despite knowledge of the hazards and involved deceiving the chief policy maker, President Eisenhower. In June of that year, *Newsweek* reported that a National Academy of Sciences (NAS) found that fallout from nuclear weapons testing posed long-lasting threats to public health.⁴³ The Academy announced that the Strontium 90 present in fallout was potentially lethal even in minute quantities if ingested. Because it imitated calcium and concentrated in growing bone, Strontium 90 posed the highest danger for children, whose calcium requirements and consumption exceeded those of adults. In light of these preliminary findings, Academy scientists and other scientists unassociated with the AEC warned that continued testing spelled potential disaster.⁴⁴ The issue rapidly achieved political prominence during election-year volleys. With Dwight D. Eisenhower at the helm and weapons testing continuing unabated, the Democrats accused the Republicans of “smug scientific optimism.” The GOP countered that the Democrats were alarmist, arguing that they were trying to frighten the electorate “out of its skin.”⁴⁵ Behind the scenes, AEC Chairman Lewis Strauss, one of the chief opponents of an international arms control agreement that would have put an end to aboveground weapons testing, reassured President Eisenhower that atomic weapons experiments were

⁴³ *Newsweek*, June 25, 1956, 88, 70.

⁴⁴ National Academy of Sciences, National Research Council, *The Biological Effects of Atomic Radiation and Excerpts From Pathologic Effects of Atomic Radiation, Studies by the National Academy of Sciences, National Research Council* (Washington, June 4, 1956.) See also Willard F. Libby, United States Atomic Energy Commission, “Current Research Findings on Radioactive Fallout October 17, 1956,” *Proceedings of the National Academy of Sciences* 42 (December 1956): 94-962.

⁴⁵ *The New Republic* 134, June 4, 1956.

safe.⁴⁶ Before the year ended, the controversy prompted Congress to schedule hearings into the activities of the AEC and the United Nations to expand its ongoing studies of the environmental and health effects of radioactive fallout.⁴⁷ Nevertheless, *Newsweek* reported in November that former AEC scientist William F. Newman anticipated little change in governmental policies: “There is a grim possibility that we will gain this information from human data.”⁴⁸

On November 26, 1956, the AEC’s Division of Biology and Medicine, a scientific advisory group assembled under the authority of the five-member Commission, met to reassess the environmental effects of Strontium 90 and the prevailing limits for exposure. Based on the incomplete studies launched by AEC scientists into the dispersal and effects of Strontium 90 and the Academy’s findings, the Division considered whether to recommend that the AEC limit the number of above-ground explosions to reduce fallout and thus keep Strontium 90 exposures within safe parameters. Before they could complete those discussions, AEC Commissioner Thomas E. Murray joined the group briefly. In one sentence, Murray rendered the potential hazardous effects of Strontium 90 irrelevant, effectively stripping the Division of its advisory responsibility. He told them that he would not consider limiting aboveground weapons testing: “I would not want

⁴⁶ Strauss to Eisenhower, June 13, 1956. “Atomic Energy Commission, 1955-56 (4) Ann Whitman File, Dwight D. Eisenhower, Papers as President of the United States, Administration Series, Box No. 4, A75-22, Dwight D. Eisenhower Presidential Library [DDE Library].

⁴⁷ The Joint Committee on Atomic Energy initiated studies in July 1956, and held hearings on May 27-29 and June 3-7, 1957. Joint Committee on Atomic Energy, Congress of the United States, Hearings, *The Nature of Radioactive Fallout and its Effects on Man* (US Government Printing Office: Washington, D.C., 1957), iii.

⁴⁸ *Newsweek*, No. 48, November 26, 1956, 64-66.

anything ... to disturb the going ahead with those tests in the spring.”⁴⁹ Thus pre-empted, the members of the Division of Biology and Medicine unanimously agreed to forestall making recommendations to limit Strontium 90 releases in accordance with the National Academy of Sciences’ study. Instead, during the remainder of the meeting the members compiled what was known about the effects of Strontium 90, assessed those facts in light of the expected number of weapons tests, and made predictions about the consequences. Without taking into account that those who would be exposed to radioactive fallout comprised an involuntary cohort and had not accepted the risks of their exposure,⁵⁰ the Division made a correlation between fatalities occurring because of automobile accidents and those caused by radiation exposure and reached the conclusion that the number of individuals killed annually by Strontium 90 would “come to somewhere about half of what we kill with automobiles.” As for the effect of exposure on children, the Division’s deputy chief, Charles L. Dunham, observed that the correlations between increasing levels of environmental Strontium 90 releases and childhood disease would not, after all, become immediately apparent: “I think in another two or three years we will be able to have a much further concept of what the relation between milk and bone in children is

⁴⁹ Transcript, “Special Meeting of the Advisory Committee on Biology & Medicine to the Atomic Energy Commission” November 26, 1956, 103. Copy in author’s possession. Years later, House member Jim Santini, R., Nev. picked up on this tendency for the AEC to proceed at all costs: “Attitudes seemed to reflect a feeling that ‘nothing must stand in the way of testing,’ and that ‘fallout is a way of life’.” Jim Santini, “Low Level Radiation Effects on Health,” *Hearings Before the Subcommittee on Oversight and Investigations of the Committee on Interstate and Foreign Commerce*, House of Representatives, 96th Congress, First Session, April 23, 1979, 3.

⁵⁰ A distinction that Gofman and others have made between tolerance to background radiation and radioactive fallout. See “Oral History of Dr. John W. Gofman, M.D., Ph.D.,” *Human Radiation Studies: Remembering the Early Years*, conducted December 20, 1994, United States Department of Energy, Office of Human Radiation Experiments, June 1995. Available at <http://www.hss.energy.gov/healthsafety/ohre/roadmap/histories/0457> (01/02/08)

really likely to be.”⁵¹ As Dr. Newman predicted, evidence about the hazards of increasing levels of Strontium 90 had no effect on the 1957 testing schedule. That spring, the Nevada Test Site was the location for a record-setting season of thirty weapons detonations with a combined yield in excess of 340 kilotons—the equivalent of more than twenty-two Hiroshima-type bombs.⁵²

This episode demonstrates that policy had not provoked the 1956 decision to continue testing. Instead, the one individual responsible for the formation of national security policy and the only individual who could approve the use of nuclear material for weapons experiments, President Eisenhower, had been told they were being safely conducted. We cannot know whether he would have considered canceling or limiting aboveground testing had Strauss told him what the AEC knew—that fallout, and especially Strontium 90, posed an incontrovertible hazard to human health. We can assume with some confidence, though, that since Eisenhower had turned to Strauss for answers about the hazards of testing, that he was not only aware of the NAS study but also that he considered its findings significant.

There are problems with the overdependence on policy to explain the program and weapons testing. First, to understand the program as one unwaveringly subservient to the dictates of policy requires the unavoidable attribution of a pristine totalitarian model of governance, implying that the post-war state imposed a rigid model of top-down decision-making where state actors had little, or no, agency or responsibility for their

⁵¹ Charles L. Dunham, Transcript “Special Meeting of the Advisory Committee on Biology & Medicine to the Atomic Energy Commission,” November 26, 1956, 118.

⁵² “Announced United States Nuclear Tests, July 1945 through December 1988,” September 1989, Office of External Affairs, U.S. Department of Energy, Nevada Operations Office, NO-209, 5-6. For maps of the 1957 fallout trajectories, see Richard L. Miller, *Under the Cloud: The Decades of Nuclear Testing* (New York, NY: The Free Press, 1986), 430-443, 460-468.

actions.⁵³ Second, the reliance upon policy to explain the trajectory of atomic experimentation conflates authorization and implementation. A national policy to develop and experiment with atomic weapons as fortification against the Soviet Union offers only a superficial explanation of how program managers and others associated with the program carried out that mandate. Policy, as an explanation, has masked the processes that characterized the program's development, misconstrued its consequences, and obscured the dissimilarities in the understandings of managers and policymakers.⁵⁴

Underneath the veneer of Cold War policy as an explanation for the atomic program lies a history of day-to-day decision-making by program managers and military officers, who, gathered in government facilities, private and public affiliates, and consultancies, comprised an institution that survived the end of World War II and, with only minor accommodation to postwar legislation and maintained its integrity as an arm

⁵³ A puzzling assumption given the prevalence of anti-totalitarian sentiment in post-war America. Peter Novick details the potency of the rhetorical appropriation of the concept of anti-totalitarianism during the post-war period. He analyzes the way that the U.S. used the term to shift alliances at the end of the war—as a means for absolving Germans from responsibility for Nazi war crimes and as a condemnatory vehicle against the Soviet Union. *The Holocaust in American Life* (Boston, MA; New York, NY: Houghton Mifflin, 2000), 86-88.

⁵⁴ Anthony Mathews offers insight into the programmatic political subversion of democratic systems that arises from the combination of bureaucratic initiative and governmental secrecy. In this regard, important and powerful democratic bureaucracies resemble the models of those within totalitarian states where the bureaucratic institution is best served by providing distorted information to leaders—leaving both rulers and citizens misinformed. *The Darker Reaches of Government* (Berkeley, CA: University of California Press, 1978), 8-9, 12-61.

Correlations exist between the bureaucratic maneuvering of those associated with the U.S. atomic weapons program and their counterparts in so-called totalitarian regimes. The insularity of the program combined with its unprecedented access to the levers of power bear striking similarity to institutions that evolved under fascist and totalitarian regimes are not dissimilar to what historians have uncovered in their studies of Nazi Germany and the Soviet Union. See Peter Hayes, *Industry and Ideology: IG Farben in the Nazi Era* (Cambridge: Cambridge University Press, 1987); Loren R. Graham, *Science in Russia and the Soviet Union* (Cambridge: Cambridge University Press, 1993); Paul R. Josephson, *The Red Atom: Russia's Nuclear Power Program from Stalin to Today* (New York, NY: W.H. Freeman and Company, 2000).

of the military throughout the atmospheric era.⁵⁵ Appreciating the momentum generated by institutional culture and bureaucratic impulses upon the program reveals that the way military officers and their supporters used atom bombs to build domestic support for expansion also contributed to the development of the national security state itself. That an approach focused on the domestic political dimension of foreign policy can yield useful insight into the evolution of the atomic program is suggested by the work of historians who, working outside official circles, have studied aspects of the program and the postwar military within the context of institutional development and domestic politics.

One of the most significant contributions to postwar history has been Michael J. Hogan's *A Cross of Iron*. Hogan evaluated the ideological and political tensions of the immediate postwar period before the antagonisms between U.S. and the Soviet Union had yet to become acute. He re-evaluated the conventional trajectory and impetus for the Cold War and located its origins not in Soviet or communist aggression, but in the Truman administration's efforts to wrestle with competing domestic interests and Truman's attempts to reach common ground with an antagonistic Congress, one made stronger through the formation of a partnership between influential congressional members and military leaders. For Hogan, that partnership muted the traditional ideological and constitutional proscriptions against the presence of a strong peacetime military that had arisen during the postwar debates about a peacetime draft and the form of military

⁵⁵ This privileging of national security objectives takes two forms. One emphasizes the official record and downplays other factors. See Barton C. Hacker's claim that because of the establishment of the civilian-oriented Atomic Energy Commission, Operation Crossroads marked the end of the Manhattan "model." *The Dragon's Tail*, (Berkeley, CA: University of California Press, 1994), 154. More commonly, the wartime Manhattan Project and its postwar manifestation is separately addressed, with histories of the Manhattan Project ending with the Japanese bombings or the passage of the Atomic Energy Act; and those detailing the postwar program beginning at a point after the passage of the Atomic Energy Act in 1946. The period between the passage of the Act and the 1949 Soviet atomic detonation is often disregarded altogether. See for example, *The Nuclear Age Reader*, Jeffrey Porro, et al., eds. (New York: Alfred A. Knopf, 1989).

unification. It was, he argues, this partnership that was primarily responsible for setting militarization in motion.⁵⁶ Hogan found that, under the terms of the NSA, Congress bargained away traditional mechanisms of military subordination in exchange for limiting executive authority. The Act put the military in a position where it could capitalize on the diplomatic failures of the 1940s and on the outbreak of the Korean War and thereby claim an unprecedented share of the national economy. For Hogan, the formation of a civil/military alliance strong enough to transcend the aversion to peacetime military authority that had held sway since the nation's founding amounted to a turning point in American history. Interest group coalitions such as the congressional/military alliance Hogan studied were an especially powerful in postwar politics. But such interest groups, however, have been part of the American political scene since long before the beginning of World War II.⁵⁷ In the words of one historian, "once entrenched" such groups were "impervious to assault."⁵⁸ By combining Hogan's findings with studies of wartime administration and institutional relationships, it seems likely that wartime circumstances

⁵⁶ Hogan, *A Cross of Iron*, 50-60; on the AEC, see 232-252.

⁵⁷ On the Organizational Thesis and for a summary of the literature on these interest groups, see Brian Balogh, particularly his discussion of "Iron Triangles." Balogh argues that though Iron Triangles have been politically essential since at least the Progressive Era, they have "time and again" caused the "common good [to be] sacrificed for narrower achievements." *Chain Reaction*, 62-64.

⁵⁸ For the formation of interest group alliances and their significance in the postwar era, see Louis Galambos's discussion of the "triocracies"—the combination of specialized bureaus, interest groups, and congressional committees that came together to shape policy and perform oversight. Galambos argues that once "entrenched," such triocracies were "impervious to assault." "By Way of Introduction" in *The New American State: Bureaucracies and Policies since World War II*, Louis Galambos, ed. (Baltimore and London: The Johns Hopkins University Press, 1987) 12-13. Matthew A. Crenson and Francis E. Rourke, who summarize administrative consolidation as a postwar phenomenon that emerged from three initiatives: the creation of the national security system, the recruitment of the natural sciences into the public sector (for defense), and the policy-level incorporation of social scientists, particularly economists, into administrative decision-making. "By Way of Conclusion: American Bureaucracy Since World War II" in *The New American State*, 137-139.

contributed to the “entrenchment” of Hogan’s civil/military alliance and lent it transformative energy as well.

Historians of state development and science who have pieced together the wartime connections between the military and private enterprise have demonstrated that the war contributed to the creation of mutually dependent bonds and that those bonds had a lasting effect on the business of government and on postwar political alignments. Their studies can be read as complementing Hogan’s, showing that although the congressional/military coalition came to express itself *politically* after the war, it drew strength and influence from a pre-existing *economic* alliance: one formed between the armed forces and private industry during the war. Such interest groups emerged from an amalgam of trends that had been in play before the bombing of Pearl Harbor, including the government’s interest in science and technology and its dependence on an increasingly large network of administrative bureaus and agencies and that came together during World War II and drew energy from mobilization. In what Brian Balogh has called the “pro-administrative” state, officials and professional administrators assumed much of the responsibility for the operation of government while experts, including economists and scientists, played increasingly influential advisory roles.⁵⁹ The wartime Manhattan Project, itself a product of these two trends, spawned a revolution in the way

⁵⁹ On the role of professionals and their influence as administrators and as public officials, see Brian Balogh, *Chain Reaction*. For the internal advisory role played by experts, see Ernest R. May who was among the first to point out how they shaped presidential attitudes and approaches. May analyzed the bureaucratic re-alignments Truman engaged in and found that they contributed to the development of viewpoints that were likely disproportionately hostile to the Soviet Union and that, in turn, bore upon that president’s foreign policy decisions. “Once Truman and the men around him perceived developments of the 1940s as parallel to those of the 1930’s, they applied this moral and hence resolved to behave toward the Soviet Union as they believed their predecessors should have behaved toward the expansionist states of their time.” May, *Lessons of the Past: The Use and Misuse of History in American Foreign Policy* (Oxford: London, New York: Oxford University Press, 1973), 29-32, quote at 32.

that large-scale military research and development were conducted and brought about an acceleration of the authority enjoyed by administrators and experts.⁶⁰ The program's influence extended well beyond the war, invigorating the armed forces' postwar commitment to innovation and stimulating increased investments in scientific and technological research and development.⁶¹ That continuing interest translated into economic incentives for those public and private institutions which sought to extend their wartime contracts after the end of the conflict.

Wartime connections with the military, however, were not enough; the institutions that desired to profit from postwar military contracts necessarily made accommodations to the military's new demands with changes in approach and focus that necessarily caused transformations in their traditional ways of doing business.⁶² They became, in Michael A. Dennis's words, "hybrids" of their former selves.⁶³ Private concerns believed that military contracts, if not already in hand, would be forthcoming. They also projected that those contracts would be lucrative enough to warrant the transformations, especially for universities.⁶⁴ For the Daniels Project, a Navy plan to develop a nuclear power plant,

⁶⁰ As Barton Hacker has observed, science had served military ends throughout the twentieth century, but it was only on the eve of WWII that the organization was built to "convert offers of help into directed research leading to engineering development ... harnessing science to military needs. The key was directed team research." Hacker, "Military Patronage and the Geophysical Sciences in the United States: An Introduction," *Historical Studies in the Physical and Biological Sciences* 30, Part 2 (2000): 312, 309-314.

⁶¹ Leslie, *The Cold War and American Science*, 6-12; Peter Galison, "The Many Faces of Big Science" in *Big Science*, 13-17.

⁶² See Leslie's description of MIT, *The Cold War and American Science*, 133-144; S. S. Schweber, "Cornell and MIT" in *Big Science*, 169-180.

⁶³ Michael Aaron Dennis, "'Our First Line of Defense': Two University Laboratories in the Postwar American State" *Isis* 85 (1994) 427-455, 430.

⁶⁴ This was not necessary a post-war phenomenon. For the ways that E. O. Lawrence's pre-war model of anticipatory planning continued into the postwar period, see Robert Seidel, "The Lawrence Berkeley Laboratory" in *Big Science*, 36-43.

for example, General Electric, Westinghouse, Babcock & Wilcox, and Allis-Chalmers, began competing for Navy (“government”) dollars in spring 1946.⁶⁵ Because of experience during the Manhattan Project, the Navy sought to award two contracts and argued that the project was a matter of utmost “urgency,” believing that parallel efforts, when combined with time constraints, would produce better results in the least amount of time.⁶⁶ Such industries and institutions sought out ways, including political engagement, to protect the value of the investments they had already made and their future prospects.

This study of the atomic program and its relationship with the military draws upon the political/ideological analysis of the early postwar period Hogan explored and the administrative/economic studies of wartime affiliations. It offers two correctives to current understandings. First, it disputes the almost universal assertion that the bomb was a peripheral aspect of militarization. In Hogan’s interpretation, the “drama of state making” took place simultaneously on different planes of experience. This study demonstrates, instead, that the atom bomb and the program were integral and not ancillary aspects of the political relationships that built the national security state.⁶⁷ One of the hallmarks of the modern state is its ability to harness technology to political

⁶⁵ Hewlett and Duncan, *Nuclear Navy, 1946-1962* (Chicago, IL: University of Chicago Press, 1974), 38-40. The Navy sought to benefit by awarding contracts to two different companies believing that parallel endeavors was the speediest way to receive a successful outcome.

⁶⁶ The AEC, under Chairman Lilienthal, did not agree. The Navy argued that the plan was urgently necessary and accorded with “the president’s support of unprecedented economic aid for western Europe and plans for a 70-group Air Force.” For a discussion of the Navy’s plan, Westinghouse’s “Project Wizard” and General Electric’s “Project Genie” and the dispute over funding parallel projects, see Hewlett and Duncan, *Nuclear Navy*, 69-71.

⁶⁷ On the international front, as Gregg Herken has found, maintaining an atomic monopoly at the end of World War II “intensified” the Cold War by “straining relations with other countries, including allies; by emphasizing chronic mistrust as a factor in relations with Russia; and by creating an atmosphere of failed expectations and anxiety at home.” “‘A Most Deadly Illusion’: The Atomic Secret and American Nuclear Weapons Policy, 1945-1950,” *Pacific Historical Review* 49 (1980):74.

purposes,⁶⁸ and it is equally evident that there was no more persuasive political instrument than the atom bomb, whether in the hands of a president desirous of flexing foreign policy muscle or, as is argued here, in the hands of military officers and their supporters interested in achieving domestic influence and funding. Thus, the military's ability to monopolize the program and its resources, and to devise weapons experiments for media and public consumption, meant that it enjoyed a significant advantage at the end of the war and throughout the atomic era over those who (a) opposed weapons development and military buildup; or, (b) those who supported the development of peacetime, and often less demonstrably dramatic, uses for atomic energy such as with medicinal tracers or other clinical applications. As the first Chairman of the AEC lamented in 1962, "The Atom has not revolutionized industrial society ... not produced revolutionary advances in medicine or industry."⁶⁹ Because of this, the atom bomb and the program itself were critical to the military's ability to achieve postwar influence and cannot be considered apart from militarization.

⁶⁸ Technological achievement and postwar expectations meant that achieving political support for innovation after World War II depended in part on the extent to which technological innovations lent themselves to demonstration. See Balogh, 78, 84-85.

Guy Debord was one of the first to point out the coercive nature of the state's manipulation of technology for political purposes. He argued that the state's monopolization of technology and the orchestration of spectacle for mass media consumption was a non-democratic and oppressive means of achieving consensus. It is difficult to overestimate the value of demonstration and spectacle in the modern state. In his words, the marriage of technology and the state resulted in a repressive mechanism, "highly favorable to the development of spectacular domination." Debord, *Comments on the Society of the Spectacle*, Malcolm Imrie, trans. (London, New York: Verso, 1998, 2002), 12.

For the significance of spectacle to those choosing the first Japanese targets for the bomb, see Margot Norris who draws on the concerns of the targeting committee that the city chosen be one that had not yet been bombed and one of sufficient size, so that the atom bomb, and only the bomb, would make a suitable impression: "The targets were arbitrary except as surfaces for inscription, semiological fields capable of registering the unmistakable mark or sign of America's absolute power. "Dividing the Indivisible" *Cultural Critique* 35 (Winter 1996-1997): 5, 23-24.

⁶⁹ *Change, Hope and the Bomb*, cited in Stewart L. Udall, *The Myths of August* (New York, NY: Pantheon Books, 1994), 270-271.

In addition, this study shows that while the aura of civil-military conflict that dominated the postwar public sphere lends understanding to political tensions and settlements, the focus on conflict leads to an underplaying of the collaboration and cooperation that underpinned subsequent legislation and the outcomes of that legislation as it affected atomic science. One of the planks in Hogan's argument is, in fact, based on the significance for postwar legislative settlements of the cooperative alliance formed between congressmen and military leaders that undermined executive privilege. He asserts that the political, congressional/military, alliance was fostered and sustained throughout the era of atmospheric weapons testing by the atomic program and through the institutional and economic alliances formed among military leaders, program managers, and the administrators of private institutions. In much the same way as the laboratories Dennis investigated became "hybrids" with "researchers ... deploying their respective strategies to create new institutional spaces, permitting similarly novel forms of boundary crossing," the military can be said to have used a hybrid approach at the end of the war by making its accommodation with peacetime by enfolding wartime experiences and ways of doing things into its peacetime institutional structures.⁷⁰ The military used the program to refashion itself in much the same way and for the same reasons that the laboratories did, and its successes can be measured in the extent to which it monopolized and achieved authority over the postwar atomic program. One of the key elements in the militarization of atomic science was the agreement among officers from every branch of the armed forces that the military was the appropriate authority to have control over all aspects of atomic weapons production and experimenting. The military's efforts to maintain authority over atomic science through postwar legislation strengthened

⁷⁰ Dennis, "Our First Line of Defense," 430.

the alliance. Losing out to civilian authority under the Atomic Energy Act meant only that armed forces officers collaborated to control atomic resources operationally—by monopolizing resources, directing production, and controlling the terms of experimentation. The creation of official advisory groups—the Military Liaison Committee (MLC) under the Atomic Energy Act and the Joint Chiefs of Staff (JCS) formed with the passage of the National Security Act—provided mechanisms for the formal expression of this alliance through official administrative and legislative channels and lent heft and authority to armed forces demands for atomic resources and expertise. The solidarity exhibited among the members of the armed forces regarding atomic science meant that except for disputes about abstract issues such as whether the air force should be charged with the responsibility for first response to atomic attack, no rivalries emerged to call into question the unequivocal stance of the group that the armed forces should have absolute authority over all facets of atomic science. The formation and stability of this cooperative alliance meant that the intra-service rivalry that often operated as a unofficial check—even during the era of Cold War extravagance—on excessive military spending or national security claims for the production of material such as battleships and planes did not emerge when the issue involved atomic weapons production or experimentation.

The centrality of atomic weapons to the national security state and the significance of the collaborative alliance formed among military branches becomes evident when the program is disentangled from an analysis shaped by national security and is examined, instead, as a product of its wartime origins, its domestic history, and its relationship with the U.S. military. This study rejects the conventional division separating

the Manhattan Project from its postwar counterpart to argue that the institutional affiliations, interpersonal relationships, and organizational norms of the wartime program were determinative upon the peacetime program, integrally shaping its evolution and characteristics. While in the traditional narrative the program is so closely aligned with the Cold War that its evolution resembles nothing less than a process of punctuated equilibrium, this analysis reveals a steady expansion of the program from the end of World War II through 1958. The nation's atomic weapons program is best understood as a single governmental regime that began during the war and became fully entrenched by the 1950s, surviving relatively unchanged until (at least) the unofficial moratorium on above-ground testing of 1958.⁷¹ From a structural perspective, at the end of the war the military secured postwar contracts by building out from the foundational networks of industrial and professional affiliations established within the Manhattan Project; solidified additional public and political support by using atomic secrecy to shield its excesses and radioactive hazards; and used the media to promote fear and to champion military applications of atomic energy. What the history reveals is a process of expanding military domination that was for all practical purposes immune from policy shifts, diplomatic objectives, and meaningful civilian oversight. Exploiting atomic science for its own domestic purposes, the military undermined safety and thwarted diplomacy.

⁷¹ While acknowledging that temporal barriers as they have been applied in the historical study of presidential politics have been useful for delineating the distinctions between presidencies, Stephen Skowronek's alternative argument that they overlook the coherencies between administrations and the "organizational ordering of institutional resources" is instructive. Stephen Skowronek, *The Politics Presidents Make: Leadership from John Adams to George Bush* (Cambridge, MA; London: The Belknap Press of Harvard University Press, 1993), 8-11. Evidence of institutional and strategic continuities between World War II is plentiful. For diplomacy, see Martin J. Sherwin's analysis of the decision to use the atom bomb against Japan and particularly how attitudes concerning the bomb during Roosevelt's presidency set the parameters for the atomic policy of the Truman presidency. *A World Destroyed*.

According to George T. Mazuzan and J. Samuel Walker, the AEC adopted the contractor system of the Manhattan Project, saving it from having to "hire directly the many scientists, engineers, and technicians" and allowing to it rely upon the "already trained cadre" of Manhattan. *Controlling the Atom* (Berkeley, CA: University of California Press, 1985), 7.

Michel Foucault's ideas about government and the modern state are especially helpful in understanding this history. Of particular interest is his sense of "governmentality" as an active force combining totalitarianism with individuality that bears on the management of state forces and the modulation of relationships within and without the system. The postwar state and those individuals administering the nation's nuclear program certainly employed "tactics rather than laws ... and laws themselves as tactics – to arrange things."⁷² This study reveals that the peacetime nuclear program grew steadily under the continual dominance of the U.S. military from the end of World War II forward, and that because of its relationship with the U.S. military and the influence of officers and program managers, the program's expansion continued for all practical purposes immune from policy shifts, diplomatic objectives, and meaningful civilian oversight. From this perspective, the Manhattan Project is a formative starting point not only for scientific and technological expertise that outlived the war, but also as the site for the creation of a network of institutional and interpersonal relationships that fostered strategies by which military officers and program managers achieved and then maintained their control over the peacetime program.⁷³ Exploring what Foucault called "tactics" to avoid legal and constitutional responsibilities, military officers, program managers, and their supporters, used the program as a lever to increase their political influence. This process culminated in what I term Atomic Governance: a shift in constitutional prerogatives that limited the ability of the American people to participate

⁷² Foucault, "Governmentality" in *The Foucault Effect*, Graham Burchell, Colin Gordon, Peter Miller, eds. (Chicago, IL: University of Chicago Press, 1991), 95.

⁷³ Though not dissimilar from other bureaucratic exercises of authority, the exceptional lethality of radioactive products increased the significance of the short-sighted and self-interested use of the program described here.

politically and denied presidents and congressional leaders alike the opportunity to gauge the effectiveness and potential consequences of weapons production and experimentation.

I have built upon this re-conceptualization of the state with methodological approaches inspired by scholars in other fields who have fleshed out the mechanics of statemaking and policy formation. Because of the towering mushroom clouds it produced, the atomic program stood as a dynamic symbol of the expanding capacity and authority of the postwar state. At the same time, it was also the most secretive and insular endeavor undertaken by the federal government. To understand this paradox, I have drawn on the work of Theda Skocpol.⁷⁴ In particular, her concept of the state and its dual roles—one, as an actor in its own right; and, two, as a matrix through which policies are initiated, implemented, and that subsequently restructure political possibilities and social identities—provides useful tools with which to grasp the program’s fundamental nature and to explain the uses made of its attributes by both the state (elected leaders) and by those administrators and military officers granted authority over the program’s direction.⁷⁵

This brings us to the division between the ends and means of policy, that is to say the difference between the authorizational impetus of Cold War policies and the ways that those same policies were articulated—the administrative decisions made and

⁷⁴ Theda Skocpol is a sociologist in the multidisciplinary field of political development. For the history of this field of study, its contributions to the study of American history and political science, and for the ways that it has problematized conventional realist interpretations, see Julian E. Zelizer’s tribute to one of the most influential scholars, Stephen Skowronek, “Stephen Skowronek’s *Building a New American State* and the Origins of American Political Development” *Social Science History*, 27:3 (Fall 2003): 425.

⁷⁵ Theda Skocpol, *Protecting Soldiers and Mothers* (Cambridge, MA: Harvard University Press, 1992); Evans, D. Rueschmeyer, T. Skocpol, eds., *Bringing the State Back in* (Cambridge, MA and New York, NY: Cambridge University Press, 1995), 13.

practices followed that influenced the way the program evolved and what it came to be.⁷⁶

The approach I adopted to tease out of the historical record the factors that bore upon decision-making and practice was inspired by J. Garry Clifford's findings about the significance of bureaucratic politics in policymaking. His examination of the interpersonal dynamics of policy formation and articulation demonstrates that "policy," even the profoundly transformative ones of the postwar state, is first writ small. Decision-making at any level and scale of consequence is, as Clifford advises, complex, contingent, and interpersonal: "an amalgam of large organizations and political actors who differ ... and who compete to advance their own personal and organizational interests."⁷⁷

My methodology and analysis are also informed by the insights of sociologists interested in institutions, behavior, and ethics. Their findings have been helpful in my efforts to make sense of the history of a program that has been shrouded in secrecy since its inception, where much of the documentary evidence remains classified and unavailable for review, and where controversies have caused much of the record that is accessible to be muddled with justification and obfuscation. This alternative way of examining the program brings to light influences on the peacetime program that have been overlooked. One example can be drawn from the periodization imposed on the program's history. Historians have tended to skirt the relationship between the peacetime atomic program and the World War II Manhattan Project with the result that similarities

⁷⁶ Gaddis's argument that the two are properly considered in tandem when the strategic nature of Cold War policy is at issue is well taken; yet, and as will be argued here, an analysis that focuses upon the conjunction of ends to means is ill equipped to recognize the disjunctions. John Lewis Gaddis, *Strategies of Containment* (New York, NY: Oxford University Press, 1982), viii.

⁷⁷ J. Garry Clifford, "Bureaucratic Politics" in *Explaining the History of American Foreign Relations*, Michael J. Hogan and Thomas G. Paterson, eds. (Cambridge, UK: Cambridge University Press, 1991), 142.

between the strategies of control employed during the peacetime program and the Manhattan Project are assumed to have resulted from similar national security safeguards necessitated by World War II and the Cold War. But what of those historical instances in the history of the program when no national security imperative existed? Navy officers, for example, directed the 1946 *Operation Crossroads* as though they were still at war. They disregarded the safety of their troops and ordered that radioactive ships be boarded, and also operated, if at all possible. Though they were charged with preventing disclosure of information that might lead to discovery of the “atomic secret” and some control of the many reporters they invited to attend the Pacific tests was to be expected, but Navy officers sequestered the media on a special ship and exerted wartime-like authority over the press by limiting the information the reporters received to that delivered in daily briefings and by monitoring their submissions. Why? While we know that *Crossroads* was extremely well organized and can imagine that the hundreds of officers in charge heeded military command, that alone does not fully explain the uniformity of intensity the officers exhibited; nor is it enough to explain the obedience of the press corps. Historical practice by itself does little to shed light on the behavior of officers and the press during *Operation Crossroads*.

The concept of duality of structure formulated by William H. Sewell, Jr., offers a way to understand both.⁷⁸ This approach makes it possible to recognize both the carryover of wartime Navy discipline to the peacetime Navy and the influence of the Manhattan Project and Army-devised strategies of security on the planning and production of *Operation Crossroads*. Similarly, it sheds light on how routine wartime

⁷⁸ “A Theory of Structure: Duality, Agency, and Transformation,” *The American Journal of Sociology* 98 (1992):11-12.

ensorship, the secrecy surrounding the Manhattan Project, and the extension of that project into the peacetime era fostered the quiet acquiescence exhibited by the reportorial press and media long after war's end. Sewell opens up intellectual and conceptual avenues to understanding the continuities across a revolutionary moment: the change from pre-atomic weapon to the atomic weapons era, from wartime and peacetime phases of the program, as less transformative and more evolutionary than has previously been appreciated. And, after the program gathered steam, his concept of structuralism as embodying schemas and resources provides a mechanism for understanding why the program expanded in a persistently linear fashion despite (a) the passage of the Atomic Energy Act and the goals for peacetime development it embodied and (b) changes in national security policy prompted by international events and the different opinions of the Truman and Eisenhower administration about the utility of atomic weapons. Moreover, structuralism offers a way to understand one of the conundrums of postwar defense policy—namely, why weapons as complex and unsuited to anything other than aerial bombardment and wholesale destruction and so hazardous to troops employing them, became the cornerstone of national defense—a process that foreclosed the development of more effective and more easily deployed weapons or defensive systems.⁷⁹

The importance that Sewell attributes to historical precedent, and the mutability of his concept of structure, leaves room for a complementary appreciation of this process at the individual level that is equally irrespective of context. The French social theorist Pierre Bourdieu found that people make most of their decisions unconsciously, based on the historical reception of a similar, earlier, decision. In his analysis, a choice that had a

⁷⁹ David Alan Rosenberg, "American Atomic Strategy and the Hydrogen Bomb Decision, *The Journal of American History* 66 (1979): 86.

favorable result in the past is likely to be repeated, even if the circumstances surrounding the second decision are vastly different. In a process he termed “habitus,” individual history and culture are determinative components of choice.⁸⁰ In this way, behaviors considered appropriate are replicated and become routine. Such routinization within an institutional context results in the reproduction and transfer of cultural norms and an institutionally supported resistance to change.⁸¹ To draw yet another example from *Operation Crossroads*, habitus provides a way to understand the wartime sense of urgency that Navy officers brought to the peacetime operation and to explain the responses of officers and crewmen alike when presented with damage to vessels that superficially resembled the results of a conventional attack but which was, as the presence of radiation monitors and medical officers made clear enough, was vastly different and exceedingly more dangerous. The threat that those officers perceived and sought to overcome during *Crossroads* did not come from an enemy, but from the possibility that atomic science could delimit the national security value of the postwar Navy. In this way, the *Operation* was a battle of survival for Navy officers, one that once underway and surrounded by burning and mangled ships, elicited from them a response that, despite being unsuitable and excessively and unnecessarily dangerous for a peacetime maneuver, was precisely the type of response that had been honed during World War II.

⁸⁰ Pierre Bourdieu, *The Logic of Practice*, trans. Richard Nice (Stanford, CA: Stanford University Press, 1990), Ch. 3 and more particularly, 53.

⁸¹ The significance of acculturation and experience has been explained by Donald MacKenzie and Graham Spinardi, who have investigated the significance of tacit knowledge for scientists involved with the atomic project, who have been emphatic about the value of experience—and experiments—that allow for the development of a “feel” for techniques and outcomes that cannot be apprehended through explicit knowledge alone. “Tacit Knowledge, Weapons Design, and the Uninvention of Nuclear Weapons,” in *The American Journal of Sociology* 101 (1995): 44-99.

Personal history exerted one influence on the choices made by military officers and program managers; institutional affiliation and professional ethical standards exerted another. In an examination of institutional decision making within the judicial system, Robert Cover sought to learn why judges or prison wardens who were morally opposed to killing could, within the context of their professions, sentence a man to death or lead him to a gas chamber. Cover found that institutional contextual factors served to legitimate violations of personal moral constraints. In Cover's analysis, a judge interpreting law, acting through the hierarchical legal system from the state, through law, to individual victims institutes, authorizes, and legitimates acts of violence against individuals. Collaborators such as wardens and executioners, components of that same hierarchical system, perform unquestioningly in a manner that might otherwise be morally repugnant to them.⁸² That Cover's findings are equally applicable to those participating in the nuclear weapons program would seem to have been demonstrated by a sociological study of weapons developers at Lawrence Livermore National Laboratory who perceived no contradiction between their anti-nuclear personal opinions and their professional duties.⁸³

Taken together as a unit, the insights of Sewell, Bourdieu, and Cover, provide a multidimensional model that gives us the conceptual tools to combine what we know happened during the program with what we can surmise given subjective evidence and the context from which it emerged, toward a goal of discovering why the program

⁸² Ryan Minow and Austin Sarat, eds., *Narrative, Violence and the Law: The Essays of Robert Cover* (Ann Arbor, MI: University of Michigan Press, 1992). See also Austin Sarat and Thomas R. Kearns, "Making Peace with Violence: Robert Cover on Law and Legal Theory" in *Law's Violence* (Ann Arbor, MI: University of Michigan Press, 1995), and particularly the comment that ethical queries (whether implicated within the law, or I would suggest, the apparatus that was the AEC) are problematic: "An excess of casuistry is surely contrary to the demands of solidarity, and, if Cover is right, solidarity, not subtlety of thought, is the sine qua non of effective legal violence." 249.

⁸³ Hugh Gusterson, *Nuclear Rites* (Berkeley, CA: University of California Press, 1996).

evolved as it did and how the characteristics of that program contributed to, and in some sense became indicative of, what has come to be known as the national security state.

This dissertation makes three substantive contributions to the literature. First, my analysis disputes the primacy of Cold War antagonisms to the structure and evolution of the peacetime atomic program. Evaluating the historical circumstances under which individuals affiliated with the military, atomic laboratories, and government contractors operated opens a window into the bureaucratic mechanisms that drove and governed experimentation. This is especially true of militarism, secrecy, and the appropriation of scientific expertise, all of which were strategies employed during Manhattan and, at war's end, by military officers who—with the help of congressional leaders eager to reassert their peacetime authority—sought to mitigate the effects of post-war demobilization and reorganization. To be sure, militarism, secrecy, and the application of science to a military objective, the themes upon which my argument rests, are not typically considered extraordinary phenomena, especially during wartime. But, as articulated during wartime by the Manhattan Project's director Major General Leslie Groves and others after the war, those attributes and techniques became tools for the expression of unauthorized control. As my analysis points out, Manhattan began to draw criticism from inside the Roosevelt and Truman administrations during the war. Critics complained that Groves disingenuously applied arguments of military necessity and secrecy to avoid accountability, abused his authority within the chain of command, and put in place mechanisms of control that hindered progress and shielded him from criticism. Those wartime strategies became constitutive, shaping the evolution of the program and characterizing it throughout the atmospheric testing era.

Second, this study illustrates that the military successfully circumvented the civilian authority of the Atomic Energy Commission and ultimately co-opted it. At the end of World War II, Army and Navy officers capitalized on domestic disorganization and national security fears to maintain authority over the use of atomic weapons. Despite the complaints that some civilian commissioners directed to Congress, the military drew the lion's share of material resources and production facilities, and employed a relatively free hand in the choice of proving grounds as well as establishing the conditions for atmospheric atomic tests. Further, I show that the AEC ultimately became a cooperative partner in this effort. Instead of the guarantor of civilian authority, my research shows that in a process streamlined by: (a) the centrality of weapons development to the AEC's post-war operation; (b) the devolvement of authority to satellite managers; and, (c) changes in agency administration that strengthened the bonds between the AEC and military officials and supporters, the AEC substantively relinquished its congressional mandate to provide civilian oversight and regulatory authority.

Third, I overturn the longstanding assumption that scientists, military officials, and program managers were ignorant of the health effects of radiation and thus believed that the parameters they established for experimentation were safe. In fact, my research indicates that many of the hazards of radiation and the risks attendant to production and experimentation were well known. Had military officers not marginalized and worked to discredit scientists who expressed opinions that worked against their goals, it is likely that some of the hazards of production and experimentation could have been prevented or their magnitude reduced. The stifling of oppositional scientific opinions occurred as a result of a number of inter-related factors: the military's ability to select a congenial pool

of scientific expertise and thus promote favorable scientific opinions; post-war anticommunism and the influence of required loyalty oaths and investigations upon the willingness of scientists to express their opinions openly; and, finally, through the insulation of cooperative scientists serving on advisory boards to the Atomic Energy Commission. The opinions available to Presidents Truman and Eisenhower, as well as those upon which the public was asked to rely, were those which suited the aggressive testing agenda of the military, cooperative program managers, and that were additionally modulated by the expression of institutional culture upon members of scientific advisory boards.

CHAPTER TWO

THE COLD WAR NARRATIVE

The extraordinary nature of atomic science, the importance of the endeavor to Cold War aspirations, and the government's commitment to secrecy have all influenced the history of the atomic program and reinforced conventional ideas about its evolution. Timing and access to the record go a long way toward explaining the prevalence and resilience of policy-centered interpretations. Culturally, researchers have been unable to avoid the influence of a lifetime steeped in Cold War experiences. As John L. Gaddis noted, "historians fell into the unusual habit of working within their own chosen period rather than after it ... [confusing] the Cold War with the stream of time."¹ Another factor relates to the subject matter itself. Official historians, those employed by the government, especially the AEC, its successor the DOE, and the DOD, together with other official insiders have held, and continue to hold, what amounts to a monopoly over the highly-classified documentary record and thus have secured a virtual lock on the ability to claim—as AEC managers responded to critiques during the 1950s—that their's are the only "authoritative" accounts. For these historians, atomic weapons development and atmospheric experimentation begins and ends with national security policy.² But

¹ John L. Gaddis, *We Now Know* (Oxford, UK: Oxford University Press, 1997), 282.

² The official historians discussed in this study universally adopt a rational-actor approach, interpreting the decisions of administrators as reflecting the stated objectives of the agency and have consistently adhered to the notion that atomic weapons development was dictated by Cold War exigencies. See Richard G. Hewlett and Oscar E. Anderson, *The New World, 1939-1946* (University Park, PA: Pennsylvania State University Press, 1962); Richard G. Hewlett and Francis Duncan, *Atomic Shield and Nuclear Navy, 1946-1962*; Gordon E. Dean, *Forging the Atomic Shield: Excerpts from the Office Diary of Gordon E. Dean*, Roger M. Anders, ed., (Chapel Hill, NC; London: University of North Carolina Press, 1987); Richard G. Hewlett and Jack M. Holl, *Atoms for Peace and War, 1953-1961: Eisenhower and the Atomic Energy Commission* (Berkeley, CA: University of California Press, 1989). For an analysis from the perspective of the Joint Chiefs of Staff, see David Alan Rosenberg, "American Atomic Strategy and the Hydrogen Bomb

classification calls into question not only their policy-centered narrative but also their claims to comprehensiveness. There is, probably, no satisfactory way of coping with fragmentary classified records, but the dismissal of the problem by these historians is not reassuring: “Even with deletions,” a government historian wrote, having “seen all the evidence ... our narrative accurately portrays the context of decisions; all the important factors in decisions have been explained or at least hinted at.”³ Non-affiliated historians and others have little choice but to work with these official narratives and piece together additional fragments of the record that have been declassified.

Throughout the Cold War, the most revealing accounts were biographies of scientists and other participants who offered insight into the intellectual progression and achievements of those responsible for the bomb’s development.⁴ The scientists’ experiences provided readers with some of their first glimpses into the components and characteristics of the atomic complexes themselves—facilities that, with the exception of

Decision” *Journal of American History* 66 (1979): 62-87, and “The Origins of Overkill: Nuclear Weapons and American Strategy, 1945-1960” *International Security* 7 (1983): 3-71.

Secrecy and the risk of liability increases the tendency for official, or agency, historians to compromise historical truth to “a few records and rationalizations that serve only Big Brother or the interests of those presently in power.” Don Page, “History and Foreign Policy: The Role and Constraints of a Public Historian in the Public Service,” *The Public Historian* 6 (1984):20-36, 21.

³ Hewlett and Duncan, *Atomic Shield, 1947-1952*, xv. In a patrician, Rankeanese, approach, these historians have asked for an greater measure of trust from their readers than did their nineteenth-century forebears because their study was based on a documentary record that is, and likely will remain, largely classified. There is, perhaps, no good solution to the problem of classified history, but rather than confronting the dilemma they faced, the authors of these studies chose instead to minimize it. They write that “restrictions of classification” were limited and “related [mainly] to the production of fissionable materials and design and production of nuclear weapons.” Moreover, the historians demonstrate a surprising lack of awareness about how their personal biases may have influenced their project.

For a history of Hewlett’s work for the AEC, the ERDA, the DOE, and as a consultant following his retirement, see Richard G. Hewlett and Jo Anne McCormick Quantannens, “Richard G. Hewlett: Federal Historian,” *The Public Historian* 19 (1997): 53-83.

⁴ Notable examples include Laura Fermi, *Atoms in the Family* (Chicago, IL: University of Chicago Press, 1954); Arthur Compton, *Atomic Quest* (New York: Oxford University Press, 1956); Leslie Groves, *Now It Can Be Told* (New York, NY: Harper & Bros., 1962).

the generalized and self-promotional story of the Manhattan Project, remained largely hidden behind a shield of governmental classification.⁵ They also modulated the anxieties produced by popular works, bestsellers all, that told of the horrors of atomic energy, such as *One World or None*, a compilation of articles written by scientists urging international agreements to control atomic weapons that sold 100,000 copies, and *Hiroshima and No Place to Hide*, accounts of the first atomic bombing in Japan and the first peacetime experiments of atomic weapons at Bikini Atoll.⁶ In the 1950s, Soviet atomic successes hardened Cold War parameters and atomic history was subsumed into a body of policy-oriented and anti-communistic literature.⁷ When combined with Cold War loyalty oaths, such pro-U.S. fervor resulted in more strident document classification schemes and the regulation of any and all articles and manuscripts related to atomic weapons, stifling attempts to authoritatively critique the program. As a result, assessments of the program itself were based on a combination of official statements and conjecture and were rendered highly suppositional.⁸

⁵ The scientific achievement was first explained by H.D. Smyth, Chairman of the Department of Physics at Princeton University, "A General Account of the Development of Methods of Using Atomic Energy for Military Purposes under the Auspices of the United States Government 1940-1945" (pamphlet, 1945). William Lawrence, a New York Times science reporter, wrote the first "official" history of the program. Lawrence, hired by General Groves to be the Manhattan Project's historian, produced his account in serial form at the end of the war.

⁶ Albert Einstein, et. al., *One World or None*, Dexter Masters and Katharine Way, eds. (New York, NY: Purnell, 1946, 1947); John Hersey, *Hiroshima* (New York, NY: Alfred A. Knopf, 1946); David Bradley, *No Place to Hide* (New York: Little, Brown and Company, 1948).

⁷ Henry Kissinger, *Nuclear Weapons and Foreign Policy*; Dean Acheson, *Power and Diplomacy*; Henry L. Stimson with McGeorge Bundy, *On Active Service in Peace and War* (New York, NY: Harper & Bros., 1947); Cecil V. Crabb, *American Foreign Policy in the Nuclear Age* (Evanston, IL: Row, Peterson, 1960); Herbert Druks, *Harry S. Truman and the Russians 1945-1953* (New York, NY: R. Speller, 1966); John L. Gaddis, *The United States and the Origins of the Cold War, 1941-1947*.

⁸ The attempts to address outbreaks of public concerns such as the 1954 Lucky Dragon incident or the Strontium 90 controversy were all highly suppositional, the best based on extrapolations from a fragmentary declassified documentary record. A representative sample includes: "It's From the Sky: Fallout from Test, March 1, 1954," *Time* 65, June 20, 1954; "A Bomb Contamination," *Science News*

This remained the case throughout the fallout controversy that erupted beginning in the mid-1950s and that ultimately provoked the U.S. and the U.S.S.R. to agree to a moratorium on testing in 1958 and the Limited Test Ban Treaty of 1963. Prominent scientists, non-governmental experts, and members of the international community all argued that fallout from both countries was reaching hazardous levels.⁹ The claims led to a series of congressional hearings concerning radioactive health effects, hearings that directed attention to the program and its operation. They also provoked commentary by scientists who, dependent on the military-supportive AEC for funding, found ways to balance their professional integrity with arguments for continued testing. In 1955, for example, the head of the radiobiology section of the National Cancer Institute, Howard Andrews, wrote in a *Science* article that although the genetic effects of fallout were “most controversial” it was “certain” that radiation could “readily produce both gene and chromosomal changes” and “certain that radiation can produce changes leading to genetic death in several generations.” Still, Andrews argued that “hysterical banning” of weapons tests was unnecessary and would endanger national defense. Instead, Andrews cast the complaining scientific community in a bad light by discrediting scientists in general, writing that the testing facilities should not be used “as playgrounds for the amusement of

Letter 67, February 26, 1955; “New Dangers of H-Bomb: Fallout,” *Science News Letter* 6, March 5, 1955; “Notes and Comment: Contamination of Earth’s Atmosphere,” *New Yorker* 31, March 19, 1955; R. E. Lapp, “Fallout and Candor,” *Bulletin of the Atomic Scientists* 11, May 1955; D. Lang, “Reporter at Large: Fallout,” *New Yorker*, Vol. 31, July 16, 1955; “Bomb Watchers: Radioactive Dust in Japan,” *Time* 67, April 16, 1956; “What are the Facts?” *Newsweek* 45, March 31, 1956; “Fallout Minimized?” *Newsweek*, 70, August 4, 1956; “Way out of a Deadly Dilemma: Finding Ways to Cut Fallout,” *Business Week*, July 28, 1956; “Hot Clams,” *Time* 69, April 29, 1957; “As the Winds Blow,” *Newsweek* 48, September 24, 1956; “AEC Cluks Reassuringly over Long-Range Effects of Fallout,” *Business Week* 82, October 26, 1957; “Deer Antlers Accumulate Radioactivity in Five Years,” *Science News Letter* 74, November 22, 1958.

⁹ The standard history is Robert A. Divine’s *Blowing on the Wind: The Nuclear Test Ban Debate 1954-1960* (New York, NY: Oxford University Press, 1978). For the history of the National Committee for a Sane Nuclear Policy, SANE, see Milton S. Katz, *Ban the Bomb* (New York, Westport, London: Greenwood Press, 1986).

bomb-happy scientists.”¹⁰ Generally, however, the revelations by the National Academy of Scientists and other outside scientists were not enough to overcome the claims by the AEC and experts affiliated with the program that testing was being safely conducted. The most significant impact of the fallout controversy was that it breathed new life into the immediate postwar arguments for international control of atomic energy to encourage national leaders to find diplomatic solutions to the nuclear arms race. While the problems of radioactive fallout were absorbed into the discussions about national policy, international diplomacy, and a broader movement promoting peace, the AEC’s support for continued weapons testing often went unexamined.

Linus Pauling’s *No More War* was indicative of the types of literature that raised public awareness and led to a moratorium and ultimately a ban on aboveground testing. Pauling summarized what scientists believed the health effects of radiation exposure to be, outlined the likelihood that fallout would cause genetic mutations and projected the possible effects of those mutations on the human population over time should testing continue. His analysis began with a forceful plea: “the facts are now at hand ... our own future and the future of the human race depend upon our willingness and ability to cooperate.”¹¹ Karl Jaspers, another outspoken intellectual, contributed a philosophical argument. Originally published in German, the American edition of Jaspers’s *Die Atombombe und die Zukunft des Menschen*, perhaps because of the requirement that anything published about atomic weapons undergo a preliminary review, omitted the reference to the bomb and was titled simply *The Future of Mankind*. Jaspers asked

¹⁰ Howard L. Andrews, “Radioactive Fallout From Bomb Clouds,” *Science* New Series 122 (1955): 453-456.

¹¹ Linus Pauling, *No More War* (New York, NY: Dodd, Mead & Company, 1958).

whether, “under the threat of total doom” there was a chance that humans would survive, and insisted that arms control proceed and treaties be negotiated with the danger of extinction in mind. With a goal of preventing nuclear warfare, Pauling and Jaspers did not take into account the autonomy of the program as it was managed within the U.S. or the possibility that elected officials were more likely to depend on scientific advice delivered by the program’s scientists—those with a vested interest in atmospheric weapons testing and its perpetuation—than they were to heed the warnings of non-affiliated experts. This changed over time, but it illustrates how successfully the military and its AEC supporters were during the 1950s at discrediting oppositional scientists. Together, the two men painted a dismal scenario in which the prospect of nuclear cataclysm in the short term could somehow be avoided, genetic abnormalities and disease in the long term certainly could not.¹² Their recommendations were directed at the world’s leaders, to the international plane where states were the primary actors. Their efforts contributed to deflecting attention from the program. Consequently, the state (or the government) as an actor or as a culprit remained the primary focus of the polarized interpretations that emerged from the social and political turbulence of the late 1960s and early 1970s.

Amidst the skepticism about the environmental and ethical consequences of atomic science, the first official history of the Manhattan Project and postwar program

¹² Karl Jaspers, *The Future of Mankind* (Chicago, IL: University of Chicago Press, 1961), 140. First published in 1958, *Die Atombombe und die Zukunft des Menschen* (Munich: R. Piper & Co., 1958), the American edition eliminated the connection between survival and the atom bomb that was explicit in the German edition. Thomas E. Murray, AEC commissioner from 1950-1957, bridged Pauling’s scientific and Jaspers’s moral arguments in 1960. Reacting precisely against the policy of Mutual Assured Destruction (MAD,) Murray argued that the creation of an ever-larger class of nuclear weapons had been immoral, a practice that promoted not force, but violence, and that it had been an inefficient, and ineffective, means of securing peace in the interests of democratic principles. *Nuclear Policy for War and Peace* (Cleveland, OH: The World Publishing Company, 1960), especially 118.

appeared.¹³ The familiarity with the inner-workings of their institutions and access afforded to Richard G. Hewlett and his co-authors, who began in the 1960s to corner the market on the history of the nation's atomic program, and David Alan Rosenberg, who focused on the military's postwar atomic planning, made their work indispensable.¹⁴ Nevertheless, the unlimited access to the records and resources of a single institution and privileged bureaucratic intimacy also limited these historians' perspective. Failing to recognize how Cold War assumptions had shaped their own scholarship, they exemplified the Cold War mindset that George Kennan discussed in 1983: "Millions of people in this country now have a personal stake in the maintenance and cultivation of this vast armed establishment, and of the Cold War psychology by which it is sustained."¹⁵ These historians overlooked the larger question of why military development dominated the program in favor of explaining how it had done so. The authors of the first official history of the program, *Atomic Shield*, for example, remarked that despite an "idealistic" potential for peaceful uses for atomic energy, the first

¹³ Richard G. Hewlett and Oscar Anderson, *The New World, 1939-1946*. They followed that volume with another chronicling the early years of the AEC: *Atomic Shield, 1947-1952*.

¹⁴ Rosenberg is an award-winning military and diplomatic historian who has written extensively on military and Navy history and who has, as Special Duty Commander in the U.S. Naval Reserve, taught at the Naval War and National War colleges, and served as a consultant to the Navy, receiving a Navy Meritorious Public Service Citation in 1945.

The official histories of the atomic program were all co-authored by Richard G. Hewlett. Richard G. Hewlett, Oscar E. Anderson, *The New World, 1939-1946*; with Francis Duncan, *Atomic Shield and Nuclear Navy, 1946-1962*; and with Jack M. Holl, *Atoms for Peace and War, 1953-1961: Eisenhower and the Atomic Energy Commission*. See also n. 2, above.

¹⁵ Kennan continued, "The Cold War and the responses it engenders may in fact be said to have become an addiction for large parts of our society." "The Arms Race and the Antinuclear Movement," in *The Nuclear Delusion: Soviet-America Relations in the Atomic Age* (New York: Pantheon Books, 1983), 238.

commissioners came to the “grim realization that for reasons of national security atomic energy would have to continue to bear the image of war.”¹⁶

Convinced that the AEC’s shift in emphasis from peacetime development to weapons was an “inexorable” one, these historians introduced their readers to the first five civilian commissioners seated in 1947 by singling out Lewis L. Strauss for special attention. “There was something special” about Strauss, they provocatively wrote. But that was reading history backwards: what was “special” about Strauss came to light only after he was seated. Strauss, who began establishing ties with the founder of the Lawrence Livermore Laboratory, Ernest O. Lawrence, as early as 1940 when he helped Lawrence receive a \$1,150,000 grant from the Rockefeller Foundation for his cyclotron project, and who likely owed his appointment to his friendship with and service under Secretary of State James Forrestal, consistently promoted military development.¹⁷ During his service on the AEC, Strauss undermined the Commission’s civilian mandate by working behind the scenes with members of Congress who opposed civilian control and by launching an attack against the majority decision of the Commission (and other scientific advisors) to promote H-bomb development.¹⁸ He also attracted enough attention to himself that Eisenhower asked him to serve as his special Advisor for atomic

¹⁶ *Atomic Shield*, xiv.

¹⁷ For an expression of Lawrence’s gratitude, see Lawrence’s letter to Strauss, April 4, 1940, Reel 25, Dr. Ernest Lawrence Collection, The Bancroft Library, University of California, Berkeley [EOL].

¹⁸ R. Gordon Arneson contributed to the well-known history of Strauss’s lobbying of influential congressmen by revealing that during the deliberations about whether President Truman should approve the development of an H-bomb, Strauss “did not appear to believe that the duly constituted machinery of decision-making would produce the results he espoused” nonetheless “never pressed his argument with the Secretary of State or anyone else in the Department of State.” Instead, he sought help from “Dr. E.O. Lawrence, Dr. Edward Teller, and other strong advocates of a ‘crash’ program” to press McMahon, Chairman of the JCAE, to intercede with Truman. “The H-Bomb Decision” *Foreign Services Journal*, May and June 1969, quote from June issue, 25.

energy and then appointed him to be AEC Chairman. The authors of *Atomic Shield* appear to have been unable to acknowledge that the development of peacetime applications for atomic energy, if the Atomic Energy Act can be held as authoritative, were priorities shared by Congress and President Truman.¹⁹ The “inexorability” of weapons development they perceived and the implication that in January 1947 the newly seated commissioners, save perhaps for Lewis Strauss, were unreasonably idealistic, maybe even delusionally so, is confirmation of a blinkered failure to look behind the Cold War to explain the atomic program’s history.

The issue comes down to a distinction between national defense and weapons development. Hewlett and other official historians have taken provisions in the Act that established the government’s monopoly over atomic science and strict penalties for violators to support their view that “[t]he government’s first priority was to maintain strict control over atomic technology and to exploit it further for military purposes.”²⁰ This is an unwarranted reductionist conflation of national defense with weapons development and a melding together of national policy, agencies, divisions, and contractors of the federal government to offer a viewpoint that is not borne out by the AEC’s early history or the Act itself. Even without getting into the tangle of who, and what, constitutes “the government,” history does not support the claim. For example, as the time neared for the AEC to assume authority over the program, Manhattan officials sought to prevent the newly-formed AEC from taking charge of weapons-related

¹⁹ Section 1(a), The McMahon Bill, Atomic Energy Act of 1946.

²⁰ From the history of the Nuclear Regulatory Commission, <http://www.nrc.gov/about-nrc/short-history.html#dawn>; also Alice L. Buck, *History of the Atomic Energy Commission* (United States Department of Energy: Washington, D.C.), 1.

resources. Military managers of the Manhattan Project, for example, transferred material and expertise for weapons development from the Los Alamos lab to a military base and omitted weapons related items from the inventory provided to the new commission.²¹ Additionally, the monopoly the AEA created over essential atomic material and the penalties it established for security breaches, when contextualized, reflects the postwar significance of preserving the “secret” of the atom bomb; not that the “first priority” was weapons development.

The significance of the atom bomb for military purposes is evident. ... Accordingly, it is hereby declared to be the policy of the people of the United States that the development and utilization of atomic energy shall be directed toward improving the public welfare, increasing the standard of living, strengthening free competition among private enterprises so far as practicable, and cementing world peace.²²

The briefest of qualifications—that national security became a way to “justify, or perhaps to rationalize” the program’s expansion—betrays a sense that even the program’s historians may have been themselves slightly uncomfortable with the official account, cognizant of the fact that, with the AEC, appearances could be deceiving.²³

The findings of David Rosenberg, a Navy historian, contradict some of the AEC’s official history. Rosenberg’s study of strategic policy and nuclear weapons demonstrated that for all the importance of both during the early years of the Cold War, there was little or no coherence between the policies formulated by the Truman administration and those

²¹ Hewlett and Anderson, *The New World*, 652-653. Peter Douglas Feaver discusses the tensions between the new commissioners and the Army’s perspective on its responsibilities in *Guarding the Guardians: Civilian Control of Nuclear Weapons in the United States* (Ithaca, NY; London: Cornell University Press, 1992) 109-111.

²² Section 1(a), The McMahon Bill, Atomic Energy Act of 1946.

²³ Hewlett, *Atomic Shield*, xiv.

of the armed forces.²⁴ Relying primarily on declassified portions of the official record produced by the JCS and National Security Council (NSC) to research the history leading up to Truman's decision to develop an H-bomb, Rosenberg argued that the detonation of the Soviets' first atomic weapon was a turning point only for civilian policymakers; military planners had been developing strategies for dealing with Soviet aggression since the end of the war. While Rosenberg was inclined to critique the motivations of civilian officials, he took for granted the military's devotion to national security and strategic planning documented in the JCS record. Rosenberg accepted that the military's "anxiety" about postwar demobilization was generated solely by the relative strength of Soviets. In his words, "[t]he American military was deeply concerned about the power of Soviet conventional forces in the 1945-1950 period" and "from 1945 on, the realization that the United States was unprepared to counter Soviet conventional forces shaped military strategy."²⁵

But it was not only military strategy, or the Soviets, that concerned upper echelon officers at the end of World War II. Despite the level of planning that Rosenberg found documented in the files, the armed forces' repeated claims that they were inadequately prepared to defend more than the Western hemisphere, especially when used to argue for increased appropriations, higher force levels, and increasing the pace of atomic weapons production, are insufficient grounds on which to base an argument that national security was the military's sole, or even chief, motivation. To be sure, national security was *one* of the factors motivating armed forces' officers. But, what their repeated appeals for

²⁴ Gregg Herken, *The Winning Weapon*, 199.

²⁵ Rosenberg, "American Atomic Strategy and the Hydrogen Bomb Decision," 63-64. In 1980, Rosenberg received the Binkley-Stephanson Prize in for the best article published in JAH in 1979.

more defense resources best illustrates is that the JCS were understandably conscientious in preventing their self-interested anxieties, including those concerned with unification and branch autonomy as well as the potential loss of influence in relation to other branches of the armed forces, from becoming part of the official record.

Leveling criticism at these narratives may seem less than generous, particularly in light of the fact that the first two volumes of the AEC history were published in 1962 and 1969 during the heyday of consensus and before the implausibility of objectivity had become one of the tenets for the majority of professional historians in America.²⁶ And yet, the DOE has made no effort to supplement the original volumes to reflect recent declassifications, issued no new editions, or addressed (except in critical book reviews) the alternative findings included in the un-official literature. In fact, the historicist flavoring and Cold War determinism of those original volumes appear in more recent publications as well.

The difficulties of reconciling a set of underlying Cold War assumptions with the historical record and shaping that to fit into the foreign-policy model of atomic history favored by the government are evident in an example drawn from Roger M. Anders's introduction to his collection of declassified portions of the diaries of the second AEC Commissioner, Gordon E. Dean. There, if Anders recognized in 1987 any discordance between his portrayal of the program as one isolated from the rest of the state and his implication that it was directed solely by foreign policy objectives—a factor outside the

²⁶ Hayden White discusses the *Annales*-school distinction between scientific and literary history with reference to Fernand Braudel's mistrust of narrative: "the narrative history so dear to the heart of Ranke" that "always claims to relate 'things just as they really happen.'" See "The Question of Narrative in Contemporary Historical Theory" in *The Content of the Form* (Baltimore: The Johns Hopkins University Press, 1987), 26-57, 32. As Novick wrote, "official historians ... were for all practical purposes engaged in public relations." *That Noble Question*, 514.

initiative of even the Chairman—he failed to address it. In his words, “Secrecy combined with the complexity of nuclear technology tended to separate and isolate [the AEC from the Truman] administration, Congress, and the American people.” And yet, Dean’s initiative and leadership qualities (somehow) gave him the ability to position the AEC precisely for what was to come: “The stage would be set for the Eisenhower administration, the New Look, and massive retaliation.”²⁷ Dean was also, according to Anders, a champion of the civilian authority written into the Act. In what amounts to a case-study of how the conventional differences between “civilian” and “military” have been used to shape understanding, Anders notes that Dean not only opposed the military’s continual requests for custody of atomic weapons, but also objected when President Truman indicated that he was considering a transfer of some weapons to the military. By highlighting Dean’s “civilian” credibility, it seems likely that Anders was responding to Dean’s well-known reputation as a strong supporter of military development. Just as Lewis L. Strauss’s claim in 1962 that prior to his assumption of the Chairmanship, the AEC had to “tacitly accept” the military’s direction appears as an attempt to gloss over his own enthusiastic support of the military, and the claim that Dean should be remembered as a champion of civilian authority is unwarranted.²⁸ For instance, Truman appointed Dean as a political compromise in the wake of political antagonism and congressional inquiries into the integrity and loyalty of then-AEC Chairman David E. Lilienthal; Dean was the only AEC commissioner to join Strauss in delivering to

²⁷ “Introduction” *Forging the Atomic Shield: Excerpts from the Office Diary of Gordon E. Dean*, Roger M. Anders, ed. (Chapel Hill, London: University of North Carolina Press, 1987), 14; for the mention of civilian control, see 23. See also, Anders, “The Atomic Bomb and the Korean War: Gordon Dean and the Issue of Civilian Control,” *Military Affairs* 52 (1988):1-6.

²⁸ Lewis L. Strauss, *Men and Decisions* (New York, NY: Popular Library, 1963), 407.

President Truman a minority recommendation that he proceed with H-bomb development; and Dean supported the creation of the Nevada Proving Ground as an affordable way to escalate weapons development and testing. An example from 1950 further illustrates Dean's militaristic stance as AEC Chairman. Barely a year after assuming the Chairmanship and, presumably at his own initiative, Dean bypassed the ordinary advisory channels and paved the way for military experiments two years hence. In a letter to Truman, Dean suggested that those experiments would be "of great value to the Armed Forces in preparing their budgetary and operational plans for 1952." While trying to force the military to assume some of the costs of those experiments, Dean lent encouragement to and fostered the notion within the administration that atomic experiments were events that the military could, and should, exploit. In a response marked "personal," Truman politely discouraged Dean's attempt to place himself, as AEC Chairman, in a position to direct military policy, suggesting that Dean "should notify the Military" of his proposals.²⁹ Given this, and other historical incidents contained in Anders' collection, Dean's opposition to a shift in custody was not so much an attempt to prevent the military from seizing control over atomic science as it was a matter of turf protection. In addition, Dean approached fallout not as a safety problem, but as a public relations issue. Unlike his predecessor, Lilienthal, for whom the differing opinions of about the risks of fallout warranted accelerated scientific study, Dean accepted at face value the most optimistic opinions and recommended, instead, an educational campaign

²⁹ July 17, 1950, Chairman USAEC Gordon Dean to The President. July 22, 1950, Harry S. Truman to Dean. "Atomic Testing: General" Box No. 175, PSF Subject File, Harry S. Truman Presidential Library [HST Library].

to alleviate public concerns.³⁰ The differences of opinion between the two men had less to do with what the dangers of radioactive exposure was known to be during their chairmanships than it did with the priority each assigned to their responsibility to discharge their responsibilities under the AEA. Lilienthal, unlike Dean, placed a high priority on program safety. How the history of the program is understood reaches beyond a differing historical perspective. One of the reasons why official histories have achieved the status of convention is that Anders and other official historians had the luxury of drawing from a complete record, while outside historians had limited access to a record fragmented by classification.

Thus, during a period that in most historical fields was known for its energetic questioning of the status quo and prolific revisionism, critical analyses of the program itself were nonexistent. Historians unaffiliated with the government or the program channeled their revisionist energies into avenues where documentary evidence was more available: the wartime Manhattan Project and Truman's decision to drop atom bombs on Japan; the legitimacy of anticommunist and anti-Soviet maneuvers; and, the secrecy, and other issues indirectly related to atomic development.³¹ The program itself remained relatively immune from sustained critique.

³⁰ For Lilienthal's comments about getting to the bottom of fallout dangers, see *Diaries of David E. Lilienthal* (New York, NY: Harper & Rowe, 1964), 553. For Dean, see his proposal during an AEC meeting where commissioners were discussing a test that was expected to produce unusually high levels of fallout. Dean suggested "a popular article on fall-out to reduce the possibility of public anxiety ... might be helpful." Harold D. Anamosa, Acting Secretary, Atomic Energy Commission, Meeting No. 964, "Minutes [with deletions]" May 14, 1952.

³¹ Gar Alperovitz, *Atomic Diplomacy: Hiroshima and Potsdam* (New York, NY: Simon & Schuster, 1965); Martin Sherwin, *A World Destroyed*; Michael R. Belknap, *Cold War Political Justice* (Westport, CT: Greenwood Press, 1977); David Caute, *The Great Fear*; Gregg Herken, *The Winning Weapon*.

For a historiographical summary of the literature on the use of the bomb, see J. Samuel Walker, "Recent Literature on Truman's Atomic Bomb Decision: A Search for Middle Ground," *Diplomatic History* 29 (2005): 311-334.

Paradoxically, nuclear accidents that book-ended the 1970s, claims by veterans, and lawsuits, caused presidential-level, national security policy to become more prominent as both the grand justificatory scheme and the ultimate scapegoat. The 1972 radioactive venting of the Baneberry detonation at the Nevada Test Site; *The China Syndrome*, the 1979 hit movie based on accidents at Dresden II reactor near Chicago in 1970 and the Browns Ferry Reactor in Alabama in 1975 that dramatized the precariousness of dependence on nuclear power; and the Three Mile Island incident that began eleven days after *The China Syndrome's* release, all drew attention to the radioactive hazards of nuclear weapons experimentation and power generation and stimulated new discussions about the dangers of radioactivity. Divisions between those scientists who held that weapons testing and atomic energy were safe and worthwhile and those who argued that both posed serious health hazards became public. Some scientists—particularly those who had participated in the program—further fueled antagonisms by lending credence to claims that past radioactive exposures had resulted in disease and death. One, John Gofman, who developed the method for refining plutonium used during the Manhattan Project and who was involved with postwar programs at Berkeley and Lawrence Livermore National Laboratory, argued that legal and moral boundaries had been crossed. In 1970, he said that he and other AEC scientists had been criminally liable, “candidates for Nuremberg-type trials for crimes against humanity for our gross negligence and irresponsibility.”³² Gofman’s complaints were directed squarely

³² John Gofman, *An Irreverent, Illustrated View of Nuclear Power*, cited in Jay Gould and Benjamin Goldman, *Deadly Deceit* (New York, NY: Four Walls Eight Windows, 1990), 95. John William Gofman is best known for developing the process for plutonium extraction used during Manhattan. While a graduate student at Berkeley, Gofman co-discovered protactinium-232, uranium-232, protactinium-233, and uranium-233, and proved the slow and fast neutron fissionability of uranium-233. Gofman has published several books and hundreds of peer-reviewed articles in the fields of nuclear and physical chemistry, coronary heart disease, ultracentrifugal analysis of the serum lipoproteins, the relationship of human

at the program's management—at *how* the program was being conducted—but they were not enough to dislodge the notion that it was not the management of the program, but national security policy, which was significant.

The revelations of the 1970s, the lawsuits that began to be filed and written about in the nation's newspapers, and the response from the program and Justice Department attorneys all shared a common theme: that the direction and articulation of the atomic weapons program hinged unilaterally, for good or ill, upon the prerogatives of the executive branch and the administration of its policies. They solidified the concept of a monolithic government. In part, this was due to the fact there were no other targets: the federal government assumed, for legal and contractual reasons, liability for its contractors.³³ Thus, those companies that managed the program's complexes received immunity from liability and, as a result, endured little criticism. In the same way that the management and operational standards of the atomic program escaped scrutiny during the

chromosomes to cancer, and the biological effects of radiation, with especial reference to causation of cancer and hereditary injury. See Gofman, *Radiation and Human Health* (San Francisco, CA: Sierra Club, 1981); John Gofman and Egan O'Connor, *X-Rays; Health Effects of Common Exams* (San Francisco: Sierra Club Books, 1985); John Gofman, *Radiation-Induced Cancer from Low-Dose Exposure: An independent Analysis* (San Francisco, Ca.: Committee for Nuclear Responsibility, 1990).

³³ Under the provisions of the Atomic Testing Liability Act, 42 U.S.C. 2212, the government absolved its contractors for liability under the theory that if a claim attached, it would attach to the principal agent—the U.S. This placed claimants in the position of filing suit under the Federal Tort Claims Act and coping with a double burden of proof: one for negligence and injury, and another to establish that the actions had not resulted from decisions that were matters of policy. Actions related to national security, or that “involved policy judgments,” are precluded under the discretionary function exception of the Federal Tort Claims Act, 28 U.S.C. Section 2680(a). See *In re Consolidated U.S. Atmospheric Testing Litigation*, 820 F.2d 982 (9th Cir., 1987). The court subsequently blurred the lines between policy and operational decision making with a finding that employees with discretionary authority would be assumed to be carrying out official policy. See *U.S. v. Gaubert*, 499 U.S. 315 (1991). For an encapsulation of these findings, see *Prescott v. U.S.*, 973 F.2d 696 (9th Cir. 1992). For analyses, see Barry Kellman, “Judicial Abdication of Military Tort Accountability: But Who is to Guard the Guards Themselves?” *Duke Law Journal* (1989): 159-1653; Medora Marisseau, “Comment: Seeing Through the Fallout: Radiation and the Discretionary Function Exception,” 22 *Envtl. L.* 1509 (1992); Angela L. Martin, “Casenotes: The Discretionary Function Exemption Returns Sovereign Immunity to the Throne of Douglas County—Once Again, the ‘King can Do No Wrong’” *Jasa v. Douglas County*,” 28 *Creighton L. Rev.* 247 (1994).

fallout controversy of the 1950s, so too at this time did the operational and managerial complicity of contractors such as Dow Chemical, Edgerton, Germeshausen, and Grier (E. G. & G.), Reynolds Electrical and Engineering Company (REECO), and others, become less visible than the federal government that defended their actions in the public sphere and in courts of law. All of this funneled more resentment toward the federal government and plowed the field for “we versus them” histories.

Beginning in the early 1980s, legal claims of victims and witnesses became the focus of journalists and lawyers who broadened the field of inquiry but repeated and reinforced the policy-centered arguments of the government’s critics by targeting a nebulous, yet extremely potent “government.”³⁴ The focus on the victims of weapons production and testing corresponded with the emergence of the New Western History that took into account previously ignored facets of historical experience, including gender, environmentalism, and racism. These historians’ critiques of the program focused on the disproportionate burdens borne by downwinders, Native Americans, and western communities during the Cold War arms race.³⁵ Over time, the romanticism of the earliest

³⁴ Leslie J. Freeman, *Nuclear Witnesses: Insiders Speak Out* (New York, NY: W.W. Norton, 1982); Hilgartner, Bell, O’Connor, *Nukespeak, Nuclear Language, Visions and Mindset* (San Francisco, CA: Sierra Club Books, 1982); John Fuller, *The Day We Bombed Utah* (New York, NY: New American Library, 1984).

³⁵ For Native Americans, see Rebecca Solnit, *Savage Dreams: A Journey into the Hidden Wars of the American West* (San Francisco, CA: Sierra Club Books, 1994), who found that where public opposition to weapons testing was most prominent, such as in Nevada, some Native American groups found common cause with activists. Shared outrage and purpose caused the formation of bonds between Native Americans and women who, Solnit says, share a greater appreciation of nature than is commonly held by (male) policy-makers. Valerie L. Kuletz, *The Tainted Desert: Environmental and Social Ruin in the American West*, (New York, NY: Routledge, 1998) argues that euro-centrism disrupted Native American lifestyles, cultural traditions and spiritual practices.

For the West generally, see: Maria E. Montoya argues that the government ruined the desert as a place of “refuge” for artists and other freedom-seeking individuals by locating military complexes within its vast, seemingly-empty spaces. “Landscapes of the Cold War West.” A demographic study makes the correlation between national incursive expansion and atomic weapons testing overt, stating that the government’s expansion into the region, like the bombs it tested in Nevada, “dropped fallout on Western society.” Kevin Allen Leonard, “Migrants, Immigrants, and Refugees” both in *The Cold War American West*, Kevin J.

works that had tended to over-idealize western landscapes and peoples began to give way to more intricate studies of the program, the people who worked within its institutions,³⁶ and those who historically supported it.³⁷ As the numbers of lawsuits increased and the limits and burdens of congressional remedies such as the Radiation Exposure Compensation Act (RECA) became known, the “government” not only received the blame, but it was held by some to be criminally complicit.³⁸

Fernlund, ed. (Albuquerque, NM: University of New Mexico, 1998), 9-28, esp. 13. See also James J. Robb and William E. Riebsame, eds., *Atlas of the New West: Portrait of a Changing Region* (New York, NY: W. W. Norton & Company, 1997), 132-135.

³⁶ As anthropologist Hugh Gusterson demonstrated in *Nuclear Rites*, activism, whether anti-nuclear, peace, or environmental, was not the sole preserve of those outside the program but was a commitment shared by many working within the program as well. Workers at California’s Lawrence Livermore Laboratory who campaigned for nuclear disarmament and environmental causes in their spare time managed to separate their careers from their convictions in part because of the insulation imposed by security and ritualized routines at their workplace. Security clearances, locked rooms, classified computers, coded language, and other factors provided the divisions necessary for the professionals Gustafson studied to ignore, or fail to recognize, the contradictions they embodied.

³⁷ Examples include: Dan O’Neill’s analysis of the cooperation between Edward Teller and the University of Alaska that overrode environmental concerns and the rights of Native Americans, see *The Firecracker Boys* (New York, NY: St. Martins Press, 1994). An abbreviated version of O’Neill’s research and findings appears in *The Atomic West*, Bruce Hevly and John M. Findlay, eds. (Seattle, WA: University of Washington Press, 1998), 179-199. For the environmental backlash that arose when plans for nuclear testing in Alaska came to light, see John Whitehead, “Alaska and Hawaii,” *The Cold War American West*, 189-210, particularly 204; for the aggressive lobbying of community leaders and politicians for Colorado’s Rocky Flats facility and the ultimate tradeoffs that arose, see journalist Ken Ackland’s *Making a Real Killing*.

³⁸ The most broadly accusative exemplar of this stream of scholarship was *The Myths of August*, a book written by former Secretary of the Interior Stewart L. Udall, who had challenged the government in court as an attorney representing downwinders and Navajo uranium miners, argued that atomic development and testing caused the degeneration of democratic decision-making (345) and a near-total breakdown of the ethical and moral fabric of America (276-277). For a history of weapons testing and resulting lawsuits, particularly *Allen v. U.S.*, a case that was re-tried after its Utah judge learned that the Justice Department had deceived the court during the first trial and that was overturned on appeal, see *The Day we Bombed Utah*. See also, Philip Fradkin, *Fallout: An American Nuclear Tragedy* (Tucson, AZ: University of Arizona Press, 1989); Richard L. Miller, *Under the Cloud: The Decades of Nuclear Testing* (New York, NY: Collier MacMillan, 1986); and Howard Ball, who depends on governmental fallout records to discuss the widespread dispersal of fallout and downwinder lawsuits in *Justice Downwind* (New York: Oxford University Press, 1986).

For the interplay between politics, scientists, and stakeholders in the construction of the “radioepidemiologic tables” that formed the basis for compensation under RECA, see Mark Parascandola, “Uncertain Science and a Failure of Trust: The NIH Radioepidemiologic Tables and Compensation for Radiation-Induced Cancer,” *Isis* 39 (2002): 559-584.

All of this re-invigorated the government's interest in telling its own story. It enlisted its own historians and contracted with another to chronicle the growth of nuclear agencies in the Cold War period and the safety procedures of the wartime and post war programs through the 1970s.³⁹ One of these historians for hire, Barton Hacker, a University of Chicago trained historian interested in military history and the military application of science and technology, caused a shift in the terms of the argument that had lasting historiographical consequences.⁴⁰

Hacker reinforced the AEC's policy-centered narrative while contributing another dimension: that radioactive hazards were "little understood."⁴¹ In what remains the most comprehensive review of the administration of health safety in the Manhattan Project and the peacetime AEC-administered one, Hacker addressed both prongs of the assault that critics had leveled at the program: that it had jeopardized the health and safety of workers and that secrecy and document restrictions had prevented analysts from getting at the truth. Emphasizing that he had relied on an unclassified record available to all researchers, Hacker detailed the program's interest in safety and found that although accidents had occurred, they were for the most part unforeseeable and unavoidable. Additionally, because both the Manhattan Project and its successor the AEC had maintained an energetic emphasis on safety, officials and employees were "diligent and

³⁹ The most prolific of these has been Richard G. Hewlett. Founder of the historical office of the Atomic Energy Commission, Hewlett completed the second and third volumes of his history of the Atomic Energy Commission, and co-authored of the history of Admiral Rickover and the nuclear fleet.

⁴⁰ Hacker is currently the curator in the Smithsonian's Division of Military History and Diplomacy.

⁴¹ Hacker, *Elements of Controversy*. For ingested or inhaled, see 64; for questions "raised" by Sunshine, see 199. For other examples, see 121, 128.

competent” and “performed a difficult job honorably.”⁴² Hacker’s approach was a sympathetic one, as can be seen from his recounting of one piece of history from the atmospheric era of weapons testing. Explaining the efforts the AEC made to reduce the risks posed to those in Southern Utah by an unusually highly radioactive fallout cloud, Hacker says that officials stuck to the “literal” truth:

they misled by what they omitted or downplayed, not by what they stated. Probably no one thought of that as lying ... but powerful officials found it easy to ... mislead as a matter of course.⁴³

Inadvertently, Hacker’s conclusion that program participants “found it easy to ... mislead as a matter of course” provides support for the lines of argument pursued in pages to follow. The primary issue now, however, is Hacker’s influence on how the history of atomic experimentation is understood.

With historians on both sides of the critical/apologist divide in agreement that Cold War policy was primarily responsible for the program (and its consequences,) the historiographical controversy devolved into whether radioactive exposures were sufficient to cause harm. From Hacker’s standpoint, the program’s history was subsumed entirely into an issue of causation: “The real question is whether or not very low levels of exposure have had disproportionately great health consequences.”⁴⁴ In this way, Hacker

⁴² Hacker, *Element of Controversy*, 272, 279. See also *The Dragon’s Tail*. Related to these “official” histories are popularizations such as Richard Rhodes’ *The Making of the Atomic Bomb* (New York, NY: Simon & Schuster, 1986) and *Dark Sun: The Making of the Hydrogen Bomb* (New York, NY: Simon & Schuster, 1995).

⁴³ “Hotter than a \$2 Dollar Pistol” in *The Atomic West*, 169. Such naiveté, or less generously, condescension, of affiliated historians did little more than fuel the frustrations of those who expected redress for their claims instead of justifications, and those of historians as well. See, for example Balogh’s review of several official histories, “Looking the Tiger in the Eye: Confronting the Nuclear Threat; Atoms for Peace and War, 1953-1961: Eisenhower and the Atomic Energy Commission; War and Peace in the Nuclear Age,” *Journal of American History* 77 (1991): 1419-1420.

⁴⁴ Barton C. Hacker, “Radiation Safety, the AEC, and Nuclear Weapons Testing,” *The Public Historian* 14 (1992): 47.

sidestepped the historical questions (among them, under what authority and under what guidelines did military officers and program managers believe the hazards were *at the time* testing was being planned and conducted?) leaving the impression that the history was settled. The causation issue, as Hacker noted, was “unanswerable” because no medical or scientific consensus exists about the effects of exposure to radiation. This resurrected an argument nearly as old as the program itself, one that Army officers and others used during atmospheric testing to devalue scientific opinions because they differed and to dispute safety precautions for permissible dose levels established for troop participation in experiments.⁴⁵ Scientists continue to disagree about such fundamental aspects of radioactivity as whether there is a “safe” threshold of exposure. In all but the most acute radiation exposures, individual and environmental variables infinitely complicate the efforts of experts to trace disease causation to exposure incidents.⁴⁶ Specially commissioned epidemiological studies of participants at the first peacetime test, *Operation Crossroads*, have shown little or no statistically significant difference in radiogenic disease between participants of 1946 Pacific atomic tests and the incidence of certain cancers in the general population. What those studies failed to take into account,

⁴⁵ As the Army did in 1950 to devalue the efforts of researchers working with the AEC’s Division of Biology and Medicine to determine, among other things, permissible dose levels for radioactive exposure. Army General Cooney argued that so many discrepancies existed in evaluating permissible dose that the recommendations were “of little value” to medical officers interested in determining the combat availability of exposed troops and proposed that instead of extrapolating information from divergent opinions, the problem be solved by experimenting on 200 service volunteers. The board, and the members present from the other branches, disagreed with Cooney that human studies were necessary. “Minutes of November 10, 1950, meeting with AEC Advisory Board of the Division of Biology and Medicine, written by F.C. Greaves, dated November 15, 1950. Advisory Committee on Human Radiation Experiments [ACHRE].

⁴⁶ On the claimant level, this includes disagreement about exposure and the accuracy of original film badge readings—an issue that in one case resulted in at least 250 hours spent of recalculating and reassessing 1100 personnel photodosimetry films and 1600 control film badges. See “Report of Review and Re-Evaluation of Photosimetry Results for Plaintiffs in the Case Of Prescott et al. versus the U.S.A.” in “Defendant’s Supplemental Designation of Fact and Expert Witnesses and Statement Pursuant to Fed. R. Civ. P. 26(b)(4)(A)(i), *Prescott v. U.S.*, consolidated, (D. Nev.) CV-S-80-143-PMP (LRL).

however, is the possibility that it may be impossible to establish a non-exposed cohort. Independent researchers suggest that aboveground weapons testing caused widespread exposures and increases in the incidence of radiogenic cancers and disease throughout the general population.⁴⁷ Additionally, lawsuits have muddled the picture, with a proliferation of experts hardening the lines between opposing opinions.⁴⁸ According to University of Utah's Dr. Joseph L. Lyon, the interweaving of liability and science has made it difficult to "[sort] out the scientific, objective research from the compensation problem" because the "government ... doesn't seem to talk science without being able to talk compensation simultaneously."⁴⁹

The controversy emerges in the literature in a variety of ways. Most historians unaffiliated with the program take causation at face value, adopting the viewpoints of the downwinders, uranium miners, workers, (and their physicians, lawyers, and experts) that exposure to radiation in the workplace or in the environment was responsible for illness

⁴⁷For the study of population mortality and its correlation to aboveground testing, see Jay M. Gould, Benjamin A. Goldman, *Deadly Deceit: Low Level Radiation, High Level Coverup* (New York: Four Walls, Eight Windows, 1990), 95-109. For Crossroads, see, Institute of Medicine, *Mortality of Veteran Participants in the Crossroads Nuclear Tests* (Washington, D.C.: National Academies Press, 1996), 86.

⁴⁸ The earliest lawsuit was *Bullock v. United States*, filed in 1954 after several thousand sheep died following a fallout incident, and reopened by the trial judge in 1979 who found evidence that the government had suppressed evidence during the original trial. The next was *Roberts (Nunamaker) v. United States*, a case brought by employees at the Nevada Test Site who were exposed to high levels of radiation, and who later died, after a 1970 venting of the Baneberry detonation. *Allen v. United States*—a suit filed by 1,100 downwinders—followed. *Prescott v. United States* was filed in 1980 became the lead case in a consolidated action wherein 218 people who had been employed at the test site and who contracted cancer (200 had died of their illnesses, 18 were still alive at the time of trial) and claimed that exposures during the course of their employment from 1951-1981 caused their illnesses.

⁴⁹ Cited in Howard Ball, *Justice Downwind*, 127. As Ball pointed out, the "battle line in the low dose controversy is clearly drawn along the government/non-government axis." *Justice Downwind*, 125. For a recent skirmish, see Robert P. Newman's retort to criticism about his book (*Enola Gay and the Court of History*) by a historian with the Nuclear Regulatory Commission, J. Samuel Walker, and Walker's response. Robert P. Newman, "Letters to the Editor," *The Journal of Military History* 69 (2005): 624-625. For the history of atomic veterans and their legal hurdles, see Allen Favish, "Radiation Injury and the Atomic Veteran: Shifting the Burden of Proof in Factual Causation" 32 *Hastings L.J.* 933 (1980-1981); For the history of lawsuits and legislation, see also Titus, *Bombs*, 2nd edition, 119-166.

and death. Those affiliated with the program consider these claims from the perspective of the program and approach the issue differently. Some lean on the scientific uncertainties to make a moral/ideological argument in favor of the Cold War objective. An official historian writing about Hanford Nuclear facility in Washington argued that the facility's central focus on Cold War production precluded attention to environmental contamination; moreover, whatever the ultimate cost to the region and its residents, it will be less than that paid by the former Soviet Union, and thus will have been "worth it."⁵⁰ Others, such as Hacker, argue that the AEC and its program managers took all possible precautions and believed at the time that "testing could be conducted safely."⁵¹ For him, the notion that it was not, absent definitive scientific proof of a correlation between health and radiation exposure, is dismissed as nothing more than an uneducated perception traceable to unfounded anxieties and apprehension embodied in changing social attitudes.⁵² In the midst of all this uncertainty, the policy-centered, Cold War narrative of the program's evolution has achieved the level of conventional wisdom, all-but-disappearing as a subject of serious inquiry.

One explanation for the resilience of the policy-centered narrative is that it is something of a historical artifact. The Cold War narrative has remained relatively free of criticism because of secrecy and national security precautions, the diversion of critique

⁵⁰ Michele Stenshjem Gerber, *On the Home Front: The Cold War Legacy of the Hanford Nuclear Site* (Lincoln, Nebraska: University of Nebraska Press, 1992), 221.

⁵¹ Hacker, *Elements* 277.

⁵² *Ibid.* A version of this argument continues to circulate within the Department of Energy. One DOE employee in Las Vegas, Nevada, suggested that the close-knit family structure and strong community ties common in downwinder communities molded their perceptions and caused them to believe that their families and friends had experienced greater-than-average incidences of cancer. UNLV History Department roundtable discussion with Charles Weiner, April 2006.

into the controversy over the health effects of exposure to radiation, and routine reinforcement through bibliographic repetition. So, too, has it been reinforced through Congress's efforts to deal with the program's politically charged controversies in a way that would satisfy outraged constituents but limit governmental liability. Beginning in 1990, Congress embedded the policy-centered explanation into legislation that (a) apologized and authorized compensation for some downwinders, production workers, and veterans who contracted radiogenic diseases; and, (b) found the program had been conducted solely in the interests of Cold War national security—a statement that effectively shielded the government and, in combination with the Warner Amendment passed in 1984, its contractors from legal liability.⁵³ The Radiation Exposure Compensation Act of 1990 (RECA) has undoubtedly alleviated some of the burden for individuals who fit the Act's requirements—at least 26,550 civilian production workers and downwinders have filed claims since the Act's passage.⁵⁴ Simultaneously, however, Congress's determination that the program was conducted entirely in the interests of national security has lent authority to the conventional narrative, immunized the program and its contractors from liability, and, because RECA discouraged the filing of lawsuits under the Federal Tort Claims Act, eliminated the possibility that the program's health and environmental record might have come under renewed and beneficial scrutiny.

⁵³ Warner Amendment, 42 U.S.C. 2212 (Supp. IV 1986). For evaluations of the Warner Amendment's effect on lawsuits brought to recover from illness and death caused by atomic weapons testing, see Elizabeth Louise Loeb, "Constitutional Fallout from the Warner Amendment: Annihilating the Rights of Atomic Weapons Testing Victims," 62 N.Y.U. L. Rev. 1331 (1987); A. Constandina Titus and Michael W. Bowers, "Konizeski and the Warner Amendment: Back to Ground Zero for Atomic Litigants," 1988 BYU L. Rev. 387 (1988); William A. Fletcher, "Atomic Bomb Testing and the Warner Amendment: A Violation of the Separation of Powers," 65 Wash. L. Rev. 285 (1990).

⁵⁴ Based upon claims filed under the Radiation Exposure Compensation Act, and as amended. All figures as through June, 2007. Government Accounting Office, GAO-05-1002R, "Radiation Exposure Compensation Act: Program Status," 3.

Litigation has historically prompted significant revelations as, for example, during trial preparation for *Prescott vs. U.S.* when investigation into the government's medical and scientific expert witnesses found that some of them had participated in human radiation experiments.⁵⁵ When the report on those experiments was released in 1995, President Bill Clinton elevated the significance of the wrongdoing above national interests: "When the government does wrong, we have a moral responsibility to admit it."⁵⁶ It was a sensibility that was not adopted where the development and testing of nuclear weapons was at issue. Even in the face of evidence of human radiation experimentation, Hazel O'Leary, then Energy Secretary, derided people who complained about adverse health effects as "crazies."⁵⁷ In fact, although *Prescott vs. U.S.* contributed to provoking the investigation into the history of human radiation experimentation and stimulated a discussion about ancillary issues such as informed consent, the case itself became a mechanism through which government officials reinforced the national security justification for atomic weapons development and experimentation. As Larry C. Johns, one of the plaintiffs's attorneys in the Prescott trial, explained after the trial and only a month before President Clinton's statement, "The court said the acts relative to testing were made at levels where judgment was exercised and essentially the courts are not going to second-guess the

⁵⁵ Though the connection between the exchange of witness discovery lists in *Prescott* and O'Leary's statement was not made in the national press, the timing of the exchange of witness lists, the filing of motions that made clear that information about human radiation experimentation would likely be sensationalized in the national press, and the judge's decision to continue the trial, lead to the conclusion that the connection between the lawsuit and admissions was not coincidental. The trial judge, U.S. District Judge Roger D. Foley, having previously refused government requests to postpone the trial, then postponed it. Shortly thereafter, then-Energy Secretary Hazel O'Leary announced that she had ordered an investigation into human radiation experimentation.

⁵⁶ Irwin Goodwin, "Clinton Apologizes for Cold War's Radiation Experiments, which panel says created a 'legacy of distrust' in science," *Physics Today* 48 (1995): 70.

⁵⁷ Cited by Michael D'Antonio, "Atomic Guinea Pigs," *New York Times Magazine*, August 31, 1997, 38.

executive branch in deciding to test and expose those people.”⁵⁸ Thus, the program, its evolution, and its characteristics have escaped the types of inquiry and analysis that has become the norm with other Cold War era efforts, such as the covert activities of the CIA, controversies about the Vietnam War, and the domestic spying practices of Hoover’s FBI.⁵⁹ In fact, the policy-centered narrative has endured so little scrutiny that it has remained relatively unchanged since it was summarized by the Justice Department’s Rex Lee in congressional testimony delivered in 1981: “Decades ago,” Lee explained, “federal policymakers decided to run some enormous risks. Innocent American citizens were involuntarily and unwittingly made the subjects of those risks.”⁶⁰

In sum, the conventional wisdom, though doubly suspect, endures—tethered on one side to a conception of the program’s history that delves no deeper than the external justifications for the program that sustained it as it evolved, and on the other to a politically-motivated and superficial finding, one designed to appease constituents while limiting the government’s liability. While the interest expressed by congressmen, historians, journalists, and victims, into the program’s operation might have stimulated analytical insights and produced revisions to the policy-centered narrative, the exact opposite has been the case. The prominence of the issue and the interest it has stimulated has resulted in the repetition of the Cold War rationale and its reinforcement as an

⁵⁸ Larry C. Johns, quoted by Keith Rogers, “LV attorney who lost test site case sees little hope for veteran’s case,” *Las Vegas Review Journal*, September 1, 1995, B-9.

⁵⁹ Hugh Wilford, *The Mighty Wurlitzer: How the CIA Played America* (Cambridge, MA: Harvard University Press, 2008); Jeffrey Kimball, *Nixon’s Vietnam War* (Lawrence, KS: University Press of Kansas, 1998); Douglas M. Charles, *J. Edgar Hoover and the anti-interventionists: FBI Political Surveillance and the Rise of the Domestic Security State* (Columbus, OH: Ohio State University Press, 2007).

⁶⁰ United States Senate, Committee on Labor and Human Resources, Radiation Exposure Compensation Act of 1981, Hearings on S. 1483, October 27, 1981-April, 1982; 97th Cong. 1st Session, 11. Lee had served as President of Brigham Young University and was Solicitor General during the Reagan Administration.

explanatory mechanism to so great an extent that the contours of the Cold War that shaped the earliest interpretative histories of the atomic program have continued to determine the direction of scholarship.⁶¹ Because the remit of President Clinton's 1994 Advisory Committee on the Human Radiation Experiments was narrowed to ferret out the victims of those experiments without investigating responsibility, Committee members ignored the findings of its staff that national security imperatives were absent in a documentary record that was instead replete with evidence that program and military officials feared embarrassment or public outcry about the practice and allowed their own assumptions about the significance of national security to color their conclusions.⁶²

One additional explanation for its stability is that it has been and remains the most palatable explanation for the two primary stakeholders in the ongoing debate. For the federal government, as already discussed, the rubric of national security is more than a way to justify the program's hazardous record; it also immunizes the government from liability—an effective bar, especially at the appeals court level, to the awarding of compensatory damages to victims able to link illness, death, and environmental damage

⁶¹ See, for example, recent editions of Titus's *Bombs in the Backyard*, 55-56, and Fradkin's *Fallout*, 92-103. Since at least 2000, the fiftieth anniversary of the Site, officials and historians with the Department of Energy, The Desert Research Institute, and the Nevada Test Site Historical Foundation—partners in Las Vegas's Atomic Testing Museum located in Las Vegas—have packaged the Nevada Test Site as “The Battlefield of the Cold War.” See Keith Rogers, “We Were in Awe,” *Las Vegas Review Journal*, December 17, 2000.

⁶² Advisory Committee on Human Radiation Experiments, *The Final Report of the Advisory Committee* (New York, NY: Oxford University Press, 1996), 16-17. The staff's finding was, however, included in the report: “With regard to defense-related documents, in none of the memorandums or transcripts of various agencies did we encounter a formal national security exception to conditions under which these human subjects may be used.” 120. This was the subject of Trudo Lemmens's critique of the Committee, “In the Name of National Security,” *European Journal of Health Law* 6 (1991): 7-23, esp. 10-11. For two perspectives on the lengthy report, see Irwin Goodwin, “Clinton Apologizes for Cold War's radiation experiments, which panel says created a ‘legacy of distrust’ in science” in *Physics Today* 48(November 1995): 70-71; and Danielle Gordon, “The Verdict: No Harm No Foul” in *The Bulletin of the Atomic Scientists*, January/February, 1996, 33-40. For a critique of the Committee's approach, see David Egilman, et al, “Ethical Aerobics: ACHRE'S Flight from Responsibility,” *Accountability in Research* 6 (2001): 15-61.

to failures in the program's administration.⁶³ It has also become the favored explanation for those who believe that the program caused them, or a loved one, to become ill. This was not always the case. Prior to the passage of the RECA, those who claimed injuries as a result of the program were much more likely to identify themselves with "guinea pigs"—as individuals who had been unknowingly experimented upon.⁶⁴ This assumption was in close alignment with the perspectives of government insiders who began in the 1970s openly to criticize managers, administrators, and others in the program for criminal negligence.⁶⁵ Since the Act's passage, however, claimants have come to use the language of sacrifice, and frame their suffering as contributions made toward the greater good.⁶⁶ It is beyond the scope of this study to examine whether this interesting shift in perspective has been caused by the routine use of policy as a rationale, by individual re-evaluations of experience or the significance of their role, or by the re-shaping of memory as a result of continuing controversy. True, the argument at the heart of this analysis is that many of the hazards and thus much of the suffering caused by the program were not inevitable and could have been prevented. Yet, there is no reason to disturb whatever comfort might be

⁶³ *Prescott v. U.S.*, 973 F2d 696, 702 (9th Cir. 1992).

⁶⁴ The phrase derives from Martha Laird's testimony before a congressional subcommittee in 1979, "we were used more or less as guinea pigs. The forgotten guinea pigs, because guinea pigs they will come to the cage and check which they never have." The subcommittee on Oversight and Investigations that held the hearings used her language for the title of their report. See Committee on Interstate and Foreign Commerce, U. S. House of Representatives, August 1980 "The Forgotten Guinea Pigs' A Report on Health Effects of Low-Level Radiation sustained as a result of the nuclear weapons testing program conducted by the United States Government," 96th Congress, 2nd Session. Committee Print 96-IFC 53, 14.

⁶⁵ John Gofman, *An Irreverent, Illustrated View of Nuclear Power*, cited in Jay Gould and Benjamin Goldman, *Deadly Deceit* (New York, NY: Four Walls Eight Windows, 1990), 95.

⁶⁶ For examples, see Carole Gallagher's *American Ground Zero: The Secret Nuclear War* (Cambridge, MA: MIT Press, 1993); Joseph Masco, "Mutant Ecologies: Radioactive Life in Post-Cold War New Mexico," *Cultural Anthropology* 19 (2004): 517-550, esp. 526; "Archives Chronicle Hanford Downwinders' Experiences," about the creation of an archive at Gonzaga University's Foley Center Library for records and memoirs of people in the "local sacrifice zone." *Ellensburg Daily Record*, July 24, 1996; Michael D'Antonio, "Atomic Guinea Pigs," *New York Times Sunday Magazine*, August 31, 1997, 38; "Editorial: Don't Leave Ex-Test Site Workers Out," *Las Vegas Sun*, March 3, 2000.

afforded by believing that one's illness came about in the interests of a higher good—the preservation of national security, or in the interests of Cold War necessity—merely to point out that it may have been generated, instead, by routines that subordinated safety, or by carelessness, greed, or lethal shortsightedness of military officers and program managers.

This analysis demonstrates, however, that the program was more than a product of Cold War imperatives and that the production and testing of nuclear weapons could have been a safer endeavor. The Cold War narrative, like the program itself, cannot be separated from the domestic context from which it grew. And, like the program, its evolution was shaped by a range of institutional, professional, and political motivations that provoked countless little day-to-day decisions. The following chapters focus on some of the many decisions that shaped the program's direction from the end of World War II through 1958. For a variety of self-interested reasons, military officers, program administrators and officials, affiliates in the private sector, congressmen, Presidents Truman and Eisenhower and members of their administrations, made decisions that, in sum, gave military officers and their supporters the ability to assert authority over the peacetime program, to control the conditions for atmospheric weapons testing, and to use the program and tests politically in furtherance of their institutional, political, or personal, goals. Given all of this, it is not only reasonable, but ethically and morally obligatory to ask, as Michael J. Hogan did in his *Cross of Iron: Might America's victory in the Cold War could have been gained at less cost?* Unlike the Cold War narrative, the answer that emerges from this critical analysis of the atmospheric era program is: yes.

PART ONE
MILITARIZATION

CHAPTER THREE

INSTITUTIONAL IMPERATIVES

*If we, as a Christian nation, feel morally free to use atomic energy in that way, Men elsewhere will accept that verdict. [T]he stage will be set for the sudden and final destruction of mankind.
John Foster Dulles, August 20, 1945¹*

At the end of World War II, it seemed highly unlikely that within a decade John Foster Dulles would become the architect of the doctrine of Mutual Assured Destruction or that the military would become the center of gravity for the American state. The atom bomb's potential for security at little cost, the pull of American tradition against standing armies, public opinion supportive of de-mobilization, and President Truman's vow to re-organize and streamline the military, meant that drastic reduction of military influence was all but certain. These forces came together in the two most significant pieces of legislation passed in the immediate postwar period, the Atomic Energy Act of 1946 and the National Security Act of 1947. Both Acts codified the principle of civilian leadership, strengthened congressional oversight and limited the military's ability to operate under presidential authority alone.² The Atomic Energy Act [AEA] took effect on January 1, 1947, and replaced the Army's Manhattan Project with a five-member civilian Atomic Energy Commission that was answerable to the president and Congress's Joint Committee on Atomic Energy. The National Security Act of 1947 [NSA] reconfigured the armed forces, put in place mechanisms for the coordination of the newly formed intelligence and

¹ John Foster Dulles, *Time Magazine*, August 20, 1945.

² Though this was one way for Congress to wrest authority away from the executive, it also went well against the grain of the military's preference to report directly, and solely, to the president. See Huntington, *Soldier and the State*, 336.

defense establishments, and strengthened congressional oversight.³ Congress also began to cut the military's budget, reducing it from 37.5 percent of GDP in 1945 to 3.5 percent in 1948, and the number of men in uniform shrunk from nearly twelve million at war's end to one-and-a-half million.⁴ Thus, even after the tensions erupted internationally, Winston S. Churchill's famous Iron Curtain speech, and failures to reach an international agreement for the control of atomic energy, neither Congress nor the president believed that a stronger military presence was necessary. Both had taken precautionary steps to ensure that they would be the ones to determine the size and influence of the military.⁵ Yet, by the early 1950s, the trend was reversed.

Communist aggression—the fall of China and the outbreak of the Korean War—thwarted their plans to contain military spending. Following the 1948 low, defense expenditures climbed to 4.8 percent GDP and by 1953 had nearly tripled, reaching 14.2 percent.⁶ Despite international turmoil, Eisenhower railed in frustration at military spending: “Every gun that is made” he said, “signifies ... a theft from those who hunger and are not fed. ... This world in arms is not spending money alone. ... It is spending

³ For documents and analysis of the subordination of the military to civilian leadership, see *Foreign Relations of the United States, 1945-1950*, “Emergence of the Intelligence Establishment.” For connections between the CIG and the CIA and World War II's OSS, see Michael Warner “The Creation of the Central Intelligence Group: Salvage and Liquidation,” *Studies in Intelligence*, 39 (1996): 111 ff.

⁴ “Table 3.1: outlays by superfunction and function: 1940-2009,” in *Office of Management and Budget, Historical Tables, Budget of the United States Government, Fiscal Year 2005 (2004)* (Washington, D.C.), 45-52. For troop levels and an overview of military cutbacks, see Robert A. Pollard, *Economic Security and the Origins of the Cold War, 1945-1950* (New York: Columbia University Press, 1985), 20-23.

⁵ For Winston S. Churchill, see “The Sinews of Peace,” March 5, 1946, Fulton, Missouri, *Sources of British History*, online at <http://www.britannia.com/history/docs/sinews1.html>. For another sign of a fraying peace and the crisis in Turkey, see Edward Mark, “The War Scare of 1946,” *Diplomatic History* 21 (1997): 383-415.

⁶ “Table 3.1: outlays by superfunction and function: 1940-2009,” *Office of Management and Budget*, as above.

the...hopes of its children.”⁷ Over the same period of time, atmospheric nuclear tests proceeded apace, from two in 1946, three in 1948, and another 188 before 1958s moratorium temporarily halted atmospheric experimentation.⁸ By then, plans were in the works to test nuclear weapons in outer space and nearly every American had been touched in some way by the military’s phenomenal expansion.⁹ The primary engine for the expansion of military influence as well as Cold War dependence on nuclear weapons was located at war’s end and at the intersection of a synergistic relationship that developed between the armed forces and the atomic program.¹⁰

In 1952, Supreme Court Justice William O. Douglas pointed out the importance of World War II and the immediate postwar period on the character of the Cold War state. “There is an ominous trend in this nation,” Douglas said in an article he wrote about the destructive effects of anti-communism and the suspicion it had generated. “The drift goes back, I think, to the fact that we carried over to days of peace the military approach to world affairs.”¹¹ In what follows, I show that the “military approach” Douglas referred

⁷ Eisenhower speech, April 1953. Cited by Ellen Schrecker, “Introduction,” in *Cold War Triumphalism: The Misuse of History after the Fall of Communism*, Schrecker, ed. (New York: The New Press, 2004), 13.

⁸ U.S. Department of Energy, *United States Nuclear Tests: July 1945 through September 1992*.

⁹ For a summary of Cold War consequences, see Schrecker, *Cold War Triumphalism*, 10-22.

¹⁰ Though in their conventional definitions, “military” and “civilian” are inadequate for the purposes of explaining the history of the relationship between the atomic program and armed forces, it is impossible to do so without them. So, when used here, “military officers and their supporters” refers to the upper-echelon uniformed military and those civilians who supported military-style atomic development and other military objectives, particularly when in opposition to peacetime applications of atomic energy and resources. “Military” or “armed forces” are both less cumbersome than “the defense establishment”—a term that became customary after the passage of the NSA in 1947. Additionally, while each branch of the armed forces used atomic science in its own particular way and for its own purposes, enough commonality existed during the atmospheric era that the use of “military” is neither an oversimplification nor inaccurate. Common to all branches were: the privileging of military objective over strictly civilian interests and the promotion and use of science, engineering, and technology for military applications.

¹¹ William O. Douglas, “The Black Silence of Fear,” *New York Times Magazine*, January 13, 1952, 7.

to was inseparable from the relationship that developed between the military and the atomic program in the immediate aftermath of World War II. Douglas's "drift" was a consequence of the continuation of the Manhattan Project into the postwar period, the use of atomic secrecy, and the use of the atomic program in the immediate aftermath of the war by Navy and Army officers interested in helping their branches achieve postwar domestic goals. This investigation of the nature of the relationship between the atomic program and the armed forces, the context for its formation and evolution, and the factors that energized it, discusses the centrality of that relationship to the Cold War state. It focuses on what I argue were key ingredients in postwar military expansion and their role in creating the conditions that caused the atomic program to become unnecessarily hazardous, a set of techniques, or strategies of control, that gave military officers and their supporters the tools they needed to monopolize the atomic program and to use it, without interference, to achieve their postwar domestic goals.¹²

Beginning at the end of the war, military officers piggybacked their short-term domestic goals onto national security, using strategic necessity as a rationale to monopolize atomic science and the program itself to build a militarily-supportive constituency. This was a classic case of militarization. In his 1950s era study, sociologist C. Wright Mills criticized the military's postwar influence. He argued that a troika composed of military, industrial, and political elites had come to dominate American politics and society. There, Mills defined "militarism" as:

[A] case of the dominance of means over ends' for the purpose of heightening the prestige and increasing the power of the military. This is, of course, a conception from the standpoint of the civilian who would consider the military as strictly a means for civilian political ends. As a definition, it points to the

¹² I use the terms "strategies," "practices," and "techniques," interchangeably.

tendency of military men *not* to remain means, but to pursue ends of their own, and to turn other institutional areas into means for accomplishing them.¹³

Mills's examination of mid-twentieth century power brokers and their interrelationships showed how the upper echelon used their standing and connections to shape national politics in mutually advantageous ways. Historians of the military and of the atomic program have, like Mills, focused on the significance of the elite and politically prominent, but have been less likely than Mills to attribute their behavior to self interest. Instead, they have portrayed them as either prescient or obedient to Cold War policy objectives. Both approaches help to explain the mechanics of empowerment and of a political field where an individual's ambition and political connections, howsoever motivated, were often enough to guarantee achievement. But individual achievement provides only a starting point for understanding how those achievements were sustained over time. One key to that sustainability was the relationship itself. As Charles Tilly argued in another context, to understand social change, "we must find the means of placing relationships rather than individuals at the center of the analysis."¹⁴ The melding together of the military's institutional structure with that of the atomic program in the aftermath of World War II fostered a continuity of not only the structures, but also the character of and the affiliations that comprised the Manhattan Project. That continuity provided stability for the relationship and for the achievement of common goals that otherwise would have been fractured by the efforts of elected leaders to restrict the military's influence and the plans some had to develop alternative, peacetime, uses for

¹³ C. Wright Mills, *The Power Elite* (London: Oxford University Press, 1956), 222, citing Alfred Vagts, *A History of Militarism* (New York: Norton, 1937).

¹⁴ Charles Tilly, *Big Structures, Large Processes, Huge Comparisons* (New York: Russell Sage Foundation, 1984), 32.

atomic energy. Over the longer term, the military's ability to benefit from the atomic program and weapons testing depended on a coalition between (a) the program, both as an organizational whole and as an amalgam of private and public interests, (b) those segments of the armed forces interested in the production and experimentation of weapons and the program, and (c) the militarily-supportive constituency that developed within the AEC. If this tri-partite arrangement is broken down into categories of interest, the result is not a dichotomous civilian/military alliance, but a partnership of program administrators and military officers cooperating together for independent but mutually beneficial reasons to develop and produce atomic weapons.

Synergy

The most significant threads in the fabric of the Cold War state came together during the immediate postwar period when a handful of Army and Navy officers first began to use atomic science for domestic political purposes. The expansion of the armed forces, their increasing reliance on nuclear weapons, and risky nuclear experimentation are factors that began with a synergistic relationship that developed at an institutional level between the U.S. military and the atomic program. The relationship was one that provided the industrial concerns and public institutions which had contracted with the Manhattan Project the chance to continue benefiting economically from those connections after the war and simultaneously gave military officers a pipeline to the atomic program's resources, including material support that helped offset diminished appropriations as well as access to a network of influential private supporters.¹⁵ It was

¹⁵ The costs itemized in *Nuclear Navy* for the Navy's research and development of nuclear propulsion between 1946-1963 provides but one example of how AEC costs offset military expenditures. In millions of dollars, the AEC spent nearly four times the amount that the Navy spent. Research and Development for the Navy's program cost the AEC \$951.8, and the Navy, \$240.3. Hewlett and Duncan, Appendix 3, 402.

this relationship that gave the military a chance to build up the slim base of political capital it had at the end of the war, to weather legislative reversals of fortune and antimilitary sentiment, and to acquire the political influence it needed to make the most of postwar circumstances, including anticommunism, the political tug-of-war between Congress and the president, and the growing belligerence of the Soviet Union. And, it was the military's use of the program for domestic purposes that caused it to become needlessly hazardous to human life and destructive to the environment. The extra-legal and extra-constitutional authority military officers and their supporters came to wield over atomic energy (a) nullified the civilian authority established under the AEA; (b) led to accelerated and unnecessarily-high production requirements and reckless experimentation; (c) interfered with the ability of elected leaders to exercise oversight and to make knowledgeable decisions about the program; and (d) fueled the arms race by undermining diplomacy during the Eisenhower administration.

The formation of that relationship, its viability, and its implications for the future went practically unnoticed by elected leaders who were preoccupied at war's end with the diplomatic consequences of the bomb, the possibilities for international control of atomic weapons, and the pursuit of domestic agendas, not the least of which was the need for legislation to manage the peacetime program. In the seventeen months before the AEA became law and the Manhattan Project relinquished its authority to the civilian AEC, Navy and Army officers received approval for, and conducted, maneuvers that involved the detonation of two atom bombs. The Navy called its experiment *Operation Crossroads* to symbolize the importance of atomic weapons to its future.¹⁶ That experiment was a

¹⁶ *Operation Crossroads* has been considered to have had little significance beyond the immediate postwar period and has gone down in history as the event that first displaced, and then led to radiation-induced

turning point for the nation's atomic program too. *Operation Crossroads* steered the peacetime atomic program down a weapons-oriented path and established the conditions through which the military monopolized atomic resources even as Truman and members of Congress were settling authority over the atomic program in the hands of a civilian commission.

There are two likely objections to this line of argument. One, related to the national security justifications previously discussed, is that without an existing arsenal of weapons on hand, national security objectives required that the program be dedicated to weapons production from the outset. Official historians have used the fact that the objective to develop weapons remained little changed when the AEC assumed authority over the program to make this assertion. But that observable continuity, especially in the absence of any formal or officially articulated directive, was also the result of the continuance of General Leslie Groves's authority into peacetime and the de facto continuance of the Manhattan Project well into the peacetime years because of continuities in personnel between the Manhattan Project and the postwar armed forces. To cite just one example, when Admiral Ernest King established the Navy's Division of

illness among Bikini islanders. The earliest history of the Operation is the official one, W. A. Shurcliff, under the Direction of Commander of Joint Task Force One, *Operation Crossroads: The Atomic Tests at Bikini Atoll* (New York: Wm. H. Wise & Co., Inc., 1947). Jonathan Weisgall's account is comprehensive, based on information and documents he gathered while representing the Bikini Islanders in their suit against the U.S. government. Weisgall, *Operation Crossroads* (Annapolis: Naval Institute Press, 1994). Titus does not dispute the Navy's justification for the Operation in her summary, *Bombs in the Backyard*, 36-43. In two articles, Lloyd J. Graybar argued that the Navy's goal with Crossroads was not, as some contemporary critics claimed, an exercise in atomic diplomacy but was, instead, no more than what the Navy said it was: a test of ships against bombs. "Bikini Revisited," *Military Affairs*, 44 (1980):118, and "The 1946 Atomic Bomb Tests: Atomic Diplomacy or Bureaucratic Infighting" *The Journal of American History*, 72 (1986): 888-890. Barton Hacker, a historian hired by the government to detail its attention to radiation safety during the Manhattan Project and the Cold War program, relied upon the official record—"Crossroads adhered to Manhattan safety procedures." *The Dragon's Tail*, 138, and *Elements*, 4-5. Herken mentioned that the Operation was a "source of embarrassment" in *The Winning Weapon*, 225; and it is featured in Richard Miller's book, *Under the Cloud*, to explain the death of Louis Slotin, exposed to a lethal dose of radiation while trying to perfect an underwater trigger for "Baker," 68.

Special Weapons to investigate atomic potential, the Division's chief, William H. P. Blandy, brought in Rear Admiral T. A. Solberg, who had been a liaison officer with the Manhattan Project during the war, and also Commodore William S. Parsons, who had worked at Los Alamos, "[tying] the division ... to General Groves and the Manhattan Project."¹⁷ Manhattan's influence also continued through the postwar formalization of contractual relationships among the program's wartime constituents, private industry, and public institutions and laboratories. Between August 1, 1946, when the AEA was signed and January 1, 1947, when it took effect, Groves continued to direct work at Los Alamos, sending a letter that September to the laboratory to begin development of a penetrating weapon that would detonate underground.¹⁸ When the AEA took effect in 1947, the AEC assumed those contracts and directives that Groves had initiated. In a coincidental but telling example, on August 1, the same day that Truman signed the AEA, the Army invited a group of physicists to Los Alamos to acquaint them with the laboratory's ongoing projects and their plans for the future.¹⁹ And, simultaneous with the Act's taking effect, key Manhattan personnel, especially Groves and his assistant Kenneth Nichols, took positions with the AEA's Military Liaison Committee and its defense establishment

¹⁷ Hewlett and Duncan, *Nuclear Navy*, 24.

¹⁸ The comment was included in background information included in a memorandum supporting an underground weapons test. Though promoted as a means of testing a 'penetrating' weapon, the text suggests that Groves was not only interested in weapons development, but interested in reducing the amount of radiation emitted from experimental detonations. "In September 1946, the Commanding General of the Manhattan Project, primarily as a result of the importance of residual radioactivity demonstrated by the underwater Bikini test, addressed a communication to the Los Alamos Laboratory stating the need for a penetrating atomic weapon." "Memorandum for the President" from Executive Office of the President, National Security Council, October 27, 1950, 1.

¹⁹ See "Noted Physicists Asked to Nuclear Conclave on Hill," *Santa Fe New Mexican*, August 1, 1946.

parallel, the Armed Forces Special Weapons Project.²⁰ Through continuities in responsibility and personnel, the AEC formalized and institutionalized for peacetime purposes the wartime structure. The Manhattan Project was not replaced—it was absorbed. With ex-Manhattan administrators husbanding the AEC program from the inside out, and with Manhattan affiliated officers embedded in the divisions the armed forces created to explore the potential of atomic science, a focus on weapons development and the monopolization production facilities and resources was all but guaranteed. In the year following the Act’s passage, the JCS’s weapons and material demands were so large that one militarily-supportive member of the JCAE wrote asking the Chiefs to substantiate their request for 400 Nagasaki-type bombs.²¹ By 1950, seven defense-related facilities had gone into production and the number of bombs in the arsenal had increased from 11 to 369.²² Any notion that this buildup of atomic weapons was a product of the policy objectives of the Truman administration or JCS defensive strategies has already been dismissed by historians who have shown that neither Truman nor the JCS had yet engaged in long-term strategic planning that included atomic weapons.²³ This, and the objective for peacetime development written into the AEA, have

²⁰ Groves and his deputy both became members of the Armed Forces Special Weapons Project. “Memorandum to: Chief of Staff, United States Army; Chief of Naval Operations; Chief of Staff, United States Air Force” October 21, 1947. RG 218, Records of the U.S. Joint Chiefs of Staff, Central Decimal File, 1948-1950. 471.6 (8-15-45) Sec. 7-10. Box No. 223, HM 1994.

²¹ “29 October 1947” Memorandum for Chairman, Atomic Energy Commission: Thru The Military Liaison Committee from Leahy” RG 218 Records of the U.S. Joins Chiefs of Staff, Central Decimal File 1948-1950, 471.6 (8-15-45) Sec. 7-10; Box No. 223, HM 1994; “1-15-48 B.B. Hickenlooper, Chairman, Joint Committee on Atomic Energy to The Honorable James V. Forrestal, Secretary of Defense” RG 218 Records of the U.S. Joint Chiefs of Staff, Central Decimal File 1948-1950, 471.6 (8-15-45) Section 8; Box No. 223.

²² Kevin O’Neill, “Building the Bomb,” *Atomic Audit*, 102-104; 589-594.

²³ As Rosenberg’s study of the Joint Chiefs of Staff demonstrates, the JCS took their time integrating atomic weapons into their strategic planning; it was, “essentially a study in the failure of regulation.”

tended to support the view that Truman's 1950 decision to proceed with H-bomb development was a transformative moment, one that caused an escalation in weapons production and caused the AEC to focus its attention on the weapons side of the program.²⁴ Given the history of weapons production, and evidence in this chapter that the program's resources were already being monopolized by military production, it makes sense to consider that from an operational standpoint, Truman's H-bomb decision and the Korean War were not transformational events but instead were ones that justified the acceleration of a process of militarization of atomic science and a virtual military monopoly over atomic science that had been underway since the end of World War II. Additional evidence that atomic science had already been commandeered by the military by 1949 is provided by the fact that the one transformation that did occur after the Soviet's development of a nuclear weapon was that recommendations approved under NSC-68, a re-analysis of national security policy, called for the military to move "away from sole reliance upon nuclear weapons."²⁵

Another anticipated objection is that weapons development and experimentation were scientifically necessary. Just as they had with their appeals to national security, military officers and their supporters—beginning in 1945 with planning for *Operation Crossroads*—exaggerated the scientific necessity for detonations. The scientific necessity

Rosenberg, "The Origins of Overkill," 8. Herken built on Rosenberg's study to argue that the disjunction between what the JCS had in mind and what Truman was counting on diplomatically could have had tragic results. See Herken, *The Winning Weapon*, 200.

²⁴ As discussed in the introduction, the typical landmarks for the peacetime program are the Atomic Energy Act of 1946, the finding that the Soviets had detonated an atom bomb in 1949, and the outbreak of the Korean War. For examples, see Anders, "Introduction," *Forging the Atomic Shield*, 3-5, *Bombs in the Backyard*, 46, 55.

²⁵ Herken, "A Most Deadly Illusion," 74.

for weapons testing became a useful hedge against the possibility that national security would not be enough to justify the public testing of weapons. Science, in fact, could have been served with secret, or non-public, experiments conducted at the Pacific Proving Grounds, as was done at Eniwetok in 1948. The military's weapons tests seem, in fact, to have been more of a hindrance than a help. In 1953, scientists at Los Alamos complained that the military's use of the Nevada Test Site for, among other things, maneuvers and detonations staged for media consumption, was, in fact, jeopardizing nuclear weapons development. Norris E. Bradbury, the Director of Los Alamos, argued that the military was monopolizing the Nevada Proving Ground to hold "civil defense effects tests, troop ... maneuvers, and for the reportorial press." If "the trend continued," Los Alamos scientists, he said, would "abandon this site ... because ... the military [had] taken it over."²⁶ The scientific argument, like the national security one, that the military and its supporters used, when viewed in light of the resistance of elected officials and scientists alike, lends support to the argument that it was the military and its supporters' desire for publicity that increased the number of military weapons tests and, consequently, hazardous production and fallout. Throughout the atmospheric era, the military used its authority over the program to test weapons as exercises in the accumulation of political influence.²⁷

Such "experiments" were more than experiments in the usual sense, they were spectacles staged to serve the domestic goals of the armed forces and their supporters.²⁸

²⁶ Drs. Norris E. Bradbury and Darol Froman, Los Alamos Scientific Laboratory, "Summary of Minutes, Committee on Operational Future, NPG," Santa Fe Operations Office, [SFOO] January 14, 1953.

²⁷ See Weisgall, *Operation Crossroads*. For continental testing, see Miller, *Under the Cloud*.

²⁸ For an articulation of "science as spectacle" applied to Project Chariot, a plan devised by Lawrence Livermore Laboratories and Edward Teller to use nuclear weapons to excavate a canal in Alaska, see Scott

From conversations that President Eisenhower conducted during April and May 1956 we know that bomb tests were not serving the national security goals that he had in mind. On at least two different occasions, Eisenhower expressed exasperation with the Army and with the AEC and their emphasis on building bigger bombs. What was needed, he said on April 23, were smaller tactical type weapons, “of less danger to humanity,” weapons that made “the most efficient use of fissionable material” and that were suited to “present” security.²⁹ As Eisenhower made those remarks, the AEC and the military were finalizing arrangements for *Operation Redwing* in the Pacific, a series composed of seventeen shots, including the first airdrop of a thermonuclear device, Cherokee. Cherokee was planned as a military effects test that would also provide an opportunity to explore airborne delivery of an H-bomb—a feat accomplished by the U.S.S.R. the previous year.³⁰ With a Special Observer Group that included sixteen reporters and seventeen civil defense administrators, it may have been successful politically as a response to the U.S.S.R., but it failed the practical test. Because the Air Force’s B-52 that was delivering the weapon mistook another island’s buildings for the targeting site, Cherokee landed more than four miles from the specially-constructed buildings and instrumentation installations that would have provided the weapons effects data that was the experiment’s

Kirsch and Don Mitchell, “Earth Moving as the ‘Measure of Man’: Edward Teller, Geographical Engineering, and the Matter of Progress” *Social Text* 54 (1998):100-134. As Kirsch and Mitchell note, “scientific experimentation has long been a social convention geared toward generating consent.” 107-108.

²⁹ Eisenhower’s memorandum of conversation with Secretary Hoover, April 23, 1956. (Eisenhower contacted Hoover after having been unable to reach secretary of defense Radford or secretary of state Dulles by telephone.) *Diaries of Dwight D. Eisenhower, 1953-1969* (Frederick, MD: University Publications of America, 1986, 1987). Eisenhower reiterated the points during his April 25, 1956, press conference. See “Weapons Testing,” the *Bulletin of Atomic Scientists*, June 1956, 230. See also May 24, 1956, *Diaries of Dwight D. Eisenhower, 1953-1969*.

³⁰ Abundant information is available on the web about atmospheric weapons tests. See, for example, www.atomicforum.org (last accessed 8/17/2007).

purpose. On May 24, three days after the Cherokee mishap, and presumably aware of the targeting error, Eisenhower reiterated his belief that it was not bombs, and especially not those in the thermonuclear class, but small tactical weapons, that should be the focus of atomic weapons production. He despaired of accomplishing this shift in focus from the inside—suggesting instead that an outside advisory group should be formed to work on devising new strategies that would employ small, tactical weapons.³¹

By 1957, the military and the AEC were engaged in an effort to elicit public support for a course of action that elected leaders were increasingly finding untenable. That year's regular testing series was held from May to September in Nevada, and tactical weapons were included in the twenty-nine tests of the *Plumbbob* series. Because of the large number of tests, and the detonation of thermonuclear devices, *Plumbbob* released more than twice the amount of radioiodine as fallout than any other testing series. At least 16,000 personnel participated in troop maneuvers, maneuvers that shared billing with individual *Plumbbob* shots in the stories of reporters invited to cover aspects the tests. At a time when atmospheric testing was becoming more controversial and testing was threatened, *Plumbbob* became a way for the military to remind the public of the national security implications of atomic weapons. The AEC and the military used the series to fuel public anxiety and confidence simultaneously: reinforcing the fearsomeness of atomic weapons while demonstrating military mastery over them. *Plumbbob* alone,

³¹ Discussion with Secretary Hoover on “the matter of no more hydrogen bombs.” See also May 24, 1956, conference with Generals Radford, Taylor, and Goodpaster, both in *Diaries of Dwight D. Eisenhower, 1953-1969*.

according to a recent National Cancer Institute study, likely caused 38,000 cases of thyroid cancer and 1,900 deaths.³²

There was nothing inevitable about this process. Had the Truman administration pursued with more rigor the proposal for domestic legislation that an Interim Committee had formulated during the final months of the war, or had Congress or the administration refused the Navy's request to experiment with atomic weapons until after the problem of domestic control had been solved, the history of the atomic program might have taken a different path. As it turned out, however, legislation was delayed, President Truman extended the Manhattan Project's authority in the interim, and the Navy received approval for its experiments and began a yearlong process of planning its atomic maneuvers. The experiences and events that occurred during those seventeen months gave military officers confidence in asserting their authority during peacetime, and they did so in ways that not only immunized them against the assertion of civilian authority that would be established under the AEA but also tested the tolerance of the public and elected leaders to the peacetime expression of military authority.

This critique of *Crossroads* as a significant moment in the peacetime history of the program differs from the typical portrait of *Crossroads*. The *Operation* is generally considered something of an anomaly in atomic history, the last gasp of the Manhattan Project, completed before the AEC took charge of the program in January 1947, it contributed to a fundamental shift in peacetime expectations. As a conduit between the wartime Manhattan Project and the peacetime program that funneled Manhattan-style techniques of control into peacetime, *Crossroads* was a first step in the indoctrination of

³² "Chart of fallout exposure from Plumbbob," *National Cancer Institute Study Estimating Thyroid Doses of I-131 Received by Americans From Atmospheric Nuclear Bomb Tests* (Washington, D.C.: National Cancer Institute, 1997).

elected leaders, members of the media, and the American public to the peacetime expression of military authority. By approving the *Operation*, and by failing to scrutinize the way it was conducted, elected officials tacitly acquiesced to a postwar increase in military influence and paved the way for the militarization of the atomic program and Cold War mobilization.

Officers seeking to gain domestic advantages from the program and authority over it benefited at the outset from the ability to draw, during the immediate postwar period, upon the wartime Manhattan Project for material and technological resources. Some of the most useful of the resources they adopted at war's end were strategies of control that had given Groves the ability to solidify his own autonomous authority over the Manhattan Project. Two of these strategies—atomic secrecy and dependence on congenial scientific expertise—are discussed in Chapter Nine, below. The focus of Chapter Three is on another set used by Groves and other influential military officers such as James E. Forrestal, Secretary of the Navy and later Secretary of Defense: appeals to national security, exaggeration of military urgency and necessity, the use of subterfuge and deceit, and manipulation of the media. With these, officers garnered private support, secured appropriations, avoided civilian oversight, and shaped public opinion to further the goals of their respective branches in ways that would have been significantly more difficult, if not impossible, without their use.

This is not the first time that the Project and Groves's management style have been implicated as a "prototype" for the national security state, but earlier histories have done little more than benignly mention Groves's lasting influence.³³ Others have

³³ The argument that Manhattan was broadly transformative is not a new one. Peter Bacon Hales's study of the project argues that it laid the groundwork for the subordination of democratic institutions. He finds that

examined Groves's stature as a postwar advisor and his influence on postwar policy.³⁴ This is, however, the first study to hone in on the practical influences that flowed from the wartime project into the peacetime one and the first to adopt a multidisciplinary approach to investigate specific techniques of control, to consider the self-conscious and unself-conscious mechanics of their integration and use. It also evaluates their effect on the program and military expansion, and, thereby, to demonstrate that policy—understood as the national security objectives of elected officials—was irrelevant except as an authorizational umbrella for a program that, operationally, played by its own rules.

From the vantage point of William Sewell's structural theory, Manhattan-style strategies of control can be understood as historical artifacts: strategic and operational resources no different than the material ones used in the building of the bomb and as transposable into the peacetime program as the production facilities at Hanford, the laboratory at Los Alamos, or the techniques used by engineers and scientists to build the

the Manhattan Project's engineering of space to accommodate weapons creation and production resulted in social and scientific engineering, space that created a sphere of power that outlived the war, one that "subsumed" democratic institutions. *Atomic Spaces: Living on the Manhattan Project* (Urbana: University of Illinois Press, 1997), 68-69. Barton J. Bernstein, in agreement with Groves's biographer, Robert S. Norris, says that Groves established something of a "prototype" with Manhattan, that in its "heightened secrecy, its substantial compartmentalization, its insulation from congressional scrutiny, its secret budgets hidden in other appropriations, its significant security and intelligence forces, and the public's unawareness" were "themes that became even more significant in the Cold-War American state." Bernstein has also pointed out Groves's tendency to use secrecy in less-than-legitimate ways. "[A]s a bureaucrat, he had known how to try and use secrecy not simply for national security but to block scrutiny and bar interpretations he did not like." See "Reconsidering the 'Atomic General': Leslie R. Groves, *The Journal of Military History* 67 (2003): 901, 917. Robert S. Norris, *Racing for the Bomb: General Leslie R. Groves, The Manhattan Project's Indispensable Man* (South Royalton, Vt.: Steerforth Press, 2002).

³⁴ Herken discusses Groves's postwar influence in "'A Most Deadly Illusion'," 51. Herken argues that Groves's opinions helped convince President Truman as well as Bernard Baruch, chief of the U.S. delegation to the UN, that a policy of excluding other countries, particularly the Soviet Union, from acquiring ore would be an effective way of guaranteeing a U.S. monopoly on atomic weapons. Groves also fueled public anxiety about atomic secrets and Soviet spies, and that, combined with his influence over postwar policy, likely "intensified" the Cold War, 74.

bomb.³⁵ The perpetuation of the structural organization of Manhattan, as well as the use of wartime strategies long after the war had ended, meant that for workers there was so little difference between wartime and peacetime that conflicts between the use of such strategies of control and peacetime constitutional principles must have been hardly evident.³⁶ The strategies were “effects” of the “schema,” the structural organization of the Manhattan Project, with their use determined by the motivations that generated them and their value, a conceptual measure based on their worth to the schema.³⁷ To Groves, atomic secrecy was a resource valuable enough to outlive the schema that initially generated it. Groves drew upon Atomic Secrecy during the war to dodge congressional scrutiny of the wartime project and again, many years later during Eisenhower’s term, to persuade the president not to include Manhattan records in a blanket de-classification of World War II documents.³⁸ Because of (a) the continuation of the Manhattan Project and Groves’s authority over it during the seventeen months between the end of the war and the takeover of the program by the AEC, and (b) the Navy’s dependence on Manhattan and Groves’s strategies of control to receive approval for and to hold *Operation Crossroads* in 1946, it was not only the “effects” of the schema that survived, but the schema itself. As valuable as the strategies of control investigated here were to Groves

³⁵ Sewell, “A Theory of Structure: Duality, Agency, and Transformation,” *The American Journal of Sociology* 98 (1992): 1-29.

³⁶ As Peter J. Westwick discussed in his evaluation of the effect of secrecy on the National Laboratories, “Secrecy contradicts the ideals of both science and democracy.” “Secret Science: A Classified Community in the National Laboratories,” *Minerva* 38 (2000): 363.

³⁷ Sewell, “A Theory of Structure: Duality, Agency, and Transformation,” 11-12.

³⁸ Bernstein, who notes that Groves illegitimately used secrecy to persuade Eisenhower not to release World War II records that would have included documents from the Manhattan Project: “[A]s a bureaucrat, he had known how to try and use secrecy not simply for national security but to block scrutiny and bar interpretations he did not like.” See “Reconsidering the ‘Atomic General,’” 917.

and his administration of atomic science during the war, they were even more so after the war when political expression opened up new reasons for using them.

Employed after the war, wartime strategies of control became the primary means for the military to begin using the program and the bomb to generate support for military expansion. An example of how “military urgency” was used illustrates the importance of such strategies during the politically fertile months following the war and offers a glimpse into how significant *Crossroads* was as a mechanism for the transmission of such strategies into the administration of the peacetime program. Though military urgency would have been the one practice that might have been expected to lose its utility and evaporate once it became clear that Japan would surrender, it did not. Instead, Navy officers began to employ it within days of the bombing of Nagasaki in their campaign to secure approval for *Operation Crossroads*. As part of that campaign, military urgency was so effective that it not only helped to ensure that the Navy would receive approval for the *Operation* but it gave the Navy what it needed to overcome the objections of Groves himself, who argued against the *Operation* on the grounds that the experiment would be impossible to secure and liable to reveal state secrets.³⁹ This example not only illustrates differences between among officers over what was necessary, but also demonstrates that a technique used legitimately and sometime illegitimately by Groves

³⁹ Among those whose opinion might have prevented the Operation were James Bryant Conant, President of Harvard and a wartime science advisor, and I. Bernard Cohen who did not object because the “experiment” would align with their own interest in ensuring that the American public had enough understanding of atomic science and the implications of the atom bomb so that they could reach “wise decisions” and “discharge their responsibilities wisely” Henry D. Smyth, *Atomic Energy for Military Purposes* (Washington: Stanford: GPO: Stanford University Press, 1945; 1989), 226, cited by Michael Aaron Dennis, “Historiography of Science: An American Perspective,” *Science in the Twentieth Century* (Amsterdam: New York: OPA: Routledge, 1997; 2003), 15. Dennis points out that Thomas Kuhn was influenced by scholars and scientists who argued that a history of science was necessary and notes also the irony inherent in the efforts of Smyth, Conant, and others to disseminate information while, as government agents, they were responsible for ensuring that much of what they did know would not be revealed.

during wartime and amidst the pressures of wartime could successfully be employed during peacetime, when a national goal was not at stake but rather an institutional one. When Navy officers used “military urgency” to receive approval for *Crossroads*, they did so in response to the threats of demobilization, reorganization, and the possibility that atomic weapons could marginalize the Navy as a defensive force. Their persuasiveness demonstrated, at least to the officers who used military urgency as a justification, that atomic experiments could be, in a sense, packaged and sold. Thus, even Atomic Secrecy, ostensibly the most important national defense issue at the end of the war, was not an insurmountable hurdle to the use of atomic science for political gain.

Over time, military urgency and the other strategies embedded within the program’s structure contributed no less to the program than its material inventory did and became increasingly consequential at the operational, administrative, and finally at the cabinet level. The linear increase in the consequences of these practices reflects, on the one hand, the routinization of their use up the chain of command; and, on the other, the successful modulation of their use by military officers and their supporters who, sensitive to changing circumstances, employed them during Militarization in different ways to achieve their goals. To explain that aspect of the process, the following chapters tie these practices and their significance to the political field (Chapter Five) in two distinct phases: Integration (Chapter Four) and Consolidation (Chapter Six).

The phase of Militarization began before the end of the war and continued through 1946 when the military ostensibly handed over control of the program to the AEC’s civilian commission. During this seventeen-month period, Navy and Army officers depended upon the moribund Manhattan Project as a material and strategic

resource for the planning, promotion, and execution of the first peacetime experiment with atomic weapons. By the end of those extravagant and highly publicized maneuvers, officers had gained experience in the tactical use of Manhattan-style strategies, and gained confidence in their ability to use them, the bomb, and the atomic program to secure political influence. A period of Integration followed, during which officers innovatively employed Manhattan techniques behind the scenes, and to greater effect, following passage of the Atomic Energy Act. With the cooperation and consolidated support they received from the reconstituted Joint Chiefs of Staff and influential supporters in the private sector, military officers reinforced the continuities between wartime and peacetime by filling key advisory positions created under the Act with Manhattan veterans such as General Groves and his wartime assistant Kenneth Nichols. During this phase, the military cultivated enough support from the influential Joint Committee on Atomic Energy to monopolize atomic resources. By 1949, military officers and their supporters had successfully undermined and offset the AEC's civilian authority and established de facto authority over nearly all aspects of the program. The final phase—Consolidation—began as Army and Navy officers leveraged their now-considerable congressional support to force the public transformation of the program. While waging a behind-the-scenes promotion for the rapid expansion of the military side of the program, officers and their supporters stepped up their efforts to discredit, and thus unseat or force the resignation of, AEC Chairman David E. Lilienthal, the most outspoken supporter of civilian authority and civilian application of atomic energy. These efforts paid off when paired with publicity that capitalized on domestic anti-communism, the anxieties provoked by communist expansion abroad, and the Soviets' atomic success.

They culminated in Truman's decision to begin development of a hydrogen bomb, a dramatic increase in funding—and a resulting increase in the value of being recognized as controlling or participating in the business of atomic science. It was at this time that Lilienthal complained that the AEC became “nothing more than a contractor to the Department of Defense.”⁴⁰ What Lilienthal perceived as the beginning of militarization was, in reality, the final step in a process that had begun at the end of the war. With Consolidation came Lilienthal's resignation; the seating of his replacement, Gordon Dean, a favorite of the military's congressional supporters; the creation of the Nevada Test Site and with it, the beginnings of routine continental testing, military maneuvers, and fallout. With it, too, came Atomic Governance—an era during which the collaboration between the cabinet-level AEC Chairman and the Joint Chiefs of Staff resulted in an influential coalition that drove atomic weapons production and experimentation to unnecessarily risky excesses; undermined diplomacy and thwarted arms control negotiations; and used manipulation and deceit to prevent the president and Congress from performing their responsibilities under the constitution and, thereby, compromising the sovereignty of the American people.

The point is not that these particular practices began with Groves and the Manhattan Project, for certainly they did not, or even that these and similar strategies of control cropped up in both wartime and peacetime programs. It is, instead, to identify some of the practical factors that energized the wartime program and to examine their influence upon the peacetime one; to evaluate the mechanics of their integration and how their routine use influenced the decision-making that caused the program to become such a hazardous one; and to explain how their use at the policy-making and cabinet level

⁴⁰ Cited in Wang, *American Science*, 237.

affected the ability of elected leaders to discharge their responsibilities to the American public. When measured alongside the standards of the time—the social values, available scientific information, and laws—militarization of the atomic program was wasteful of the program's resources, caused it to become unnecessarily hazardous, and led to the erosion of constitutional parameters of authority, responsibility, and rights.

Officers and Officials

This relationship drew its energy from connections between military officers and civilian administrators that were more collaborative than the dominant Cold War thesis allows. Generally, the domestic dimension of the Cold War is understood to have been one shaped by conflict and a disruption of the civilian-military balance of power brought about by partisanship and provisions included in the National Security Act that gave the military new opportunities for political expression.

Most historians interested in the postwar era agree that although some military expansion and atomic weapons development were necessary, there were in reality a number of political, economic, and systemic factors besides Cold War exigencies that contributed to the scale of military expansion and atomic development.⁴¹ During the early years of the Cold War, when the posturing of military officers at congressional hearings and at public events had become commonplace and the domestic agenda was being sacrificed to defense, scholars began to look back to World War II and to postwar legislation for reasons why the military had grown so influential. Sociologist C. Wright

⁴¹ Those who do not, or only reluctantly do so, are official historians. Their failure to diverge from a rational actor approach is understandable given that they tend to rely on an official record that is likely to reveal little more than conscientious obedience to legislative mandates and administrative lines of authority. Less understandable is their steadfast reluctance, manifest in their reviews of pertinent literature and in the absence of any revisionary effort, to take seriously new interpretations. See for example Jack M. Holl's review of Titus, *Bombs in the Backyard* in *Journal of American History* 74 (1987), 1093; and his review of Peter Douglas Feaver, *Guarding the Guardians* in *American Historical Review* 99 (1994): 687.

Mills was one of the first to argue that the escalation of the armed forces was not strictly military in nature, but was an expression of the influence concentrated in a class-based troika of elite businessmen, politicians, and military officers who had risen to such influential positions that they had begun to take over the government.⁴² Samuel P. Huntington, a political scientist, argued that the war had contributed to the de-professionalization of the armed forces and that it was this loss in status that had driven officers into the political field. Huntington pointed to the opportunities for political engagement written into postwar legislation and found that those opportunities allowed military officers to undermine executive and congressional authority.⁴³ For that reason, Huntington concluded that postwar legislation to limit the authority of the armed forces had been only “partially successful.”⁴⁴ In hindsight, that 1957 assessment was overgenerous. In fact, so much subsequent attention was paid to understanding why elected leaders had been so unsuccessful in limiting military expansion and authority that out of the “Realist” school of International Relations a field interested in domestic history was born: “civilian-military relations.”⁴⁵ Though the dynamic that gave the field its name

⁴² C. Wright Mills, *The Power Elite*.

⁴³ Because of the Hatch Act of 1939, upheld by the Supreme Court in 1947, military officers had more opportunity to participate publicly than did civil servants and administrators employed by the federal government.

⁴⁴ Samuel P. Huntington, *The Soldier and the State: The Theory and Politics of Civil-Military Relations* (Cambridge: The Belknap Press of Harvard University Press, 1957), 317. *The Soldier and the State* is a classic in the “realist” school of political science where conflict is a given whether between states or the institutions of a state. This brief gloss is about all that a historian can say with certainty given controversy in the field about how far realism can be stretched. See Jeffrey W. Legro and Andrew Moravcsik, “Is Anybody Still a Realist?” *International Security* 24 (1999): 5; Peter D. Feaver, et al, “Brother Can You Spare a Paradigm? (Or Was Anybody Ever a Realist?),” *International Security* 25 (2000): 165.

⁴⁵ Huntington argued that the best way to achieve an effective balance of civilian authority and military effectiveness would be to re-adopt a system of military organization that was guided by “authoritative policy guides” to professionalize the military. Mills, on the other hand, can be seen to have found military officers altogether too “professional” and who, as members of a brotherhood that they participated in along

is broad enough to encompass a wide range of topics, it was anchored in the controversy over postwar control of atomic science and the contention by some lawmakers that the legislative options amounted to a straightforward choice of “civilian versus military” control.⁴⁶

Through the 1960s and 1970s, atomic weapons remained in the background as scholars studied the armed forces and military influence. Those analyses explained expansion as a result of relationships established between congressmen and officers; and, as some would have it, the military’s incursions into the ostensibly “civilian” realm of political engagement.⁴⁷ The high water mark for criticism of this sort occurred during the Vietnam War. In a 1972 review essay, William Appleman Williams launched a defense

with leaders in government and industry, had neglected their responsibilities in favor of achieving their own ambitions and elevating the status of their class.

⁴⁶ For a discussion of the political controversy, see Peter Douglas Feaver, *Guarding the Guardians*, 87-104.

⁴⁷ Paul Boyer is one who has made the linkage between the political use of crises escalation and Cold War mobilization. In his study of atomic age fears, Boyer pitted scientists against the Truman administration and conflated Truman’s political uses of crises and overlooked his earlier efforts to restrain military exuberance, over-homogenizing the Truman administration and overestimating Truman’s ability to control the independent elements of his administration and the political climate. In his words, “The emotions they worked so mightily in 1945-1947 to keep alive and intensify created fertile psychological soil ... their rhetoric of fear continued to echo through the culture, to be manipulated by other people pursuing other goals. The scientists offered one avenue of escape from atomic fear, Truman offered another. Truman won.” *By the Bomb’s Early Light*, 106.

Daniel Ford disputes the notion that fear of atomic attack was a persuasive theme during the Cold War. Ford argues that fears were shortlived in the face of “American ebullience” and subsumed in what were, at the time, grandiose designs for peacetime applications of atomic energy. Ford’s reliance on periodicals and the imaginative hopefulness of scientists and some national leaders who discussed how atomic science could be beneficially exploited likely led him astray. Ford failed to examine the extent to which that rhetoric was designed as something of a balm for the fears that Boyer and Spencer Weart in *Nuclear Fear* found expressed in polls and American culture. Ford, *The Cult of the Atom: The Secret Papers of the Atomic Energy Commission* (New York: Simon and Schuster, 1982), 29-31.

For more recent analyses of how strategies to defend against a nuclear war affected politics and society, see John Kenneth White, *Still Seeing Red: How the Cold War Shapes the New American Politics* (Boulder, CO: Westview, 1997); and Andrew D. Grossman, *Neither Dead nor Red: Civil Defense and American Political Development during the Early Cold War* (London; New York, NY: Routledge, 2001), esp. 8-19, wherein Grossman discusses the creation of a “The Civic Garrison” and summarizes his argument for understanding civil defense as an exercise in federalism.

of the military, supporting in particular a core of officers who had remained disengaged from the political arena and blamed civilian policymakers for the heavy handedness of the armed forces.⁴⁸ In an analysis that overlooked the extent to which military officers had contributed to helping Americans decide what they did want, Williams argued that policymakers were primarily responsible for crisis escalation: the military had done no more than to “put their backs into giving U.S. what we said we wanted.”⁴⁹ Several years later, Bernard Brodie, one of the founders of RAND and the nation’s pre-eminent authority on nuclear strategy, agreed with Williams that the military had been unfairly singled out. In the wake of arms control negotiations, Brodie argued that whether from an ideological or technological standpoint, the military had been “with no significant exceptions, strictly consumers” while civilians, “working quite independently of the military” made “virtually all” of the practical, ideological, and strategic decisions.⁵⁰

⁴⁸ These included books about soldiers in general, an Eisenhower biography and his wartime papers, and the first of a two-part biography of MacArthur. See, for example, J. Glenn Gray, *The Warriors: Reflections on Men in Battle* (New York: Harper Torchbook, 1970); Ward Just, *Military Men* (New York, NY: Knopf, 1972); Sidney Lens, *The Military-Industrial Complex* (Cleveland, OH: The Pilgrim Press and The National Catholic Reporter); Seymour Melman, *Pentagon Capitalism: The Political Economy of War* (New York, NY: McGraw-Hill, 1970).

⁴⁹ Williams kept the civilian/military distinction while making another intra-military one that reflected the postwar development of a politicized faction within the military. For Williams, civilians needed to reassert their authority over ambitious, politicized officers while recognizing that the majority of military officers remained conventionally subordinate. “The only sure way to solve the problem of the military” he said was by “politically acting to create an America that will no longer be hated and feared.” William Appleman Williams, “Officers and Gentlemen” *New York Review of Books*, May 6, 1971. The military, and what made it different following the war, has been a topic of study since the early days of the Cold War. The climate of crises that prevailed during the formative years of the national security state meant that some of the most significant early studies were primarily philosophical ones, interested in reconciling a stronger and permanent military presence that some believed was necessary that took for granted the conventional division between “civilian” and “military.” C. Wright Mills was an exception, among the first to argue in *The Power Elite* that military expansion was not strictly “military” in nature but rather an expression of class based affiliations and the formation of a ruling elite composed of politicians, industrialists, and armed forces officers united by status based sensibilities.

⁵⁰ Bernard Brodie added an additional boundary-one at the level of responsibility and another at ideology. The military’s goal was, as ever, to use everything it had to win a war that now, to civilians, would be “intolerable.” Bernard Brodie, “Plenary Session Address” National Conference, Inter-University Seminar on Armed Forces and Society, University of Chicago, 1977. “The Development of Nuclear Strategy”

Implicit in this statement is an assumption that the military's purchasing power was provided by civilians through congressional appropriations.⁵¹

The fall of the Soviet Union and the declassification of Cold War documents contributed to bringing atomic history back into the civilian-military fold and the military came under the spotlight again. Practitioners, primarily political scientists, adapted their theories to investigating, among other issues, how technological advancements influenced decisions about the custody of atomic weapons, the effectiveness of organizational strategies developed to prevent nuclear accidents, and a Cold War history of the civilian-military balance of authority based on the decisions made during that time to use force.⁵² They, like other scholars who will be discussed presently, agree that (a) the most significant issue for policymakers concerned with postwar defense was the problem of achieving and maintaining an effective balance between civilian and military authority; (b) that except for the fact that the creation of the atom bomb made national defense a priority, nuclear weapons and the atomic program were of peripheral significance, on the sidelines of the competition for authority that arose between military officers and elected officials; and (c) that during the Cold War when imbalances occurred, it was primarily military officers, and not civilian officials or administrators,

International Security 2 (1978): 65-83. For more on Brodie and the significance of RAND to Cold War strategy, see Kaplan, *Wizards of Armageddon*, and Alex Abela, *Soldiers of Reason, The RAND Corporation and the Rise of the American Empire* (Orlando, FL: Harcourt Books, 2008), esp. 42-48.

⁵¹ An assumption that ignores what Brodie was certainly aware of, the "Black Budget"—a means of funding that avoids congressional oversight of top-secret national security projects. See Anthony S. Mathews, *The Darker Reaches of Government* (Berkeley, CA: University of California Press, 1978), 3.

⁵² Peter Douglas Feaver has achieved dominance in this field. The mentioned studies are Peter Douglas Feaver, *Guarding the Guardians*; Scott D. Sagan, *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons* (Princeton: Princeton University Press, 1993); and Peter Douglas Feaver *Armed Servants*. See also, Feaver and Christopher Gelpi, *Choosing Your Battles: American Civil-Military Relations and the Use of Force* (Princeton and Oxford: Princeton University Press, 2004).

who were the transgressors. The underlying assumption of these studies has been that, with a default preference for autonomy and an inherently opportunistic outlook, it was the military and its officers that needed to be corralled then monitored. Whether stated or merely implied, personality and behavior figure prominently on the military side of the equation and hardly at all on the civilian side. In such approaches, civilian responsibility has generally been held to be limited: a matter of drawing the appropriate boundaries between civilian and military authority through law or administrative regulation and then establishing organizational mechanisms so that those boundaries could be effectively policed.⁵³

In this field, just as it was for elected leaders at the end of the war, the distinction between civilian and military is understood as an organizational principle that reaches across ideological, constitutional, professional, and political lines. There are “irreducible...inherent” differences between the military and civilians that break down to different responsibilities.⁵⁴ As Peter D. Feaver put it, “civilians and the military are both imperfect judges of what is needed for national security ... [yet] in a democracy, civilians have the right to be wrong.”⁵⁵ Because of this, civilians have escaped the types of scrutiny directed at military officers. In what might be considered a “the king can do no wrong” approach, one measure of the civilian-military balance is evaluated according to a principle/agent theory that measures whether military officers “work”—do what civilians tell them to do—or “shirk”—act in a way that operates against or does not fulfill civilian

⁵³ Hence the importance of organizational theory. For an instructive summary, see Sagan, *The Limits of Safety*, 28-53.

⁵⁴ Feaver, *Armed Servants*, 59-61

⁵⁵ Feaver, *Armed Servants*, 65.

desires.⁵⁶ No such straightforward formula has been devised to evaluate the performance of civilian policymakers and administrators and thus the extent to which they carried out their responsibilities has been left out of a perspective that is anchored in an assumption that if civilians did not make the “right” decisions, then the most that can be said of them was that they were “wrong.” Though historically valid—both the AEA and NSA embody the assumption that one way to restrict military autonomy and influence was to subordinate the military to civilian authority, whether congressional or, in the case of atomic energy, to a civilian commission—the assumption has had historiographical ramifications, limiting how the history of the atomic program is understood.

In a field ostensibly devoted to figuring out how civilian policymakers and the military elite balance their responsibility and authority, the analysis of this balance of power has stopped on the civilian side where it begins: with a determination of what policymakers sought to achieve through legislation or policy changes, the decision by elected officials to grant a civilian commission authority over atomic energy or with subsequent decisions to authorize shifts in custodial control of weapons, for example, and then evaluating whether the procedures civilians adopted to achieve their goals were “right” or “wrong” based upon what the military elite subsequently did. It is a one-sided approach that has been useful for explaining breaches of responsibility on the military side of the equation.

But the atomic program was one that encompassed civilian and military purposes and to figure out how that program evolved requires recognizing that civilian responsibility did not stop with policymakers, congressmen, or even the AEC. Instead, its system of satellite management devolved authority onto administrators, who were

⁵⁶ Feaver, *Armed Servants*, 60.

responsible for everything from allocating atomic resources to managing weapons design, production, and experimentation. Setting aside that facet of the program has reinforced an artificial divide between civilian administrators and the armed forces and has contributed, if only in a passive way, to perpetuating the misunderstanding that the atomic program can be explained in light of policy. Moreover, it has helped to reinforce a conceptual division between the evolution of the atomic program (as administered by civilians) and the expansion of the armed forces (as fostered, in part, by the ambitions of military officers.) Just as Mills sought to understand Cold War mobilization by analyzing the factors that united disparate groups of individuals, the methodological solution is to set aside the categorizations based on assumptions that (a) military officers and civilians differ in their approaches and goals and (b) that the end of the war and the passage of the AEA erased the atomic program's wartime history. By focusing on the program itself and the groups of individuals that it brought together, more similarities than differences emerge—ones that reveal continuities between wartime and peacetime components of the program and among those individuals united during the war that contributed to its successes and who maintained their affiliation with the program at war's end. From this perspective, it becomes evident that by the time the Act was passed, the civilian/military dynamic had become a distinction without a difference.

The circumstances of the bomb's creation, the way it was managed and protected during the war and afterwards meant that the distinction between "civilian" and "military" all but evaporated at a functional level. Here, I am not referring to the ordinary ambiguities of language or the euphemistic use of words, though both became routine enough over the course of the military's use of the atomic program. Instead, what is

necessary is the same sort of conceptual shift that took into account the fact that neither “war” nor “peace” adequately described the Cold War. “Civilian” and “military” were similarly inadequate for the purposes of dividing authority and responsibility after the Manhattan Project, the adoption of atomic secrecy, the formation of associational relationships between uniformed and non-uniformed personnel, the involvement of private enterprise; and, significantly, after the realization that atomic weapons could be politically persuasive on the domestic front. Military officers such as General George C. Marshall and General Omar Bradley were less likely to homogenize the categories of “civilian” and “military” than were elected officials. Under different circumstances, both Marshall and Bradley expressed their belief that, consciously or not, America’s elected leaders had underestimated the significance of the atom bomb and overestimated their own ability to maintain the chain of command and keep the armed forces in check.⁵⁷

Respected as an experienced leader on both sides of the civilian/military fence and described as a “statesman” in the opinion of members of the Senate’s Special Committee on Atomic Energy in 1946, Marshall was one of the foremost opponents of postwar military expansionism.⁵⁸ As Truman’s secretary of state in 1947, he objected to the terms of the National Security Act because he believed it would increase the military’s influence over the executive branch and would grant the military unwarranted

⁵⁷ Herken’s study suggests that Marshall sensed that some had not grasped one of the lessons of World War II: that strategy governed what was bombed and what was not and that conventionalizing the atom bomb meant that it would be used as any other bomb, and on any other city. After R. Gordon Arneson, one of Marshall’s assistants, suggested that the U.S. use an atom bomb to break the Berlin Blockade, Marshall asked him about targeting and whether he would attack Leningrad and its Hermitage. After Arneson said that he might “spare Leningrad,” Herken reports Marshall said ““But if you’re really serious about then why is there any question?” He advised Arneson ‘to go home and think about it.’” *The Winning Weapon*, n. 262.

⁵⁸ United States Senate, Special Committee on Atomic Energy, transcript, “Report of Proceedings” January 28, 1946, Vol. 5, 293-296.

control over non-military, national assets.⁵⁹ Later, as Secretary of State during the Korean War, Marshall signaled that he would guard against the Joint Chiefs' attempts to overreach by emphasizing that he would not violate his own conscience to satisfy their perceived needs. In that 1951 meeting, Marshall told the Chiefs that although he would meet the statutory requirement to relay JCS recommendations to the president, he was under no burden to agree with those recommendations and intended to offer his own opinions at meetings in accordance with the importance he alone attached to an issue.⁶⁰ For Bradley, the atom bomb had raised the stakes of military expansionism. In a 1948 Armistice Day Speech, Bradley lamented that man—whether military or civilian—was neither morally nor ethically prepared to deal with atomic weapons. “We have grasped the mystery of the atom and rejected the Sermon on the Mount. . . . The world has achieved brilliance without wisdom, power without conscience. Ours is a world of nuclear giants and ethical infants.”⁶¹ These viewpoints illustrate the caution that two preeminent military men considered important at a time when the level of military entitlement was one of the most pressing dilemmas. They also highlight an important distinction in the extent to which individuals may be held accountable. In contrast to the deliberate accretion of power that Marshall believed threatened to disrupt the nation's civilian/military balance, Bradley pointed to a problem more profound: the cognitive inability of officers and civilians alike to perceive, let alone address systemically or

⁵⁹ Michael Hogan, *Cross of Iron*, 56-57. See also Charles E. Neu, “The Rise of the National Security Bureaucracy,” *The New American State*, Louis Galambos, ed., 88.

⁶⁰ “Minutes of the 95th Meeting of the National Security Council,” Wednesday, June 27, 1951, *Minutes of the National Security Council*, Third Supplement (MNSC).

⁶¹ Bradley's “nuclear giants” were American ones—in 1948 the only nation with atomic weapons. *Collected Writings*, Vol. 1 (1967).

legislatively, the potential and pitfalls of atomic science and atomic weaponry. Theirs was a perspective lost on lawmakers.

The content of the NSA and the AEA illustrate that after the war, elected leaders failed to take into account the uniqueness of atomic science and the circumstances of the bomb's creation, and thus failed to recognize that the conventional distinction between "civilian" and "military" no longer held. Just as the goal of winning the war had unified civilian and military personnel within the Manhattan Project and elsewhere during the war, so too did the continuation of the military's desire for weapons production and experimentation depend upon similar cooperative alliances with public and private industry after the war. With atomic science, the significant division was not one of profession—one that separated uniformed armed forces personnel from civilians—but one of *interest*—a line that divided individuals supportive of military-style development and military projects from those who promoted peacetime applications of atomic energy.

Placing the atomic program in the hands of a "civilian" Atomic Energy Commission was, at best, only marginally effective as a means of restraining the military's use of atomic science. During the era of atmospheric testing and especially after the resignation of David E. Lilienthal in 1950, the Commission participated as a full partner with the military, allowing it to dictate the terms of production and the conditions of experimentation, minimizing the hazards involved, and justifying the military's use of the program before Congress and the president.⁶² Consider, for example, how the career of Lewis L. Strauss problematizes the conventional civilian/military dichotomy. As a Navy officer, and prior to the official surrender of Japan, Strauss was the first to propose

⁶² When Congress stripped the AEC of its regulatory authority in 1974 under the Energy Reorganization Act, it did not do so because of the AEC's relationship with the military, but because of the conflict inherent in the AEC's authority to both administer and regulate atomic energy.

that an experiment with atomic weapons might serve to boost the Navy's share of postwar appropriations, in Strauss's words, "to preserve a postwar Navy of the size now planned." Strauss became a member of an inter-service committee on the future role of atomic energy and, six months after *Operation Crossroads*, the maneuvers he had instigated, wrapped up in the Pacific, he took his place as one of the first five civilian commissioners to sit on the AEC. As a commissioner, Strauss consistently supported military-style development; diverged with other members of the commission to recommend in a letter to Truman that he favored proceeding with H-bomb development; and, as Chairman of the AEC from 1953-1958, vigorously defended the continuation of atmospheric weapons experimentation, deceived Congressmen and President Eisenhower about the safety of those experiments, and interfered, though ultimately unsuccessfully, with diplomacy aimed at reaching an agreement with the Soviet Union that would have curtailed or eliminated atmospheric weapons testing altogether. Convention would have it that during the postwar era, Strauss was a civilian. And it was as a civilian that Truman nominated him for a position on a commission that, according to AEA mandate, was charged with the responsibility to manage the program and to devote at least some of the program's resources to the development of peacetime applications. It is impossible to know whether Truman would have nominated Strauss if he had based his decision on whether or not Strauss supported peacetime or military-style development instead of on his recognized status as a "civilian." What can be known, however, is that Strauss's involvement as a commissioner and later as AEC Chairman contributed to the program's devotion to military-style development and weapons experimentation from its 1947 beginnings until 1958. At that time, Strauss's continual defenses of atmospheric weapons

testing during the fallout controversy put him in the political spotlight. Strauss drew congressional ire and lost the confidence of Eisenhower, who began to consider alternative opinions, such as those of Nobel Prize winning physicist, Isidore Rabi, that fallout was hazardous.⁶³

Although in the entirety of Cold War civilian/military interaction the instances where a “civilian” adopted a pro-military stance have been found to be rare,⁶⁴ that was not the case with the atomic program during the atmospheric era. Moreover, atomic secrecy, the complexity of atomic science, and the insidious nature of radioactive hazards, all factors that lawmakers took into account when they stripped the Army’s Manhattan Project of its authority over the program and turned it over to a “civilian” commission, were precisely the reasons why it became all but impossible for Congress and the president to exercise meaningful oversight. Because of their confidence in the salience of the civilian/military distinction, they failed to particularize lines of authority and expectations that, in the absence of that assumption, they might otherwise have included in both the AEA and the NSA. But they did not, and the result was misunderstanding and disagreements at the time about how authority was distributed under the Acts, two factors that ended up consuming congressional energies.⁶⁵ For instance, in the twenty defense-related hearings held publicly during the first seven

⁶³ “Memorandum of Discussion at the 350th Meeting of the National Security Council,” January 6, 1958, 541, 545. FRUS, *National Security Policy: Arms Control and Disarmament*, Microfiche Supplement, 1998. In a telephone conversation with Hoover on April 23, 1956, Eisenhower indicated that he needed outside expertise, that he should not “take the explanation of Admiral Strauss, he is prejudiced.” *Diaries of Dwight D. Eisenhower, 1953-1969*.

⁶⁴ Feaver, *Armed Servants*, 132.

⁶⁵ On the controversy over custody of weapons under the AEA, see Feaver, *Guarding the Guardians*, 110-127.

months of 1947 alone, Congress took testimony from sixty-seven military officers and twenty-six civilian officials.⁶⁶ Similarly, under the AEA, and aside from hearings to confirm nominations of commissioners, the Chairman of the AEC was not only required to report to Congress but was routinely called to testify, especially during the tenure of David E. Lilienthal, a lightning rod for Truman's opponents.⁶⁷ Subsequent revisions to the NSA reinforced the civilian authority written into the originals. A 1949 Amendment, for example, gave the civilian Secretary of Defense more power over individual branches and the service secretaries. Nevertheless, with so much attention committed to maintaining and policing the lines of authority at the congressional and cabinet level, there was scant energy for oversight to occur below the upper echelon. Thus, although the Joint Committee for Atomic Energy (JCAE) had substantial official power over the atomic program and its administrators, it paid little attention to those operational issues that, under the AEA, fell into its circle of authority. Under one AEA provision, the JCAE would independently review the program—"shall make continuing studies of the activities of the [AEC] and of problems relating to the development, use, and control of atomic energy." That ambitious scenario was unworkable, as Senator Edwin C. Johnson from Colorado pointed out during hearings held in January 1946. Responding to comments by Harrison Davies, a representative of the Federation of Atomic Scientists who argued that Congress and the president were best prepared to ensure that military officers were not allowed to establish atomic policy, Johnson commented upon the

⁶⁶ *Congressional Hearings on American Defense Policy: 1947-1971*, Richard Burt and Geoffrey Kemp, eds. (Lawrence, Manhattan, Wichita, KS: University Press of Kansas for National Security Education Program of New York University, 1974), 3-15.

⁶⁷ Congressmen did raise operational issues, questioning Lilienthal's management system and lax security.

limitations of congressional oversight: “there are virtually tons and tons of reports made to the President and to the Congress by the different agencies” and thus the “safeguard which [Davies] deems important is of little or no importance.”⁶⁸ As Johnson anticipated, reviews of the AEC were not independently launched by the JCAE, but occurred only when an issue had already reached political proportions and had come to their attention from outside sources.⁶⁹ Because of this, the opportunities for grandstanding, the channeling of political tensions, and partisanship, that have been repeatedly addressed in the literature were not the only by-products of postwar legislation aimed at strengthening lawmakers’ authority over the military and atomic science.

One overlooked consequence of the strict subordination of the postwar armed forces to civilian authority written into the AEA and the NSA, in the form of the AEC or congressional oversight of the atomic program or the defense department, was that it could be used as an authorizational umbrella. After passage of the Acts, military officers as well as the atomic program’s managers and their supporters proceeded under an incontrovertible civilian imprimatur. To a greater degree than the administration’s budget allocations and congressional appropriations, and especially since neither the executive branch nor Congress was able to adequately monitor operational activities, that imprimatur gave officers and administrators a way to justify all their activities and insulated them from criticism that they had stepped beyond the scope of their responsibility.

⁶⁸ Edwin C. Johnson, Special Committee on Atomic Energy, “Report of Proceedings” United States Senate, January 28, 1946, Vol. 5, 316.

⁶⁹ The JCAE was composed of nine members from each house, appointed by the President of the Senate and the Speaker of the House. To minimize a partisan takeover of the Committee, no more than five of those selected from each house could be of the same party. Atomic Energy Act of 1946, Sec. 15. Quote from 15(b). For the difficulties of administrative and congressional oversight and the contractual system of scientific and technological development, see Price, *Government and Science*, 90-94.

The testimony Martha Bordoli Laird gave to a congressional committee in 1979 and later reiterated in a television documentary illustrates how program managers used this imprimatur. Laird lived within 80 miles of the test site on a small farm with her family. Like others in the area, they drew their water from a shallow well, played in a nearby spring, drank milk from the family's cow and ate vegetables from a backyard garden. When someone from the testing program visited, Laird asked about the fallout clouds that lasted, sometimes, "all day." He told her that the clouds were no worse than an x-ray and were harmless. In 1955, Laird's son, a first-grader, died of cancer. Shortly after that, she suffered a late-term miscarriage and delivered a still-born, legless child. After learning from her doctors that fallout could have been responsible for her son's leukemia and her miscarriage, she circulated a petition asking that atmospheric testing be stopped and in early Fall sent it to her congressional representatives and to President Eisenhower. In reply, AEC Chairman Strauss—who took it upon himself to speak in the name of President Eisenhower, as revealed in a memorandum he wrote to Eisenhower in July 1957 informing him of the practice⁷⁰—first emphasized the national security necessity for continued testing by referencing statements made by Eisenhower and quoting from one made by former President Truman that fallout was being kept to a minimum and any dangers that might be occasioned amounted to "a small sacrifice" when compared to the "greater evil" of nuclear warfare. Only then did Strauss include the information that he himself had used to allay the concerns of those presidents, that scientists from around the world had "in essence" concluded that the risks were

⁷⁰ Strauss to Eisenhower, July 23, 1957. Folder: Atomic Energy Commission 1957 (4), Administrative File, Dwight D. Eisenhower, Papers as President of the United States, 1953-61 (Ann Whitman File) Administration Series, Box No. 16, A75-22, DDE Library.

exceedingly small “when compared to other risks that we routinely and willingly accept every day.” Though Laird testified that she objected to being part of a small population asked to make the largest sacrifice, (one still keenly felt years later, as she explained in a television documentary, after her daughter contracted thyroid cancer) she did not—nor did congressmen who accepted for the record the responses she received from Strauss and her congressmen—notice that one of the scientific authorities Strauss quoted had given a carefully worded qualification to his opinion on the dangers of fallout.⁷¹

Shields Warren, the first Director of the AEC’s Division of Biology and Medicine who before he resigned his post had consistently sparred with military officers and program managers about their refusal to conduct experiments within the boundaries of standards developed to ensure that testing proceeded safely, testified during hearings about fallout that risks of testing were “low” provided they resulted from “a reasonable program of weapons testing.” The evidence suggests that while Warren was Director he, for one, believed that the weapons testing was not being conducted reasonably. Nonetheless, the imprimatur Strauss received as AEC Chairman gave him the ability to leverage the authority of two presidents, presidents whose opinions about fallout were shaped by Strauss himself, in support of continued testing and in support, too, of the notion that *all* nuclear experiments were being conducted solely in the interests of national security.⁷²

⁷¹ *Turning Point: Cover-Up at Ground Zero*, Elena Mannes, producer, for ABC News. Broadcast January 30, 1994. Copy in author’s possession.

⁷² Of the three letters she received in response to her petition, Strauss was the only one to misspell her name, addressing his letter to Mrs. Bordoh instead of her name at the time: “Bordoli.” For Laird’s testimony and documents entered into the record House of Representatives, “Low Level Radiation Effects on Health,” *Hearings before the Subcommittee on Oversight and Investigations of the Committee on Interstate and Foreign Commerce*, Ninety-Sixth Congress, First Session, April 23, May 24, and August 1, 1979; 14-39.

The civilian imprimatur also strengthened the collaborative relationship between the armed forces and the program by giving officers the opportunity to engage with program administrators behind the scenes and use the program to further their own institutional goals. One such point of interaction was within the Military Liaison Committee (MLC). The Committee was made up of officers from the Army, Navy, and Air Force. Its Chairman was officially a civilian who functioned as a deputy for atomic energy matters to the Secretary of Defense. The MLC was established under the AEA to act as a point of intersection between the Joint Chiefs of Staff and the program and officially charged with ensuring that the military's needs were incorporated into the program's goals. During the deliberations about whether to pursue development of a hydrogen bomb in 1949, however, the MLC gave advice to the JCS. Their position was one shaped by Major General Kenneth Nichols, Groves's right-hand man during Manhattan and then head of the Armed Forces Special Weapons Project, who was "under pressure from [E.O.] Lawrence," the entrepreneurial Director of Berkeley's Radiation Laboratory and soon-to-be founder of Lawrence National Laboratories. As a historian of the JCS points out, it was not the JCS, or military strategy, that informed the MLC position, but civilian promoters of H-bomb development, including Lawrence, who sought development for economic reasons; Strauss, who supported the militarily-intensive atomic development preferred by Senator Brien McMahon; and others who had urged Nichols, a Manhattan veteran, to sway the MLC away from its "military mission" in favor of promoting development of a weapon that was primarily in the interests of industry.⁷³ The JCS subsequently approved the MLC's recommendation and so did

⁷³ Rosenberg, "American Atomic Strategy and the Hydrogen Bomb Decision," 80-82.

President Truman. This decision lent even more momentum to the program's expansion and, as with earlier decisions, allowed officers and managers to foster the sense that all of this was occurring because of the national security objectives established by elected officials.

Nonetheless, one of the chief advantages of investigating individual initiative and practice is that it offers a way to pierce through the emotionally charged political rhetoric and secrecy that has clouded atomic history and to test the genuineness of claims to national security made during the early years of the Cold War. Many of those claims to national security were no doubt genuinely felt, others perhaps only marginally so; but the historical record demonstrates that most, if not all, were persuasive. This examination of the atomic program practices that military officers and supportive program managers engaged in helps to reveal the distinction between "national security" and "defense" that Robert Steel argues was, and is, too often overlooked. "Defense is a policy, national security is an attitude; defense is precise, national security is diffuse; defense is a condition, national security is a feeling."⁷⁴ Particularly when used routinely under an umbrella of national security claims, the practices examined here achieved a significance that went well beyond their use by Groves in his management of the Manhattan Project, beyond their initial use by Navy and Army officers interested in gaining domestic political advantages from *Operation Crossroads*, and beyond the contributions they made to creating an unnecessarily hazardous program of atomic weapons development. The use of secrecy, media manipulation, deception, and other wartime-style practices of control by military officers and their supporters within the atomic program likely lent confidence to others outside the program's confines, contributing to their proliferation, and to the

⁷⁴ Steel, "A New Realism," *World Policy Journal*, 14 (1997).

disregard for civilian authority and Cold War defenses policies that General Curtis LeMay exhibited in 1957. That year, two members of Eisenhower's Gaither Committee, a group of scientific and technological experts charged with evaluating civil defense capabilities, visited the General, then Commander of Strategic Air Command, at his headquarters. On his wall they noticed a chart that outlined the strategic plan that experts and policymakers had devised to coordinate what they believed would be the most effective military response should the United States come under nuclear attack. When they asked LeMay whether he thought the plan—a symbol not only of elected leaders' commitment to national security and to coherence in defensive strategies—would be effective, LeMay said that the official plan was irrelevant. When they volunteered that the early warning system set up in Canada might not provide SAC with enough time to respond, they learned that, for LeMay, that possibility was irrelevant: "I will know from my own intelligence whether or not the Russians are massing their planes [and]...if I come to that conclusion, I'm going to knock the shit out of them before they get off the ground." When one of them advised him his solution went against national policy, LeMay said "No, it's not national policy, but it's my policy."⁷⁵ It is not possible to know whether LeMay's own plan to pre-empt a Soviet attack would have worked as he supposed it would or whether it would have failed and in that failure, would have also doomed the coordinated response that was articulated on his wall chart and that held some promise, at least in the imaginations of the policymakers who arrived at it, for the

⁷⁵ Robert C. Sprague and Jerome Wiesner, cited in Newhouse, *War and Peace*, 280.

repelling of a nuclear attack. It does, however, reveal that LeMay had achieved a staggering level of autonomy.⁷⁶

Some of the self-conscious disregard for authority that was indulged in by military officers such as LeMay as well as those upper-level AEC officials was no doubt anchored in what they believed necessary to preserve national security. Still, the prevalence of such disregard suggests that it was provoked by multiple and complex motivations. Some of these would include a lack of faith in the competence of policymakers, commitment to institutional goals, self-interested ambition, or hubris. And yet, there are only two ways to explain why officers and their supporters resorted to using wartime-style techniques of control, including claims to national security: Either military officers and program managers believed that elected officials and their advisors did not fully appreciate the risks to national security and were unable to provide evidence to convince them otherwise; or, that their claims were disingenuous, or at the very least were unsupported by persuasive factual evidence. In either case, military officers and their supporters who used such strategies undermined, consciously or unconsciously, the authority of civilian superiors and elected officials.

The socio-historical insights of Bourdieu and Cover allow us to understand these practices as a product of institutional culture as well as ambition; to understand the varieties in the ways they were employed, from the deliberate to the unself-conscious as a function of *habitus*; and to appreciate the extent to which such practices were engendered by and reproduced within an insular atomic workplace. The concept of *habitus* contributes a dimension absent from the analyses of conformity found by C. Wright Mills

⁷⁶ As Lowell Schwartz remarked in a review of books about nuclear policy, Cold War leaders were as lucky as they were wise. "Reviewing the Cold War: Approaches, Interpretations, Theory," *Cold War History* 4 (2004): 198-200, 200.

and William H. Whyte to have developed within American business, and especially within the managerial class, after the end of World War II.⁷⁷ From a workplace perspective alone, it might seem as though the hyper-conformity of the mid-twentieth century business class could explain why, for example, a test director at the Nevada Test Site would approve the scheduled detonation of an atomic bomb even after weather conditions suggested it would cause dangerous levels of fallout to downwind communities. But the atomic worker—at all levels of responsibility—was quite unlike “The Organization Man,” whose dedication to workplace responsibilities caused transformations in his world view and relationships outside the workplace. The program also operated under a different set of circumstances than did conventional businesses and bureaus. Atomic secrecy and the hazards inherent in production and experimentation made the atomic program and decision-making by administrators and frontline personnel unique. Cover’s studies of systems of justice and Hugh Gusterson’s investigation of Lawrence Livermore National Laboratory and the socio-cultural aspects of its workplace environment shed light on the ideological and ethical conflicts inherent in those environments and the ways that workers resolve those conflicts. Administrative regulations (including those involving atomic secrecy and managerial responsibilities) combined with the physical and psychological isolation of the atomic workplace caused employees—at all levels of responsibility—to operate with dual sets of norms: one set fostered by their participation in society, and another fostered by their profession.⁷⁸ Thus,

⁷⁷ C. Wright Mills, *The Power Elite*; William Hollingsworth Whyte, *The Organization Man* (New York, NY: Simon and Schuster, 1956).

⁷⁸ For Cover, jurisdictional principles exert a regulative function that allows judges to separate their professional responsibilities and the violence that involves from their commitment to peace. “The significance of the jurisdictional principles through which courts exercise violence is that they separate the exercise of the judge’s authority or violence from the primary hermeneutic act that that exercise realizes.”

as Cover discussed, their decision-making must be considered not only in light of its conformity with workplace expectations, but also in light of its divergence from social and ethical standards.

The atomic worker, especially one in a position of authority, was forced to reconcile conflicts between two sets of norms. For instance, in his position as Director of Los Alamos from 1945-1970, Norris E. Bradbury publicly defended atmospheric weapons test as safe and argued that radioactive fallout was not, at the levels dispersed, hazardous. Bradbury's personal identity as a father and grandfather, however, trumped his professional one as Director. During the years that atmospheric testing was being conducted at the Nevada Test Site, Bradbury's son and daughter-in-law relocated with their children to St. George, Utah, an area that was routinely showered with fallout during testing season. According to his daughter-in-law, Bradbury advised them to leave, saying "St. George was not a good place to stay." She continued, "He didn't want anything to go wrong with his grandchildren."⁷⁹ More than a way to understand administrative level decision making, Bourdieu's *habitus* and Cover's findings open channels for understanding behavior and judgment calls that took place at multiple levels of responsibility during the atmospheric program's history.

The frequency of what was, at the very least, questionable decision-making by top AEC officials that is contained in the historical record has contributed to the mistaken belief that illegitimate, or ill-advised, behavior, if it existed at all, was limited to top-level

Cover, "Nomos and Narrative" in *Narrative, Violence, and the Law*, Martha Minow, et al., eds. (Ann Arbor, MI: The University of Michigan Press, 1995), 157.

See also Hugh Gusterson's *Nuclear Rites*. Gusterson provides novel insight into how the architecture and restrictions of the workplace at Lawrence Livermore contributed to an atmosphere that enabled workers to reconcile conflicts between their personal ethical commitments and their professional careers.

⁷⁹ *Turning Point: Cover-Up at Ground Zero*, Elena Mannes, producer, for ABC News. Broadcast January 30, 1994. Copy in author's possession.

administrators. The result is that there has been no effort to examine, let alone try to explain, the activities of the intermediate level experts, professionals and managers, military officers far removed from the upper echelon, and skilled technicians and the ways they approached their tasks. In the words of one of the government's historians who studied radiation safety within the program, a line of responsibility should be drawn between an elite tier of decision-makers and the thousands of people working below that upper tier. Among "powerful officials" it was so "easy to deny, dissemble, or mislead" that it became a "matter of course." There, the workforce below the upper, administrative, level has been absolved; congratulated in fact for having "performed a difficult job honorably."⁸⁰ This misses the point that one of the reasons why over-exposures did occur was because people who had reason to believe that they were occurring did not give voice their opinions. There were certainly many employees who did no more than do what they were told. But, there were legions of others: scientists, managers, and technicians, who knew that safe levels of exposure were being exceeded but who, despite that knowledge, failed to speak out.⁸¹ Without launching a quest to discover who might have done no more than follow orders and who did not, *habitus* offers a way to step outside the boundaries of right/wrong and to consider the silence as something besides ignorance of the hazards or complicity. There were, as one Utah judge found in 1984, many people who were knowledgeable about the dangers but who failed

⁸⁰ Hacker, *Elements*, 278-279.

⁸¹ As briefly discussed in the introduction, it seems unreasonable to explain their silence as a result of ignorance, because knowledgeable people outside the program were outspoken about the dangers. It might also be understood as a shared commitment to national security, but that leaves no space to consider why it seems to have made little or no difference to officers and program managers that the safety criteria for experiments conducted in secret were generally followed while they were prone to be waived during those held for public consumption if it was believed that they would have inconvenienced invited dignitaries or if they would have been likely to draw unfavorable publicity.

to speak out. Their silence was so widespread that the only way that Judge Bruce Jenkins could explain it was to posit some sort of fundamental breakdown had occurred.

“Responsible persons” Judge Jenkins wrote “neglected an important, basic idea: *there is just nothing wrong with telling the American people the truth.*”⁸² Studies of institutional culture that extend back into the early decades of the twentieth century, as well as more recent ones by Bourdieu and Cover, suggest that it was not merely individual negligence, but also systemic reasons behind some, if not most, of the failures by insiders to warn those who were being exposed and others that testing was posing known hazards.⁸³

Similarly, there were likely systemic reasons behind the persistent claims by officers that atmospheric weapons tests were essential and those that led to the dependence upon a nuclear class of weapons, a dependence that drew energy away from other defensive and offensive capabilities. While institutional culture cannot excuse nor explain all of the program’s hazards or the military’s use of it, it does open up a space for understanding

⁸² Italics in the original. Of administrators, Jenkins argued “ ‘They do not [inform] the public of the nature and extent of any hazards and of precautions which may be taken,’ which was the *primary mission* of such efforts according to the 1954 AEC Committee Report. See PX-51/DX-1, at 48.” ... “Both in monitoring and information activities, the off-site radiation safety program at the Nevada Test Site served largely to check the possibility of an immediate, acute exposure crisis resulting from nuclear fallout and to reassure the off-site residents that one would not occur. Long-term consequences of exposures below the acute symptom ‘threshold’ were measure, analyzed and explained in terms of nationwide of worldwide populations...place at small risk, not in terms of local communities placed at greater risk. In both regards, *monitoring and information*, the employees of the defendant negligently and wrongfully breached their legal duty of care to plaintiffs as off-site residents placed at risk.” Italics in original. *Irene Allen, et al., v. United States*, 588 F. Supp. 247 (1984) [Pt. 2, Lexis 16823] 156-159. For Jenkins’s discussion of the difference between discretionary judgment of policymakers and the operational responsibilities of those who carried out policy, see Allen opinion, Pt. 1, Lexis 16822, 204-214. For the backdrop to *Allen v. U.S.*, see John G. Fuller, *The Day We Bombed Utah* (New York and Scarborough, Ontario: New American Library, 1984), 163-172.

⁸³ As Robert Michels pointed out in 1911, individuals (in his study, socialists) tended to compromise even longstanding and heartfelt ideological principles under the influence of a bureaucracy or state institution. The “devotion” of socialists to their “elevated policy of principles” faded as “paths of activity were opened...and the more did a recognition of the demands of the everyday life of the party divert their attention from immortal principles.” *Political Parties: A Sociological Study of the Oligarchical Tendencies of Modern Democracy*, Eden and Cedar Paul, trans. (New York: Drowell-Collier Publishing Company, 1962), 190.

how routine, duty, and ambition combined may shape behavior and lend momentum to a workforce.

Conditions for Militarization

Militarization of the atomic program was contingent upon a number of internal and external factors, including the political climate of opportunity that emerged during the immediate postwar period, the ingenuity and initiative of Navy and Army officers who believed that the atomic program and weapons testing could help them preserve the status of their institutions after the war's end, and their ability to tap into the technological and material resources of the wartime Manhattan Project. On a macro level, those officers benefited from the military's position in the governmental framework, from the adaptable organizational structure and administrative capacity of their respective institutions, from affiliations formed during wartime with the private sector, and the ability to draw upon those resources for political leverage while remaining relatively immune from the pressures of electoral politics. Each of these gave military officers opportunities to build networks of support that insulated them in a number of ways from legislation designed to restrain the postwar military. The armed forces, for example, responded to congressional budget cutting by channeling expenses for military projects into other government programs, such as those borne for the military by the atomic energy program. This was a significant resource stream and one that was as dedicated to weapons as its wartime predecessor. Though reliable figures are not available for the immediate postwar period when the Manhattan Project remained in control, AEC expenditures for atomic weapons, excluding the costs of production, were approximately

\$1.6 billion per year in 1948-1950.⁸⁴ Moreover, though the military bore some of the costs, the program provided the weapons as well as the technological and scientific expertise for two substantial military experiments held in 1946 and 1948, *Crossroads* and *Sandstone*.⁸⁵ Similarly, when Congress sought to expand its own authority over the military by requiring officers to regularly appear and testify on capital hill, officers turned those hearings to their advantage and used the witness stand as a forum for political engagement, influencing legislators and the public in ways that had not previously been possible.⁸⁶

Success at the macro level of political engagement was contingent, in turn, upon micro level factors and more subtle forms of persuasion to convince the American public that a large, atomized, military was necessary to preserve national security. To use atomic weapons experiments for public relations purposes meant that the military had to walk a fine line between nurturing the fear of nuclear weapons and fallout that might occur from an enemy bombardment and convincing the public that the radioactive fallout from military detonations posed no hazards. The importance of taking an accurate sounding of the political climate and responding to changes in public opinion was a lesson the military learned early. The publicity generated by 1946's *Operation Crossroads*, according to one officer, had undermined the military's efforts to get approval for a continental testing site. Commanding Lieutenant General J.E. Hull argued in a

⁸⁴ In 1996 dollars. Table, "Expenditures for U.S. Nuclear Weapons Research, Development, Testing, and Projection, 1942-1998," Stephen I. Schwartz, ed., *Atomic Audit*, 74-75.

⁸⁵ Kevin O'Neill, "Building the Bomb," in *Atomic Audit*, 102-103; 589-594.

⁸⁶ For an example of how the congressional debate over universal military training turned into an opportunity for the Air Force to increase its funding, a move which was then imitated by other branches, see Hogan who portrays the political lobbying as a fracas: "all semblance of order to break down ... without ... a comprehensive plan ... and regard for total costs." Hogan, *Cross of Iron*, 105-107, quote on 107.

memorandum to the Army Chief of Staff in 1948 that using radioactive hazards to justify the enormous expense of Pacific testing had worked against the Army's desire to have a less costly continental testing site dedicated for atomic detonations. "It is high time to lay the ghost of an all-pervading lethal radioactive cloud that can only be evaded by people on ships, airplanes and sandpits in the Marshall Islands." Conceding that continental testing would pose "public relations difficulties" he believed those would be "offset by the fundamental gain from increased realism in the attitude of the public."⁸⁷ While Hull's Memorandum was limited to addressing the detrimental effect he believed publicity from *Crossroads* had had on the military's desire to gain approval for the continental testing of weapons, it illustrates that, as an exercise in public relations, *Crossroads* had given Hull confidence that atomic weapons experiments could be used to sway public opinion and confidence, too, that the Army could overcome the fear that weapons testing was dangerous. For Hull, it was not safety, but inadequate attention to publicity that was the primary obstacle to the Army's goal to achieve approval for stateside weapons testing, where experiments would be less expensive and could be routinely used—as they were at the Nevada Test Site—to promote military projects before audiences of invited dignitaries, congressmen, and throngs of reporters.⁸⁸ The significance of public opinion was again brought home in 1958 when the combined efforts of the Joint Chiefs of Staff

⁸⁷ Hull, undated Memorandum to U.S. Army Chief of Staff (with attachments dated 1948) Subject: location of proving ground for atomic weapons. Cited by International Commission to Investigate the Health and Environmental Effects of Nuclear Weapons Production and the Institute for Energy and Environmental Research, *Radioactive Heaven and Earth* (New York: Apex Press, 1991; London: Zed Books, 1991), 53.

⁸⁸ The AEC invited hundreds of people from Utah to witness one test after residents of that state had complained about the possible dangers from radioactive fallout. *Deseret News*, March 27, 1953. The most comprehensive analysis of the use of publicity at the Nevada Test Site is that of Judge Bruce Jenkins in *Irene Allen, et al. v. United States*, 588 F. Supp. 247 (1984), [Pt.2, Lexis 16823] 156-159. See also John G. Fuller's study of the *Allen* case, *The Day We Bombed Utah*.

and of the Chairman of the AEC, Lewis Strauss, to stem anxieties about the dangers of fallout and the escalation of the arms race failed. In the face of overwhelming public opposition at home and abroad, Eisenhower agreed with Khrushchev to suspend atmospheric nuclear testing. Before that setback, however, the military had effectively used the program and weapons testing to build support for military projects and had prospered from its relationship with the program.

Origins of Militarization

Exaggeration of military necessity, appeals to national security, using secrecy to deceive and mislead superiors, and the manipulation of scientific expertise and the media—all factors that caused the peacetime program to become such a hazardous one—were strategies Groves used to secure his authority over the far-flung empire that was the Manhattan Project.⁸⁹ They were tactics that might have drawn far more criticism, and

⁸⁹ Barton J. Bernstein's familiarity with the documentary evidence and decades of scholarship make his critical reviews and essays a good starting point for study of the Manhattan Project. For Manhattan and General Groves, see Barton J. Bernstein "An Analysis of 'Two Cultures': Writing about the Making and the Using of the Atomic Bombs" *The Public Historian* 12 (1990): 83, and "Reconsidering the 'Atomic General': Leslie R. Groves" *The Journal of Military History* 67 (2003) 883-920. The official history of the program remains the most comprehensive. See Richard G. Hewlett and Oscar E. Anderson, Jr., *The New World 1949-1947*. For a summary of the controversies surrounding the use of the bomb, see Ferenc Morton Szasz, *The Day the Sun Rose Twice: The Story of the Trinity Site Nuclear Explosion July 16, 1945* (Albuquerque, NM: University of New Mexico Press, 1984), 145-158. See also, Michael J. Hogan, ed., *Hiroshima in History and Memory* (New York: Cambridge University Press, 1996). For critical analysis of the program, see Martin Sherwin, *A World Destroyed*; Ronald E. Powaski, *March to Armageddon* (London: Oxford University Press, 1987); and Peter Hales's cultural critique, *Atomic Spaces*. Barton C. Hacker evaluates Manhattan's radiological safety program in *Dragon's Tail*. The only cost analysis of Manhattan as well as the peacetime nuclear program is *Atomic Audit*, Stephen Swartz, ed. A sense of what it was like to live and work on the Manhattan Project can be gleaned from reminiscences, and especially Leslie Groves, *Now It Can Be Told* (New York: Harper & Bros., 1962); Richard Feynman, *Surely You're Joking, Mr. Feynman!* (New York: WW Norton, 1987); Laura Fermi, *Atoms in the Family* (Chicago: University of Chicago Press, 1954). For insight into the concerns of scientists who helped to administer the program, and how the program contributed to their professional development, see Glenn T. Seaborg's diaries, *A Chemist in the White House: From the Manhattan Project to the Cold War* (Washington, D.C.: American Chemical Society, 1988).

perhaps a congressional investigation, had the project not been successful.⁹⁰ Groves, well known for “compartmentalizing” all aspects of Manhattan to keep workers in the dark about the project’s purpose, was equally adept at keeping his superiors in the dark. He used the dual imperatives of secrecy and military necessity, for example, to avoid both congressional and administrative scrutiny. Rather than participate to any extent in the appropriations process, Groves persuaded Henry L. Stimson to intercede with a few members of the appropriations committee who agreed to “bury” the project’s costs in the Army’s budget.⁹¹ In Spring 1945, when the Secretary of State James Byrnes suggested an “impartial investigation and review” of the project to President Roosevelt, Groves avoided it by misleading Stimson, telling him that an investigation would be “impossible” because there “were no American nuclear physicists not connected in some way with the project.”⁹² Groves insisted afterward that such extra-constitutional maneuverings and authoritarian measures were necessary: “Because of it’s [sic] magnitude and ramifications ... because of extreme secrecy, it was not possible for the business to be handled in the usual manner ... it was normal for General Groves to report verbally to his superiors.”⁹³ According to an aide who worked beside Groves, he “reported to Army Chief of Staff George C. Marshall to the degree he reported to anyone, but Marshall gave him plenty of freedom. ... He set the agenda, and he wasn’t second-

⁹⁰ Howard Ball, citing Niehoff, mentions that the provisioning for a Joint Committee on Atomic Energy within the Atomic Energy Act was an effort to avoid a repeat of the subversion of voting and appropriations that had occurred with Manhattan. *Justice Downwind*, 225, n. 9.

⁹¹ Memorandum for the Secretary of War from Groves, 6 March 1945, TSCMED.

⁹² Memo to File from Groves, 7 April 1945, TSCMED.

⁹³ Undated press release. TSCMED. Barton J. Bernstein has said of Groves that “He was basically operating a state within the American state.” “Reconsidering the ‘Atomic General,’” 900.

guessed.”⁹⁴ Because Groves had complete control over what was written about the program, he cast his routine use of strategies of control in the best possible light. Calculatingly packaged, the disregard Groves expressed for authority, when combined with the program’s success, became expressions of managerial mastery, on a par with his accumulation of property, material, and expertise, and as vital to his role in the war effort as were the “creeps” he directed as part of his own intelligence service.⁹⁵ It was for these reasons, and not because elected officials considered them innocuous, that the strategies that Groves used to avoid the civilian chain of command never became the focus of congressional or presidential investigation. Groves’s use of such strategies to secure authority over the program and his use of atomic secrecy to make those strategies of control relatively impervious to congressional or administrative scrutiny, set an example for other officers and established precedents that influenced the management of the peacetime program.

After the war, a handful of officers who believed that exploiting atomic science would yield domestic advantages adopted and employed them. They, and other officers and their supporters in the years to follow, drew upon their own administrative ability, political acumen, access to influence, and wartime strategies of control to assert their authority over the peacetime atomic program. Except for a general interest in maintaining

⁹⁴ John Newhouse, *War and Peace in the Nuclear Age*, 34-38.

⁹⁵ In Bernstein’s words, “Groves had a deep sense of his own historical importance.” “Reconsidering the ‘Atomic General,’” 889.

The contested history of the Manhattan Project and the use of the bomb is captured in Philip Nobile, ed., *Judgment at the Smithsonian* (New York, NY: Marlowe, 1995). For an analysis of how the domination of the Los Alamos/Oppenheimer narrative in histories of the Manhattan Project over Chicago’s MED Lab/Szilard, see Margot Norris who argues that the first provided “a public narrative of an epic corporate alliance between government, science, and the military to produce a monumental technical achievement.” “Dividing the Indivisible: The Fissured Story of the Manhattan Project,” *Cultural Critique* 35 (1996-1997): 5.

a steady increase in appropriations, and thus influence, there was no grand design or long-term strategy that guided officers and administrators in the use of these practices, the program, or the bomb. They used them all in much the same way, and for similar reasons, that Navy and Army officers did at the end of the war did: for the limited purpose of achieving one or several short-term goals. Moreover, in the tens of thousands of individual decisions that moved the process of militarization along, the percentage that resulted from conscious deliberation was likely very small. Militarization of the atomic program was only partly the result of ambition and the deliberate use of wartime practices. It was also energized by a combination of dedication and routine that operated as a force, one capable of modulating, or stifling altogether, conscious deliberation.

The following example drawn from a discussion that took place at the Trinity site on July 16, 1945, will illustrate the significance of such mundane factors as ambition and routine in the history of something as phenomenal as the atom bomb. On that day, while the scientists who had been working on the atom bomb were celebrating the successful detonation of the first atom bomb, Richard Feynman, a group leader in Manhattan's theoretical division, noticed his friend and mentor Robert Wilson had separated himself from the excitement. Wilson was a Princeton physicist who had lured Feynman to Manhattan and who had, in addition to drawing experts into the program, secured for the project Harvard's cyclotron.⁹⁶ Wilson would become Director of Cornell's Laboratory of

⁹⁶ After the war, Feynman earned fame as an eccentric but down-to-earth teacher who had an uncanny ability for making difficult concepts understandable and as one of the winners of the 1965 Nobel Prize for physics. In one of his last public services, Feynman drew on what he had learned at Los Alamos about the deleterious effects of bureaucracy and institutional momentum upon rational thought and decision making and applied it to his investigation of the 1986 Challenger disaster. Feynman was a member of the Rogers Commission, officially The Presidential Commission on the Space Shuttle Challenger Accident. In Feynman's explanation, the tendency of upper echelon officials to exaggerate the importance of the mission while inflating the prospects for its success meant that in the striving for appropriations, officials with NASA failed to take into account the more temperate opinions and concerns expressed by mid-level

Nuclear Science but never again worked on any project that required a security clearance. On that July day when “the sun rose twice,” Feynman intimated the reasons for Wilson’s quietude and recalled telling him, “It’s a terrible thing that we made. But you started it. You got us into it.” Explaining later, Feynman wrote: “You see, what happened to me—happened to the rest of us—is we *started* for a good reason, then you’re working very hard to accomplish something and it’s a pleasure ... excitement. And you stop thinking, you know: you just *stop*. Bob Wilson was the only one who was still thinking about it, at that moment.”⁹⁷ The accumulation of little decisions, made without much thought by military officers and program managers “to accomplish something,” brought about a revolutionary change in peacetime America—one that allowed the military to exercise an unprecedented measure of authority over the atomic program, authority that undermined the ability of elected officials to carry out their responsibilities, and contributed to the development of the Cold War’s National Security state.⁹⁸

scientists and engineers. It was, in Feynman’s analysis, the breakdown of collaboration and coordination between those two levels that “produced a calamity.” Feynman’s experiences as one of the investigators demonstrates that institutional factors compromised not only the safety of the space shuttle, but hindered the investigation of the disaster as well. See Feynman, “An Outsider’s Inside View of the Challenger Inquiry,” *Physics Today* 41 (1988): 26-37. For the similarities Feynman drew between NASA and the Manhattan Project, see 37.

⁹⁷ Feynman, *Surely You’re Joking*, 135-136.

⁹⁸ Without making any claim that this amounted to a revolution in the strict political sense, the military had at its disposal all of the elements that John Kenneth Galbraith wrote were essential for a successful revolution: determined leaders, disciplined followers, and a weak opposition. “The Massive Dissent of Karl Marx” from *The Age of Uncertainty*, in *The Essential Galbraith* Andrea D. Williams, ed. (Boston, MA, New York, NY: Houghton Mifflin, 2001), 186-187.

CHAPTER FOUR

INTEGRATION

In the first seventeen months after World War II, the military fought and lost its battle for legislative authority over atomic science but achieved enough influence over the program and its assets to render the civilian authority established under the Atomic Energy Act of 1946 irrelevant. It did so by integrating wartime behaviors of control from the Manhattan Project, by building on wartime connections and ways of doing business, and by exploiting postwar political instability to gain approval for *Operation Crossroads*, the first peacetime experiment with atom bombs. Using subtle deceit, exaggerating military urgency, appealing to national security, and manipulating the media, military officers and their supporters commandeered the atomic program and funneled its resources into military projects. Though primarily a Navy operation, *Crossroads*—with 250 support and target ships, 150 aircraft, 43,000 military personnel, 500 cameramen, 168 reporters, and 60,000 experimental animals—benefited each branch of the armed forces, establishing military authority over atomic development and engendering a broad set of parameters for weapons experimentation that held sway throughout the atmospheric era. Integration was the first, formative, stage of Militarization: seventeen months during which wartime methods for managing the program became normative even as the program and atom bombs became, for the first time, instruments for the military's accretion of domestic political influence.

When the war came to an end, the atom bomb and the program were far from being sources of strength for the military. In fact, in the hands of budget conscious officials, the atom bomb was one of the greatest threats the traditional military had ever

faced. For the first time in five years, military institutions were vulnerable to cutbacks, forced to compete for resources on an agenda crowded with domestic needs while contending also with the president's plans for streamlining the nation's armed forces. Pearl Harbor had, of course, long since obliterated any notion that the United States could afford to remain militarily complacent, but whether because of anti-statism or economics, few outside the military believed that permanent mobilization was in any way affordable. For some, the atom bomb seemed a tailor made solution: one that could guarantee national security at far less cost than standing armies and conventional munitions.¹ The *New York Times* put this sensibility into print between the bombing of Hiroshima on August 6 and Nagasaki on August 9 with phrasing which, from a military perspective, was nothing short of apocalyptic: "all of these armed forces as we now know them, become obsolete. Mass conscript armies, great navies, piloted planes have ... become part of history, the slow, long, tortured history of man's ascent from the mud."²

It would be a short-lived notion. Amidst the political and administrative disorganization of the first seventeen months following the end of the war, media savvy and politically connected Navy officers exploited the Manhattan Project—a rare source of stability between August 1945 and throughout 1946—for the resources to preserve the Navy's postwar integrity.³ For any branch of the armed forces, the ability to assert

¹ In the words of Navy historians, "the atom bomb with its awesome power seemed to invalidate all traditional military doctrines." Hewlett and Duncan, *Nuclear Navy*, 24.

² *New York Times*, August 8, 1945. On August 12, the editors qualified that statement, writing that the armed forces might not "disappear" but they had lost "forever their decisive value." *New York Times*, August 12, 1945.

³ For examples of the connection between military reorganization, demobilization, and the peacetime atomic program, see "Atom Board Compromise Taken Up by Senators and Army, Navy Chiefs" *New York Times*, March 12, 1946, 16; "Size of Army, Navy Tied to Bikini Test" *New York Times*, April 10, 1946, 16.

authority over the atomic program and atomic weapons was a matter of critical importance. As Henry A. Kissinger wrote in 1957, “possession of nuclear weapons was the prerequisite to any claim to be able to contribute to the strategy of an all-out war and was, therefore, the best support for budgetary requests.”⁴ The military’s insecurity about its own future, anxieties about unification, and the centrality of the atom bomb to both of these postwar issues made control over atomic science significant on the legislative and on the practical level. During Integration, officers strove to secure enough political support to maintain authority over the postwar atomic program even as they were taking charge of atomic science at the operational level. *Operation Crossroads* was an critical ingredient in this political and operational process—one that, although perhaps not recognizable at the time, set precedents for the peacetime exploitation of atomic science. The Navy did not undertake *Crossroads* to commandeer atomic science, but instead to make a case for the maintenance of a powerful peacetime Navy during a transitional period when the future of the conventional forces, especially the Navy, hung in the balance. In the words of Navy historians, *Crossroads* was “almost ... an act of desperation.”⁵ Its scale offers an idea of its significance: *Crossroads* was four times larger than the wartime invasion of Guadalcanal. Its operational plan was, according to its official historian, “so vast and detailed as to suggest the Book of Fate itself.”⁶ *Operation Crossroads* was a fateful turning point in the history of the atomic program, one that gave

⁴ Kissinger, *Nuclear Weapons and Foreign Policy*, 27.

⁵ “The Navy felt itself particularly vulnerable to the charge that the bomb and airpower had made ships and seapower obsolete.” Hewlett and Duncan, *Nuclear Navy*, 24.

⁶ Shurcliff, William A. *Bombs at Bikini; the Official Report of Operation Crossroads*, 43.

the military the ability to monopolize the program and its resources, transforming the atom bomb from a liability into an asset.

Crossroads might not have taken place if, as the war came to a close, the Truman administration and elected officials were as prepared to incorporate the atom bomb into their postwar planning as Navy officers were to incorporate it into theirs. Recalcitrance and indecision on behalf of the Truman administration as well as disunity and disorganization between the administration and Congress delayed the passage of legislation and led to a prolonged extension of the Manhattan Project and Groves's responsibility over it. Truman's decision to extend the Project's authority pending the passage of legislation was a well intentioned but fateful one. By authorizing the Manhattan's continuance, Truman and his advisors hoped to avoid setbacks in production and achievement by making it more likely that that private and public universities, laboratories, and industry, would be willing to re-establish during peacetime the affiliations they had formed with the Manhattan Project and the armed forces during the war. But, in reaching for a temporary way to maintain the status quo, Truman gave military officers opportunities to secure internal and external support for military exploitation of atomic science and to offer economic incentives that contributed to the peacetime militarization of the program.

Congressional disunity and the Truman administration's failure to follow through on a pre-arranged course of action meant that the Navy's ability to formulate and implement a coherent postwar strategy for atomic science was especially effective. Most congressmen, entirely surprised by the atom bomb, were unable to assess what to do about it or about the Manhattan Project quickly or meaningfully. The war came to a close

while they were in recess and the bomb was but one of many domestic issues on their agendas when they returned. The continuing investigation into the bombing of Pearl Harbor and the impact of demobilization were among the matters competing with atomic energy for congressional attention.⁷ Yet, there was little reluctance on the part of many congressmen to do what they could to take charge. By early September, multiple committees had claimed jurisdiction over atomic energy and at least six different bills emerged, ranging from granting absolute control to the military to the outlawing of any military use of nuclear fission.⁸ For his part, Truman did not address the issue of domestic legislation until September 21, three weeks after Japan's formal surrender on September 2 and just as negotiations in the United Nations were getting underway.⁹ Within the administration, domestic legislation took a back seat to the debate about whether, and if so in what way, the United States should rely on an international organization to control the use of atomic science.

This was precisely the sort of scenario that some cabinet-level officials in the Truman administration had anticipated and worked to prevent. In May 1945, Secretary of War Henry L. Stimson convened the Interim Committee, a group of scientists, Manhattan administrators, and members of Truman's cabinet and explained that the president expected them to consider and seek solutions for the problems that would arise with the bomb's use. Speculation has surrounded the purpose of the Interim Committee since

⁷ Cabell Phillips cataloged a number of issues, including unemployment compensation, selective service, and the disposal of surplus property. See, "Full Calendar Awaits Returning Congress" *New York Times*, September 2, 1945, 46.

⁸ Arthur H. Vandenberg, Arthur H. Vandenberg, Jr., ed., *The Private Papers of Senator Vandenberg* (London: Gollancz, 1953; Westport, CN: Greenwood Press, 1974), 221.

⁹ James Forrestal, *The Forrestal Diaries*, Walter Mills, ed. (New York, NY: Viking, 1951), 94-96.

Stimson wrote about it in early 1947.¹⁰ To those who later claimed that it was primarily involved with evaluating and deciding on targets for the bombing of Japan, Stimson's biographer disagreed, arguing that it only symbolically performed those tasks, giving "ordered form" to "attitudes already developed."¹¹ In official literature it is credited with developing postwar strategies for the international control of atomic energy and for "considering a draft atomic energy bill."¹² Recent analysts have continued the practice of conflating aspects of the Committee's work with decision-making that took place after the war.¹³ A strict reading of the Committee's log and notes of the meetings illustrate, however, that although the Committee discussed a variety of issues, its primary purpose was neither targeting nor the consideration of international control of atomic science, but to find ways to ease the transition of the program from wartime to peacetime. In Stimson's words, the Committee's goal was to "study and report on temporary war-time controls and later publicity" and to evaluate and make recommendations for the peacetime domestic future of atomic energy, including postwar "research, development, and control, and on legislation necessary for these purposes."¹⁴

¹⁰ Alice Kimball Smith's discussion summarizes the Committee's record and what participants subsequently wrote about it in *A Peril and a Hope*, 34-40.

¹¹ Elting E. Morison, *Turmoil and Tradition* (Boston: Houghton Mifflin Co., 1960), 629-630, quoted by Smith, *A Peril and a Hope*, 40. Smith's comment that the Committee's existence "demonstrated with what care this enormous conclusion had been considered" captures its symbolic importance, 40.

¹² See, "The Manhattan Project: An Interactive History" United States Department of Energy, Office of History & Heritage Resources. Available on the World Wide Web at http://www.cfo.doe.gov/me70/manhattan/international_control_1.htm. (Last accessed 3-27-2007).

¹³ Gerald DeGroot, a Professor of Modern History at the University of St. Andrews, Scotland, assessed the "political aftermath" of the Manhattan Project solely in terms of the international ramifications of the bomb, and drew upon comments made by Oppenheimer and Stimson at the May 31 meeting of the Committee and Truman's receptivity to them later, in October, during a meeting where cabinet members were discussing the possibility of sharing atomic secrets with the Soviet Union. *The Bomb: A Life*, 114-116.

¹⁴ "Notes of an Information Meeting of the Interim Committee, Wednesday 9 May 1945," Papers of R. Gordon Arneson, Harry S. Truman Presidential Library, [HST Library].

With no peacetime equivalent for either the Manhattan Project or the atom bomb, this was a challenging task. Atomic production and its implications were more scientifically complex and technologically demanding, and held more peacetime promise as a source of energy and for medical applications, than either the Norden gunsight and radar, two other technological marvels made possible through government funding.¹⁵ Stimson and other members of the committee were thus not only circumstantially constrained by a program that had enormous implications for national security, but also imaginatively constrained.¹⁶ In fact, the only conceptual model Stimson could think of to draw upon when he addressed the committee was a fictional one. The atom bomb, he said, was not just a weapon but an instrument that represented a “revolutionary change in the relations of man in the universe ... it might be a Frankenstein that would eat us up.”¹⁷ Stimson’s strategy to prevent some future catastrophe was to build legal safeguards and

¹⁵ The Norden bombsight’s cost has been estimated at \$1.1 billion and was the other “secret weapon” of World War II. See Stephen L. McFarland, *The Command the Sky: The Battle for Air Superiority over Germany, 1942-1944* (Washington, D.C.: Smithsonian Institution Press, 1991). See also “The Secret Weapon,” *Air and Space Magazine*, Smithsonian, 1995. <http://www.airspacemag.com/ASM/Mag/Index/1995/FM/swpn.html> (last accessed 8-20-2006). For radar, see L. Brown, *A Radar History of World War II: Technical and Military Imperatives* (London: Bristol Institute of Physics Press; Taylor & Francis, 1999).

¹⁶ The original committee was made up of Stimson, and his “Special Consultant” George L. Harrison; Ralph A. Bard, Under Secretary of the Navy; James F. Byrnes, the President’s Special Representative; Vannevar Bush and Karl T. Compton, Director and Chief, respectively, of the Office of Scientific Research and Development (OSRD); James B. Conant, Chairman, National Defense Research Committee; William Clayton, Assistant Secretary of State. By the second meeting, additional members were added: a scientific panel made up of Arthur H. Compton, Ernest O. Lawrence, J. Robert Oppenheimer, and Enrico Fermi was included as were additional representatives from the Army: General Marshall, Lt. Gen. Thomas T. Handy, and Groves; and from the Navy, Admiral of the Fleet Ernest J. King, Admiral Richard S. Edwards, and Rear Admiral William R. Purnell. “Notes of an Informal Meeting of the Interim Committee” 14 May 1945, Papers of R. Gordon Arneson, HST Library.

These technological and scientific achievements, together with the bomb, the proximity fuse, and solid fuel rockets combined provoked the military to continue cooperative university/laboratory/military research at the end of the war. See Leslie, *The Cold War and American Science*, 7.

¹⁷ The language is not included in the record R. Gordon Arneson kept of the meetings, but is available on the Department of Energy website: http://www.mbe.doe.gov/me70/manhattan/international-control_1.htm#interim%20committee (1/14/2005; 3/25/2005).

to secure, first and foremost, suitable legislation for the domestic control of atomic energy.

As Secretary of War and the Committee's Chairman, Stimson was as aware as any other individual of the importance of incorporating the bomb into postwar diplomatic policy and the Committee's role in framing that policy. Meeting formally eight times between May 9 and July 19, the Committee discussed everything from bombing Japan "without warning," to securing Sweden's supplies of radioactive ore, postwar international control, and post-use publicity. But the most important task facing the Committee, from Stimson's point of view, was to devise a legislative solution to postwar domestic control. During some of the Committee's earliest meetings, Stimson asserted that "first priority be given to legislation for domestic control" so that the "problems of international relations and controls" could be dealt with under postwar law. Stimson's response to a Committee proposal to form an advisory "Military Panel" suggests that at least one of the reasons he desired a quick legislative solution was to avoid duplicating Manhattan in peacetime and to eliminate as soon as possible the military's authority over atomic science. While welcoming the creation of an advisory Scientific Panel, he rejected a Committee proposal for an advisory "Military Panel" of upper echelon Army and Navy officers, opposing from the outset the possibility of military unduly influencing Committee deliberations.¹⁸ On June 21, the Committee outlined its recommendations and directed that a bill be drafted and submitted to them for consideration.¹⁹ During a mid-

¹⁸ "Interim Committee Log" Papers of R. Gordon Arneson, HST Library. The Committee's discussion of a military panel was conducted on May 14, 1945, 2. For Stimson's statement of priorities, see the entry for June 7, 5.

¹⁹ "Notes of the Interim Committee Meeting" 21 June 1945, 6. Papers of R. Gordon Arneson, HST Library.

July meeting, the Committee addressed postwar control of atomic material and secrecy, and discussed and made revisions to the draft legislation that they had requested. The Committee decided that until legislation was in place, the Manhattan Project should continue under Groves's direction. Nonetheless, the revisions they made to the draft bill left no doubt that they intended, through the legislative process, to prevent the peacetime control of atomic science from falling into the hands of the military. The Committee eliminated four military positions—two Army and two Navy—that Manhattan officials had envisioned for the nine-member Commission. The members decided instead on a wholly civilian commission and replaced the military's presence on the commission with a "Military Board" that would serve in an advisory capacity between the Commission and the service branches.²⁰ The "Atomic Energy Bill" was revised and finalized accordingly and by August 18, Stimson's Special Consultant George L. Harrison had begun to refer to it as "our proposed bill."²¹

But the bill never made it out of the administration. On September 2, a Sunday, Harrison met with Secretary of State Byrnes to discuss getting it into congressional hands. Also attending the meeting was Dean Acheson, Byrnes newly promoted Under Secretary of State. Byrnes agreed that his office should, in Harrison's words, "carry the ball" and turned it over to Acheson. Acheson was the likeliest choice to take the bill forward. Not only was he second-in-command to Byrnes, but he had also, while Assistant Secretary, made repairing relations between State and Congress his goal. In his own words he had made every effort "to bridge ... gaps in values and understanding" through

²⁰ "Notes of Interim Committee Meeting" 19 July 1945, 3. Papers of R. Gordon Arneson, HST Library.

²¹ George L. Harrison, Special Consultant to the Secretary of War and Alternate Committee Chairman, "Memorandum for the Record 18 August 1945," Papers of R. Gordon Arneson, HST Library.

“hours of tramping the halls of the House and Senate office buildings, innumerable gatherings and individual meetings, social occasions of all sorts at which all the arts of enlightenment and persuasion were employed.”²² Acheson’s most recent biographer explains that his relationship with congressmen was so intimate that Acheson wrote speeches for them and made “them look good to their constituents by feeding them department information.”²³ But Acheson, who described himself in his memoirs at this time as “Chief Lobbyist for State,” carried the bill only as far as his desk.

Over the next four days, Harrison contacted Acheson twice, “urg[ing] upon him the necessity of prompt action,” and on September 6, “called to his attention the fact that the newspapers were already talking about Members of Congress introducing their own bills and that ... it was very important that we proceed as fast as possible.” Acheson told Harrison that “he would look into it and see what he could do about hurrying it.” On September 8, John McCloy, Under Secretary of War, visited Acheson in his office in hopes that he might be more successful in persuading Acheson to fulfill the Interim Committee’s request and to perform as directed by his boss, Secretary of State Byrnes. McCloy’s efforts were as fruitless as Harrison’s had been. Meeting afterward, Harrison and McCloy came to the conclusion that Acheson was in over his head: “Acheson was very timid about it ... he doesn’t know what committee to turn to or to whom he should go for the introduction of the bill.”²⁴

²² Acheson, *Present at the Creation*, 100. For Acheson’s efforts to re-elevate the State Department’s importance after the FDR years by operating as an instrument of executive initiative, see 96-101.

²³ Robert L. Beisner, *Dean Acheson: A Life in the Cold War* (New York: Oxford University Press, 2006) 20.

²⁴ George L. Harrison, “September 8, 1945, Memorandum for the Files,” Interim Committee Log, R. Gordon Arneson Papers, HST Library.

The proposed “Atomic Energy Bill,” a document that Stimson made his highest priority and that had been the primary goal of the Interim Committee, one that the combined expertise of the Interim Committee believed essential to the responsible transition of authority over atomic energy into the peacetime workings of democratic government, went unsubmitted and unconsidered because Acheson failed to move it forward. Harrison summarized this history in a September 11 memorandum, wherein he urged President Truman’s secretary to let the president know that Acheson was ostensibly holding it up because he feared repercussions on the international front. Harrison disputed that stance with reference to the Interim Committee’s commitment to get domestic legislation passed because it would expedite international agreements, noting as well that it was also a commitment shared by Secretary of State Byrnes and the primary reason why Secretary Byrnes, McCloy, and Harrison had decided that the State Department should be the one to deliver the bill to Congress—immediately—in the first place.²⁵ Discussions about moving the bill forward continued: on September 12, Secretary of War Stimson discussed the issue with the president and aides gave Acheson’s assistant a briefing he had requested on the background of the bill—a conversation that ended with the assistant saying that the next step would be for the president, the secretary of war, and Acheson to discuss the matter; on September 13, after Harrison had again met with Acheson, one of Acheson’s aids phoned Harrison to ask if the Secretary of the Interim Committee, R. Gordon Arneson, could be assigned to help him “handle the bill,” a request that Harrison said would be unnecessary since Harrison, McCloy, and the War Department were already on record with Secretary of State Byrnes

²⁵ George L. Harrison, “Memorandum for the Secretary,” September 11, 1945, 2. President’s Secretary’s Files, Box 173, Folder “Atomic Bomb: Cabinet: James F. Byrnes,” HST Library.

as ready and willing to assist moving the bill forward in any way that the State Department desired.²⁶ On September 15, Acheson ignored the bill entirely in the recommendation he made pursuant to Truman's requests for input during his first cabinet meeting on the issue held on September 21. Acheson suggested that, concurrent with the beginning of talks with the Soviet Union, the president "might" send a message to Congress explaining the foundations of the U.S. proposal and "recommending" that, at that time, Congress proceed with its own full consideration of atomic energy. Nowhere in those four pages did Acheson mention the Interim Committee's draft bill; nor did he recommend that the president make note of the bill in his message to Congress.²⁷

Acheson's account of the Interim Committee's bill does a disservice to the history. In his memoirs, he discusses the concerns he had at the time for international control, but fails to mention the work of the Interim Committee or the draft bill, referring to it only in passing and diminishing its significance as though it were a formless idea floated by insiders. Because the liberties that Acheson took with the history of the Interim Committee and its proposed bill have led to distortions in the domestic history of the peacetime program,²⁸ it will be useful to compare the account detailed in the Interim Committee Log and Notes discussed above with Acheson's:

For some weeks ... Harrison, Governor of the Federal Reserve Bank of New York, and John J. McCloy who had been collaborating with Colonel Stimson on atomic energy matters, had been urging Mr. Byrnes and me ...

²⁶ R. Gordon Arneson, 11 September 1945, 12 September 1945; George L. Harrison, September 14, 1945, all in "Interim Committee Log," Papers of R. Gordon Arneson, HST library.

²⁷ Dean Acheson "Memorandum Requested by the President" September 25, 1945, 4; President's Secretary's Files; Box 173, Folder "Atomic Bomb: Cabinet: James F. Byrnes" HST Library.

²⁸ Among those who have followed Acheson's characterization of the events are Hewlett and Anderson, *The New World*, 424-426; David S. McLellan, *Dean Acheson: The State Department Years* (New York: Dodd, Mead & Company, 1976), 62-64.

to support with the President the May-Johnson bill on domestic control. Mr. Byrnes had agreed to this before his departure. However, I had become impressed by the complications that might arise if the Administration went too far with domestic legislation before formulating any approach to international problems.²⁹

It was, of course, not a “May-Johnson” bill until October 3, after the Interim Committee’s bill, as well as a presidential statement to accompany it, had been discussed and agreement reached in a meeting between congressmen and administration officials, including Acheson, Secretary of War Patterson, and George Harrison on October 2. By that time the bill had undergone some revision, including the re-addition of the four military officers to the nine-member commission that the Interim Committee had removed from the proposed bill in July, and, according to Harrison’s report of the meeting, it had become impossible for any congressional discussion of domestic control to be separated from the issue of international control.³⁰ Had Acheson, as the Interim Committee had planned, coordinated the introduction of the bill among congressional leaders in August or early September, it would have allowed the administration (by reason of the work of the Interim Committee) to frame the terms of the debate over domestic control before lines had been publicly drawn in the sand over secrecy, the extent of military authority over ordinance or atomic science generally, and before the issue of international control became an issue for congressmen to deliberate on at the same time that they were considering what to do about domestic control. It is impossible

²⁹ Dean Acheson, *Present at the Creation*, 124.

³⁰ George L. Harrison, Notes, October 3, 1945; “Interim Committee Log,” Papers of R. Gordon Arneson, HST Library. Arneson’s recalled that the May-Johnson bill was insufficiently handled but mis-remembered the series of events that led to the State Department assuming authority. “Congressman [Andrew] May and Senator [Edwin C.] Johnson held one day of hearings and that was it. You don't get vital legislation through that way. I think the administration was very unhappy about it; things floundered for a while. Finally, the War Department asked the State Department to take over the burden of sponsoring the legislation.” R. Gordon Arneson, Oral History Interview conducted June 21, 1989 by Niel M. Johnson, 35. HST Library.

to know whether the problem of domestic control would have been settled earlier had Acheson acted promptly and in accordance with the direction he was given; but it is reasonable to assume that all of the issues that were raised in the press prior to the bill's final submission did complicate congressional deliberation and did, therefore, cause an unnecessary delay in passage of atomic energy legislation.

Acheson's mischaracterization of the history in his memoirs suggests that by September 11, Acheson, though justifiably concerned about the international implications of atomic energy, was reaching for an excuse to explain his failure to move the bill forward. There are three possible explanations for Acheson's inactivity: Harrison and McCloy were correct in their initial suspicion that it was timidity that froze Acheson's hand; Acheson did not want to become involved in any controversy before the hearing had been held on his confirmation as Under Secretary—a hearing Acheson expected would be held following Truman's nomination of him on September 19 or because Acheson preferred to set his own pace. According to Acheson's biographer, this was something Acheson did out of respect for his own ability to sense when the time was right: "His skill at letting matters rest and returning to them later came from his matter-of-factness and a nice sense of timing." Acheson believed that it was "as important to know when to sit and wait as it is to know when to push ahead."³¹ R. Gordon Arneson, then a staff member to the Delegation to the United Nation's Atomic Energy Commission, recalled that Acheson was not one of the "best advocates" because he had

³¹ Robert L. Beisner, *Dean Acheson: A Life in the Cold War*, 101. As Beisner also points out, Acheson had already put himself in the middle of controversy by supporting Stimson's view that atomic secrecy would be counterproductive—a position that was also held by Wallace, opposed to by Secretary of the Navy Forrestal and leaked, probably by Forrestal according to Beisner, to the *New York Times*, as one that put Wallace in the position of answering to the claim that he wanted to "reveal the secret of the atomic bomb to Russia." 32.

unresolved doubts about the legislation until sometime in Spring 1946 when he put forth a State Department position that the two military seats on the commission proposed in the McMahon bill be dropped.³²

From the standpoint of the peacetime atomic program, however, Acheson's tentativeness was significant: it put the future of domestic control up in the air, where it became a focus for political grandstanding, the playing out of tensions between the White House and Congress, between pro- and anti-military scientists, between those who desired full international cooperation on atomic matters and defenders of the status quo. As Groves testified, "We are flirting with national suicide if this thing gets out of control." Even those opposed to May's bill agreed with the danger. Vannevar Bush, head of the Office of Scientific Research and Development desired "rigid" control lest careless experimenters set up laboratories that would "sterilize everyone who passed by." The administration's failure, for whatever reason, to take the initiative at the very end of the war over atomic legislation meant that, in the words of a *Time* reporter, "Congress would just have to do its frightened best."³³ The result was a year of bi-polar debate over civilian versus military control—debate that gave the military time to forge a cooperative alliance to secure authority over atomic science, in whatever way was possible; and gave the military, and especially the Navy, the opportunity to plan and receive approval for and to conduct *Operation Crossroads*. In sum, Acheson bought time for the military to

³² See "Interview with R. Gordon Arneson by Maj. Montgomery C. Meigs, July 1980," Atomic Energy Program and R. Gordon Arneson—Correspondence, 2 of 2, Papers of R. Gordon Arneson, Subject File 1945-1994, HST Library, 23-24. Arneson was the secretary of the Secretary of War's Interim Committee on Atomic Energy, 1945; member of staff, U.S. delegation to the United Nations Atomic Energy Commission, 1946-48; Special Assistant to the Undersecretary of State, 1948-50; and Special Assistant to the Secretary of State, 1950-54.

³³ All quotations from *Time*, "Better than Dynamite," October 22, 1945.

exploit the program; to continue consuming and to begin monopolizing peacetime atomic resources; to establish postwar contracts with private and public entities and to begin building a network of external, civilian, support for military atomic projects; and, to begin using atom bombs as instruments of domestic political influence.

While Acheson stalled on the Interim Committee's bill and before the JCS had taken up, and approved, *Operation Crossroads*, the military had already allied for the purposes of investigating their atomic possibilities, creating a "Joint Committee on New Weapons and Equipment" and authorizing it to enlist Groves and the Manhattan Project for new military projects. On September 4, 1945, two days after Japan's formal surrender, the Joint Committee sent a letter to Groves questioning production capacity. The specificity of that request suggests that at the very least at an operational level officers had already identified specific targets and also that there was an expectation that wartime production schedules would be maintained or increased. "How long a period of time will be required to stockpile 123 bombs if production is continued on the same scale and priority as at present?" And what, they asked, was the "maximum rate of delivery from storage in the United States ... using present personnel and facilities?"³⁴ Such questions demonstrate that the Committee had not yet had time to imagine atomic weapons that were not bombs and, possibly, that unlike the editors of the *New York Times*, they had not yet considered the implications of their request: that bombs of the

³⁴ "Memorandum for Major General L. R. Groves, USA." from H.P. Gibson for the "Joint Committee on New Weapons and Equipment" September 4, 1945, "Top Secret Correspondence of the Manhattan Engineering District" (hereinafter TSCMED), a microfilm publication of the National Archives and Records Administration, Washington, D.C. Though the request for 123 bombs indicates that a list of targets existed, I have been unable to locate any additional documentation that might have clarified the services' objectives, though Barton J. Bernstein notes that in October 1945, the JCS selected "twenty urban targets in the Soviet Union deemed most suitable for atomic attacks." "Eclipsed by Hiroshima and Nagasaki, Early Thinking about Tactical Nuclear Weapons" *International Security* 4 (1991): 171.

Hiroshima/Nagasaki type could render conventional forces irrelevant. This assumption is supported by a request sent six weeks later from another newly created entity—the War Department Atomic Energy Board—that shifted the emphasis away from a strict “bomb” model and toward conventional, “atomized,” tactical weapons. Such weapons would be dependent, as had those of World War II, upon servicemen. The Board asked for atomic energy “to use as the explosive in the warheads for all missiles and projectiles” including bombs, artillery projectiles and shells, and an assortment of short, medium, and hemispheric-range ground-to-ground, ground-to-water, and ground-to-air missiles. Expecting that servicemen might be exposed to radioactive hazards, the request included countermeasures such as “neutron escape” warning and detection devices, “simplification of the mechanisms of the warhead and associated bombs,” and “prophylactic treatment” for injured personnel. One enthusiastic general required “development to perfect the loading and detonating techniques so that the carrying vehicles for atomic energy can penetrate the earth’s crust.”³⁵

These memoranda complicate the picture of military planning portrayed by JCS historian David Alan Rosenberg, who relied upon the post-National Security Act files of the JCS to find that the military’s planning for an atomic attack was something that began in earnest only in 1947. In his words, “the JCS did not collectively or formally review or approve any plan contemplating the use of atomic bombs. ... The first operationally

³⁵ “Memorandum for the Chairman [Groves], War Department Atomic Energy Advisory Board” October 18, 1945. TSCMED. This request presents an opportunity to revise Bernstein’s study of the tactical use of atomic weapons, especially his concept of what constituted a “tactical” nuclear weapon in the minds of military planners and his finding that the discussion of the contemplated uses of atom bombs in a tactical way was limited to the months immediately preceding the end of the war and not resumed until “only later [likely 1950] amid new technological possibilities with the likelihood of hundreds and even thousands of A-bombs, would there be a strong institutional push for tactical nuclear weapons.” “Eclipsed by Hiroshima and Nagasaki” 170-171.

oriented atomic target list was prepared in the summer of 1947.”³⁶ Admittedly, the requests of the two committees may not have risen to the level of operational planning that Rosenberg had in mind, but they do demonstrate that officers were beginning to include atomic weapons in their planning in the immediate aftermath of the war.³⁷

Though it would take another eight years before an atomic cannon, a weighty, multi-ton affair that was so large it required trucks fore and aft to get it into position and a partially buried telephone pole to hold it in position, was ready to test,³⁸ requests such as these provided the vital first imaginative step in the development of tactical weapons and the ideological conventionalization of atomic weapons that occurred during Eisenhower’s administration.³⁹ The first step in establishing atomic weapons experiments as political instruments was *Operation Crossroads*. *Crossroads* gave military officers a precedent for the staging of elaborate atomic demonstrations to suit domestic agendas—demonstrations that made explicit the use of atomic weapons as theatre that downplayed radioactive dangers by anointing tactical weapons with cartoonish nicknames such as “Amazon Annie.”⁴⁰ Over time, public demonstrations of weapons’ effects—such as those carried

³⁶ Rosenberg, “The Origins of Overkill,” 3-71, quote from 12.

³⁷ They also illustrate that the historical record can be more complex than is evident from an institutional record. In this case, it is likely that either the institutional overhaul accomplished as a result of the NSA or the destruction of the JCS’s postwar minutes during Watergate—a “perfect catastrophe”—caused an interruption in the record that led to an analytical distortion. Eduard Mark, “The War Scare of 1946 and Its Consequences,” *Diplomatic History* 3 (1997): 385, fn. 6.

³⁸ Recollections of G. L. Shafer, a Lieutenant with the 867th A Battery Field Artillery Unit, U.S. Army, Operation Upshot/Knothole, on an atomic veteran’s website: <http://www.aracnet.com~pdxavets/shafer.htm>.

³⁹ See, for example: “Stage is Set for First Firing of Atomic Cannon,” *Las Vegas Review Journal*, May 24, 1953; “Amazon Annie Hits Target: History Made by A-Cannon,” *Las Vegas Review Journal*, May 25, 1953.

⁴⁰ Typical headlines include: “Stage is Set for First Firing of Atomic Cannon,” *Las Vegas Review Journal*, May 24, 1953; “Amazon Annie Hits Target: History Made by A-Cannon,” *Las Vegas Review Journal*, May 25, 1953.

out at the Nevada Test Site—resulted in dereliction of established testing protocols and safety procedures, and unnecessarily high levels of off-site fallout.⁴¹

Truman’s decision to continue Groves’s authority gave the armed forces the first inter-governmental opportunity to write new contracts—contracts that encumbered the atomic program and committed, for the long term, the nation’s atomic resources to military projects. In 1946, for example, the Army and Navy provided in the neighborhood of \$90 million dollars to universities and industrial laboratories performing general research and investigating nuclear physics.⁴² And, in early February 1946, eleven months before the Act became law, K. D. Nichols, Groves’s chief assistant, reminded Groves to tell General Eisenhower that “to avoid disintegration of our research organizations, it is absolutely essential that we make commitments” to spend “20 to 40 million during 1947. ... Commitments must be made in the immediate future prior to the passage of atomic energy legislation.”⁴³ Though Nichols’s proposal amounted to only a fraction of the approximately \$13 billion that Truman had planned for the military’s budget, it was a substantial amount given the interim nature of Groves’s authority. It also gave the military the opportunity to control atomic resources beyond the interim period. It is likely that expedience alone prompted the writing of such contracts. But in at least one instance, (and probably more,) Groves approved a contract in a deliberate move to avoid the

⁴¹ The best-known example may be “Harry”, of the Upshot Knothole Series, detonated at the Nevada Test Site on May 19, 1953. Weather had caused the Test Director to postpone the shot and disappoint the assembled observers (including congressmen) over the course of several days. Adverse wind conditions persisted, but “Harry” was detonated as re-scheduled on May 19 to avoid additional delay.

⁴² Louis N. Ridenour, “Military Support of Atomic Science: A Danger?” *Bulletin of the Atomic Scientists* 3 (1947): 221.

⁴³ Nichols was briefing Groves for a meeting with General Eisenhower to take place on February 4, 1946. “Memorandum to Major General L. B. Groves” 2 February 1946, TSCMED.

possibility that the newly seated AEC would not. After Truman signed the AEA, but before the AEC took charge of the program, Groves guaranteed that the Navy would not be hindered by the possibility that the AEC would not cooperate with the Navy's plans by approving a contract with General Electric. That contract provided funding to study development of a nuclear powered reactor for a Navy destroyer.⁴⁴ So, even as congressmen were deciding that the management of the atomic program should be in civilian hands, the Navy and other branches of the armed forces were taking steps that reduced the resources available for future civilian development and stifled the options available to the civilian authority that elected officials would establish under the Atomic Energy Act of 1946.

Truman's extension of Groves's authority also provided time for advisory-level officials of the Manhattan Project to downplay the perception within government circles that Groves had overreached as manager of the Manhattan Project in an effort to generate support for continued military control over atomic energy, for *Crossroads*, and indirectly for the militarization of atomic science. Why? While some no doubt sincerely believed that only the military was capable of corralling atomic science, one example suggests that internal support for military control was not necessarily the result of a decision that the military was the appropriate authority to control atomic science, but was prompted by a combination of factors, including: (a) a belief that the speedy passage of domestic legislation was necessary to neutralize the possibility of atomic warfare; (b) confidence that elected officials would have no difficulty restraining the military's enthusiasm for

⁴⁴ Hewlett and Duncan, *Nuclear Navy*, 39. The Navy was also contracting with Westinghouse. 40-41. A summation of expenditures drawn from their breakdown of the cost of Navy's nuclear reactors between 1946-1963, shows that research and development spending by the AEC was at least \$1 billion, while the Navy spent less than half that: \$418 million. Appendix 3, 402-403.

atomic weapons during peacetime; and, relatedly, that (c) the heavy-handedness that those opposed to continued military control found so objectionable during Manhattan had not been the result of military authority, but had, instead, been circumstantially anchored in the pressures of wartime and Groves's businesslike authoritarian manner.

One of these officials was Stafford Warren, Medical Director of the Manhattan Project, soon to be Chief Medical Officer for *Operation Crossroads*. Warren had prepared the safety plan for Trinity, analyzed and reported on the radioactive damage that first atom bomb had caused, and had been among the first investigators into Hiroshima and Nagasaki. From his perspective in December 1945, passage of the dominant military-oriented, May-Johnson, atomic energy bill was urgently necessary, the first step to international control and agreements to prevent atomic warfare and a necessary preliminary to funding studies of beneficial uses of atomic energy and those that would lead to new ways to reduce or mitigate the hazards associated with exposure to radioactive material. Warren took advantage of a position on a State Department "Working Committee" convened to advise the Top Policy Commission on international control to massage Manhattan history, endeavoring to leave the impression that Groves (and by extension, the Army) had been appropriately subordinate to civilian authority during wartime; and, that if given the opportunity during peacetime, military officers would likewise defer to civilian authority, direction, and policies. Warren's handwritten list of factors that led to the successful development of an atom bomb, and the corrections he inserted, illustrate that his default assumption about the project was that military autonomy was the key to Manhattan's success. Only as an afterthought did Warren decide—for the Working Group's consumption—to distinguish between civilian and

military responsibility and to minimize the extent of Groves's authoritarianism. Warren originally wrote:

(1) Proper vision & overall concept of AB [atom bomb] importance:

(a) military authority (b) financial support &

(c) proper concept of relationship to the war in the

Manhattan District organization from the top down.

Warren's revisions, made with insertions on his original copy, indicate that he was not only interested in protecting Groves's reputation, but also in the identification of a set of circumstances that he believed important for the peacetime program:

(1) Proper military vision & overall concept of AB importance:

(a) military and civilian administrative authority (b) financial support &

(c) proper concept of its relationship & importance to the war in the

Manhattan District organization from the top down

(d) pooling all nuclear research under one organization, ie.,

Manhattan District.⁴⁵

This revision illustrates that Warren was motivated by sympathy for Groves and the dilemmas he had faced during the war as manager of Manhattan, but also was concerned with the makeup of the peacetime program and especially the creation of a coordinated research program. In Warren's estimation, such coordination would prevent fragmentation of data and misplaced assumptions about exposure limits and human tolerance that occurred when, as he later put it in a ninety-minute lecture that summarized what he had learned from the bombings of Japan and at *Crossroads*, "chemists and

⁴⁵ Undated. The notes were included with others made for the State Department's Working Group meeting on December 1, 1945. Stafford Warren, "Assorted Notes and letters December 1945-January 1946." Stafford Warren mss, Coll. 987, Box 57, Folder 4, UCLA.

physicists” misunderstood the “biological problems. They use a slide rule and diffuse things evenly and then come up with figures that are fantastically low or safe.”⁴⁶ Thus, it seems most likely that it was not out of support for a militarily controlled program that Warren sought speedy passage of a bill that would have put the military in charge of atomic science, but because he believed—not unlike the members of the Interim Committee—that settling the issue of domestic control was an essential first step toward the achievement of greater scientific understanding of the possibilities and hazards of radioactive materials as well as for the erection a system of international control that would limit the possibility for atomic warfare.

Toward a goal of domestic legislation, Warren tried during the same period of time to broker a détente between Groves and the scientists he had antagonized during wartime and who were the most outspoken opponents of continued military control over atomic energy. To the scientists, Warren cast the problems they remembered at Manhattan as generated by wartime—not military authoritarianism—and pointed out the control that the president and Congress would be able to exert during peacetime. The real problem, Warren argued, was neither Groves nor the Army, but the war: “strain and fatigue,” “security regulations,” and, not unlike the “rest of the country,” scientists were “restless,” tired of “restraints” and “eager to get back to civilian occupations and back home.” As evidence that it had been war, and not the Army, that was the problem, Warren reminded them that since the end of the conflict, Groves had encouraged “freedom of research.” At the same time, Warren tried to convince them their opposition to the military bill was counterproductive, undermining scientific progress. Their

⁴⁶ Transcript, August 19, 1948. Stafford L. Warren, “Course in the Application of Nuclear Physics to the Biological and Medical Sciences. Subject: Review of the Problems Presented by Atomic Bomb Detonations.” Box 291, unnamed folder, Stafford Warren mss.

outspoken opposition had caused the senate committee to become “badly confused and afraid to make decisions” and had negatively affected scientific prestige. Warren explained to them that indecision was contributing to “apathy” which would lead to “less support of scientific research” when a bill was finally passed. He argued for speedy passage of a stopgap bill, urging them to unite, get “something passed ... which can be tried out” and decide on safeguards they wanted added as amendments and to “get the right men to serve in key positions.”⁴⁷

Warren was less blunt with Groves. With a mixture of admiration and sympathy, it took Warren nine pages to sum up his assessment of the oppositional scientists’ frustrations and to give the cantankerous Groves a friendly lesson in the art of intra-personal political persuasion. Explaining the “spade work” Groves needed to do, Warren told him to “mend all the fences possible ... eliminate friction and jealousy without losing military control.” Warren suggested that Groves take the younger scientists into his confidence, use actual cases of suspected espionage to explain the importance of his security measures, and show his appreciation to the scientists by throwing a party. The significance of this final recommendation, and the gentle prodding that Warren included to ensure that Groves not botch the reconciliation, demonstrate not only that Warren believed Groves to be particularly inept at camaraderie, but more importantly that Warren genuinely believed that much of the opposition to continued military control was grounded primarily in Groves’s personality. Among his recommendations for the party, Warren told Groves to have his second-in-command Nichols set it up “with all the trappings ... get everybody there ... and have fun. Make it like an alumni meeting. It’ll work without liquor but will need strong coffee.” Apparently wary that even Nichols

⁴⁷ “Rough Draft Talks to Scientists. Notes” November 1945. Stafford Warren mss, Box No. 285, Folder 2.

might not get it right, Warren suggested that proper seating arrangements would encourage co-mingling between civilian and military: “arrange the seating with alternate military and civilians.” Warren encouraged Groves to make the most of the occasion, to elicit appreciation and sympathy from the scientists by admitting his “embarrassments in dealing with them” and showing appreciation for the scientists’ work and sympathy for their hardships. In this way, Warren argued, Groves would be able to turn “their fear of you into loyalty.”⁴⁸

Thus, in the winter of 1945, and before Congress or the president had given their approval to *Operation Crossroads*, Warren—perhaps unknowingly because he clearly believed that elected officials would be the ultimate guardians of atomic energy—contributed to militarization of the atomic program. Warren’s admiration for the wartime effort and the success of the Manhattan Project, his belief in the peacetime value of atomic science, and his faith in America’s democratic system, led him to minimize the extent of autonomy exercised by the Army and Groves during Manhattan and, in the process, to diffuse at least partially the wariness within a high-level government advisory committee about what the military might be expected to do if given authority over atomic energy. Warren’s opinions carried weight: the respect that he commanded outside of the Manhattan Project is evident from his inclusion in a powerhouse of consultants, including such leading figures as Henry Smyth and Vannevar Bush, brought together to analyze the prospects for international control over atomic energy and to devise the rudiments for inspection that would best protect America’s interests and security. Their recommendations were to be presented in a package to the War, State, and Navy

⁴⁸ December 1, 1945. “Recommendations for M.E.D. Staff program”, Box 57, Folder 3, “Radioactive materials forms. December, 1945,” Stafford Warren mss

Departments for negotiations with the Russians and for presentation to the United Nations Security Council.⁴⁹ It is, of course, impossible to know how influential Warren's suggestions, recommendations, and portrayal of the military's command of the Manhattan project were. It is reasonable to assume that the combination of the respect he commanded within high-level administrative circles, his support for *Operation Crossroads*, and his willingness to serve as its Chief Medical Officer, played a role in the assent the president and Congress gave the *Operation*.

Truman's indecisiveness and his administration's failure to follow through with the atomic energy bill drafted by his Interim Committee did not merely maintain the status quo, it created opportunities for the armed forces to begin exerting their authority over atomic science. As Warren had within the Working Committee, military officers and their supporters used the delay to combat antimilitarism within government circles, to diffuse objections and build support for the peacetime exploitation of atomic science by the armed forces among congressmen and officials for peacetime research and, for the expansion of military control over atomic energy. Simultaneously, Army and Navy officers generated additional external support for military projects during peacetime by contracting with private industry and universities for research and development. And, military officers who had begun planning for and requesting additional atomic bombs and development of new types of atomic weapons were also causing money and material to be commandeered for military projects and tied up atomic resources for military use far into the future.

⁴⁹ December 1, 1945, notes for "Meeting of 'Working Committee'—advisory to Top Policy Committee of S.D." Box 57, Folder 4, "Assorted Notes and Letters Dec., 1945-Jan., 1946" Stafford Warren mss.

Over the same period of time, Navy and Army officers allied in support of *Operation Crossroads* in an effort to begin drawing public support for the maintenance of a strong peacetime military. The discussion that follows demonstrates that *Crossroads* was not, as historians have suggested, merely an anomaly in the history of atomic weapons or the last gasp of the Manhattan Project; but, because it operated as a bridge between wartime and peacetime ways of doing business, giving military officers practical experience in the use of wartime strategies of control during peacetime and in the use of atomic science for domestic political purposes, was, instead, one of the most significant turning points in postwar history.

Operation Crossroads was put in motion by Secretary of the Navy James V. Forrestal and his Assistant, Lewis L. Strauss. Strauss's interest in atomic development had begun before the war when, as one of New York's prestigious financiers, he began to invest in the production of radioactive isotopes because of the promise they held for the treatment of disease.⁵⁰ Forrestal's immediate goal was to wrest attention away from the Army to ensure that the Navy would prevail in upcoming legislative battles about appropriations and military reorganization.⁵¹ As the *New York Times* put it, the end of the war was all that was needed to bring to the fore intra-service rivalry. The military had "a green light to resume their campaign, and Navy leaders are preparing for the coming

⁵⁰ Strauss had been the senior partner of Kuhn, Loeb and Company. Rogow, *James Forrestal*, 101.

⁵¹ See Albion and Connery, *Forrestal and the Navy*, 180-181; Arnold A. Rogow, *James Forrestal: A Study of Personality, Politics, and Policy* (New York: The Macmillan Company, 1963); and Townsend Hoopes and Douglas Brinkley, *Driven Patriot: The Life and Times of James Forrestal* (New York: Alfred A. Knopf, 1992).

The Army seems to have drawn some Navy blood by ending the war in the Pacific. Ralph Bard, Undersecretary of the Navy said before the bomb's use that Japan was already "licked" and that a warning should be delivered before the bomb was used. In a memo to Stimson, he wrote that the Army only wanted to use the bomb to "be in on the kill." Cited in Robert Jay Lifton and Greg Mitchell, *Hiroshima in America, Fifty Years of Denial*, 141.

fight.”⁵² Forrestal’s long-term plan was both more complex and ambitious: nothing less than the mobilization of peacetime America, the erection of a national security economy, and securing policymaking authority for military leaders. By August 1945, Strauss had made Forrestal’s vision his own. In contrast to officers in other branches who began to press Groves for additional atom bombs and for development of a range of conventional atomized devices, Strauss took into account the ways that the atomic program could be used to help the Navy secure its future. Strauss sought to use atom bombs to demonstrate that the Navy was the only branch of the forces that would be able to withstand and effectively respond to an atomic attack. On August 16, one month to the day after Feynman and Wilson considered their role in the Trinity bomb and one week after the bombing of Nagasaki, Strauss wrote a memorandum to Forrestal recommending that the Navy waste no time in holding maneuvers that would show that Navy ships could withstand an atomic attack. Strauss’s interest was not with national security but with the Navy’s postwar viability and prestige. In his own words, the goal of this experiment was to maximize the Navy’s share of the defense budget: to avoid the possibility that “loose talk ... that the fleet is obsolete” might gain political traction and “militate against appropriations to preserve a postwar Navy of the size now planned.”⁵³ Though Strauss’s proposal for maneuvers pitting ships against atom bombs would be a tremendously expensive way to test vessel design against radiation and blast and was implausibly based on the possibility that an enemy would use a weapon as expensive and as terrifically effective at land-based devastation as the atom bomb against targets as scattered and as

⁵² *New York Times*, August 25, 1945, 1.

⁵³ Lewis L. Strauss, *Men and Decisions* (Garden City, NY: Doubleday and Company, Inc: 1962), 208.

resilient as ships and vessels; and, may have amounted to what one columnist called another example of “the piecemeal improvisation which represents the daily evolution of our post-war defense policy,”⁵⁴ it nonetheless dovetailed perfectly with Forrestal’s methods of political engagement and with his postwar goals.

Forrestal’s enthusiasm for *Crossroads* reflects the confidence he had in its potential to position the Navy at the forefront of peacetime planning. He created an Office of Special Weapons, staffing it with four top Navy men, three of whom had worked on the Manhattan Project.⁵⁵ He arranged with Connecticut Senator Brien McMahon to propose the experiment during a speech he made on August 25, publicly launching *Operation Crossroads*.⁵⁶ By the end of August 1945, Forrestal had achieved his short term goal by stealing some of the limelight that had been occupied by the

⁵⁴ Hanson Baldwin acknowledged that because of demobilization as well as public opinion, the Navy had reasons to hasten the tests but nonetheless argued that the elaborate operation should be able to make room for a land-based experiment to investigate the types of sheltering that might protect from atomic attack as well as the damage bombs would cause to military equipment such as tanks and armaments. “Bikini Tests’ Value to Navy: Atomic Bomb Experiments Seen Limited Technically, as now planned, to Guidance on Ship Types of the Future.” *New York Times*, February 20, 1946, 9. See also the public sparring of Admiral Chester Nimitz and retiring General “Hap” Arnold, *New York Times*, February 13 and 14, 1946, 1, 13, respectively.

⁵⁵ Weisgall, 14-15. Additionally, in September, 1945, the Navy sought to catch up with the Army’s hold over atomic science and proposed to MIT officials that they create a nuclear laboratory. Leslie, *The Cold War and American Science*, 141.

⁵⁶ *Washington Post*, August 26, 1945, 16. At that time, McMahon was in favor of sharing atomic secrets, believing that doing so would result in cures for disease. *New York Times*, August 19, 1945, 6. On the conservative coalition of Democrats and Republicans aligned against Truman in favor of the military and of that coalition’s support of military control, see Hogan, *A Cross of Iron*, 5-7; 237-238. See also C. Wright Mills’ analysis that the military employed techniques perfected by the armed forces during World War II designed to prevent postwar demobilization still resonates. *The Power Elite*, 202-224. The Navy’s methods are interesting in a theoretical sense, too. In the words of Michel Foucault, the Navy employed “tactics rather than laws ... and laws themselves as tactics—to arrange things.” “Governmentality” in *The Foucault Effect*, 95-103.

Army's Manhattan Project,⁵⁷ and had taken the first steps toward achieving his long term ambitions.

For the peacetime atomic program, McMahon's introduction of *Crossroads* was a turning point: national security had successfully been used to mask a self-interested military use of atomic energy. August 6 and 9, 1945, the first and last times that the atom bomb was used in war, will forever account for two of the most significant dates in the history of atomic weapons. August 25, the day that McMahon introduced the Navy's plan, deserves a place on the timeline of atomic history as the first time that the military and its supporters used atomic science to achieve a domestic political goal. That it was not the last time was partially due to the institutional and operational antecedents set by Forrestal. As Secretary of the Navy, Forrestal engaged in strategies similar to the ones that Groves used to control atomic energy: he endorsed media manipulation, the use of military urgency, and operational methods that sidestepped the constitutional subordination of the military to civilian authority.⁵⁸ In the process, Forrestal contributed to increasing the military's influence, establishing the imaginative space for postwar militarization, for what has been described elsewhere as a reconciliation between the traditional wariness of peacetime military influence and acceptance of a mobilized America.⁵⁹

⁵⁷ Albion, Connery, *Forrestal and the Navy*, 180-181.

⁵⁸ As Melvin Small has noted in his review of the literature on how leaders have responded to and shaped public and congressional opinions, "The line between education and manipulation is often a thin one." "Public Opinion," *Explaining the History of American Foreign Relations*, Michael J. Hogan and Thomas G. Paterson, eds., 165-176, quote from 170.

⁵⁹ Hogan analyzes the ideological transformation involved in the postwar reconciliation between democratic traditions and increasing militarism. *A Cross of Iron*, 23-68. See Melvyn P. Leffler for the influence of Pearl Harbor and the atom bomb on postwar military planning and strategy in "The American Conception of National Security and the Beginnings of the Cold War, 1945-1948," *The American*

The ways that Forrestal influenced the atomic program have been mired in the larger and interesting history of a man whose passions and patriotism took him from a prosperous Wall Street career to service as Secretary of the Navy, then as first Secretary of Defense, and finally into paranoia and Walter Reed General Hospital, where he committed suicide in 1949. As Under Secretary of the Navy throughout most of the war, as Secretary from spring 1945 until 1947 when he became the first Secretary of Defense, Forrestal was dogged by failure. He was unable to earn the respect of career officers under his command and was thus unable to achieve cohesion among the Navy's upper echelon during the war. Afterward he was equally incapable of persuading the JCS to accept his recommendations or to make any adjustment in their traditional roles; was unable to secure the military dominance that he had planned for the National Security Council; and, ultimately, was unable to achieve the policymaking revolution that seems to have been his primary goal.⁶⁰ As one historian wrote, "It is ... difficult to find distinction, or wisdom, in the life and work of James Forrestal."⁶¹ The loftiness of Forrestal's ambitions account in large measure for his inability to achieve them. Motivated by a belief, by all accounts genuine, that elected policymakers had underestimated the threat Soviets posed to American security during the war and fearing that they would continue to do so afterward, Forrestal envisioned a revolutionary change

Historical Review 89 (April 1984): 346-381, esp. 350. For the centrality of national security and America's defensive posture to the negotiations over international control of atomic weapons, see Barton J. Bernstein, "The Quest for Security: American Foreign Policy and International Control of Atomic Energy, 1942-1946," *The Journal of American History* 60 (1974): 1003-1944.

⁶⁰ Nelson, "President Truman and the Evolution of the National Security Council," *Journal of American History* 72 (1985): 362.

⁶¹ Michael J. Hogan "The Vice Men of Foreign Policy" *Reviews in American History* 21 (1993): 323-324. But see also Hogan's discussion of Forrestal's influence over the content and passage of the National Security Act and his role in the creation of the National Security State in *A Cross of Iron*, 31-66.

in policymaking, one that would have positioned the military at the very center of policy formation. It was a plan that was not only at odds with the Constitution and American tradition, but also went against the grain of elected officials and civilian advisors who believed that whatever the threat from Soviet style communism, they should continue to be the arbiters of policy.⁶² Truman's reluctance to share policymaking authority was particularly acute. "Under our system, he wrote, "the responsibility rests on one man—the President. To change it, we would have to change the Constitution, and I think we have been doing very well under our Constitution."⁶³

It seems likely that Forrestal's failure to achieve the policymaking authority he sought actually contributed to the influence he had in shaping the direction of the postwar atomic program. Had Forrestal, for instance, been confident that the military would be allowed to participate in policymaking after the war without the use of atomic weapons as instruments of political persuasion, he might not have been so receptive to Strauss's proposal for the expensive *Operation Crossroads*. But he did not, and his inability to

⁶² For a discussion of Forrestal's role in the creation of the National Security Council and his frustrated plan for it to become the mechanism through which the Defense Establishment could wield substantive policymaking power, see Anna Kasten Nelson, "President Truman and the Evolution of the National Security Council" *The Journal of American History*, 360-378, especially 364-369. Alfred D. Sander's analysis of the Council's origins highlights the importance of the Navy connections between Forrestal and Clark Clifford and George M. Elsey, and the care with which the Truman administration took to avoid alienating Forrestal. Among other insights, Sander points out that despite the significance of the National Security Act and the interest in re-evaluating the formation of domestic and foreign policy decision-making, the Secretary of State (Dean Acheson) paid very little attention to the drafting of the bill or the conflict over Forrestal's insistence on an integrated, council-based, defense bill and unification—the method preferred by the Army and recommended by General Marshall. Attempts to preserve, within the bill's proposed provisions, the decision-making authority of the President was taken up by Donald C. Stone, Director of the Budget Bureau's Division of Administrative Management and Budget Director James E. Webb. "Truman and the National Security Council: 1945-1947," *The Journal of American History* 52 (1972): 369-388.

⁶³ As Jeffery M. Dorwart pointed out, Truman suspected that the plans to coordinate national defense that Forrestal, Eberstadt, and others supported and that under the National Security Act led to the creation of the National Security Council (NSC), would create a managerial elite and reduce the president's authority. For this reason, Truman never participated in the meetings of the NSC. *Eberstadt and Forrestal: A National Security Partnership, 1909-1949* (College Station: Texas A & M University Press, 1991), 157-158.

receive that authority seems to have done little more than harden his resolve to secure it by whatever means necessary, including the use of atomic weapons for publicity purposes. One incident suggests that Forrestal was quick to imagine, in fact, that he was deliberately being shut out of high-level deliberations. On October 4, 1945, and on the basis of a comment made by then-Commodore Lewis Strauss, Forrestal complained to Secretary of War Patterson that the Navy had not been allowed to review the atomic energy bill before it had been submitted to Congress on October 3. Forrestal dropped his complaint when informed that it was not the Navy, but Strauss who had been left out of the loop. Former Under Secretary of the Navy, Ralph A. Bard, had represented the Navy on the Interim Committee, had received a copy of the draft bill on July 25, and had returned it without comment or objection.⁶⁴ Forrestal's inability to participate in policymaking to the extent that he believed necessary gave him reasons to use atomic weapons in an effort to achieve that authority.

A review of Forrestal's operational and administrative methods, together with their significance for *Operation Crossroads* and their relation to future atomic experimentation, illustrates not only the centrality of the atomic program and atom bombs to the military's postwar goals but also the significance of the wartime sense of responsibility for national security that Forrestal carried into peacetime. The following summary of Forrestal's use of the program for domestic political purposes, the effectiveness of his arguments for postwar mobilization, and the influence he had over Strauss, who supported the military throughout his years of service as an AEC Commissioner and later Chairman in ways that were reminiscent of Forrestal's, demonstrates that Forrestal was more successful in revolutionizing policymaking than has

⁶⁴ R. Gordon Arneson notes, 4 October 1945. Papers of R. Gordon Arneson, HST Library.

previously been recognized. Forrestal established the conditions for the militarization of atomic science and for the military to use atomic science and weapons testing to exert policymaking force.

This force would ultimately be expressed at the institutional and at the cabinet level. During the 1947-1949 period of Consolidation, the military influenced AEC decision-making. After Consolidation, the AEC actively supported and enlarged the military's authority over atomic resources and experimentation. At the cabinet level, Strauss, as Chairman of the AEC and as Eisenhower's Special Assistant for Atomic Energy beginning in 1953, partnered with the military to resist diplomatic efforts aimed at arms control, fearing that they would limit or prevent continued atmospheric weapons testing and the military's atomic projects. Moreover, he subordinated civilian applications to those of the military. Strauss, for example, objected to the use of AEC resources for peacetime applications and refused to comply with the NSC mandate approved by Eisenhower in Spring 1955 that directed the AEC develop a "small-output power reactor ... most promising for uses abroad." The AEC was to develop the reactor "as soon as possible" so that a form of "U.S. aid" could be used to counter Soviet influence, a move that held the promise of building links between small countries and American industry. Strauss's first response was to balk; then in October, to stall, claiming that he believed he had satisfied the directive's intent, citing "tacit approval" from the Council for his announcement the previous July that he intended to postpone acting on the directive because of an ongoing Army reactor project that could potentially lead to the development of a reactor suitable for civilian use. Finally, in January 1956, Strauss substituted the AEC's, or his, judgment for that of the NSC and the president, reporting

that the AEC “considers that independent AEC action to construct a small-output reactor with public funds is not economically justifiable.” Eisenhower’s interest in the project’s success seems to have been the reason why Strauss ultimately did make one concession to the directive by “inviting” private companies to participate or to use development contracts from other countries, as Westinghouse was doing for Belgium for the Brussels World Fair, to provide Eisenhower’s civilian reactor.⁶⁵

Interestingly, one of the reasons why the administration aggressively pursued development of a small power reactor was because Strauss had emphatically argued during a NSC meeting and in support for increased funding that the U.S. was losing the civilian reactor race—that the Soviet’s had “astonished us” with their advances, having put their first civilian reactor into use in 1954, and that the British had a six-month lead on the U.S.⁶⁶ NSC records show, however, that Strauss avoided using the funds that had been allocated for civilian applications and avoided, also, using non-weapons grade uranium that the president had allocated for civilian reactor development. Instead, Strauss diverted resources for civilian applications to military programs.⁶⁷ Just as Groves had with Manhattan, Strauss used his authority over atomic science in a self-serving way, deferring only superficially to executive authority and directives, and used deceit and

⁶⁵ George Weber, 1-14-56, “Background Brief on AEC Small Reactors Report to be Discussed By The Planning Board on Monday”; “Memorandum for Mr. Anderson, January 27, 1956, Subject: Progress re NSC 5507/2 [Peaceful Uses of Atomic Energy, approved by the President on March 12, 1955.]” Representatives from the Departments of State and Defense brought the small reactor project to the NSC’s attention in January, 1955. *Minutes of Meetings of the National Security Council, 3rd Supplement*, (Frederick, MD: University Publications of America, 1988), microfilm collection.

Strauss’s resistance to the development of a civilian reactor in the interests of Eisenhower’s definition of national security is interesting in light of the fact that in 1946-1947, the Navy used Truman’s vow to support Europe economically as a pretext to justify funding two parallel projects for nuclear power generators for ships. See Hewlett and Duncan, *Nuclear Navy*, 71.

⁶⁶ “Memorandum for Mr. Anderson” 1, *Minutes of Meetings, 3rd Supplement*.

⁶⁷ “Memorandum for Mr. Anderson” 2, *Minutes of Meetings, 3rd Supplement*.

subterfuge to avoid taking responsibility, and in the process avoided carrying out a policy-level directive. In this instance, Strauss combined the wartime strategies of control used by Groves with another wartime tactic employed by Forrestal, namely, using an insider, “civilian,” status to shape national policy in the interests of the military.

Forrestal’s operational approach—including his relentless cultivation of the media to promote anticommunism and his anti-Soviet ideology and his inducement of prominent civilians into administrative positions within the Navy and other military branches—allowed him to build long-lasting support for the military expansion and contributed to establishing a number of the conditions for the militarization of atomic science. As others have noted, Forrestal’s “political/military” philosophy transformed the Navy. Forrestal modernized it, reconfiguring departments and personnel in ways that helped it to meet its wartime challenges and enlarging its footprint, leaving it “infinitely larger in terms of ships, planes, and men [and] better organized to support the new responsibilities in the international scene.”⁶⁸ One of the ways that Forrestal accomplished this was by incorporating successful civilians into Navy administration. Unlike career officers, Forrestal came from outside the Navy, having achieved fame, and wealth, as a financier and was a believer in the value of professional expertise—a trend already evident in non-military government agencies and departments. The civilian talent that Forrestal brought in gave him a network of support outside the military community and, within Navy ranks, one that was not dependent upon the traditional officer corps. This helped him to rise above the resentment of powerful career officers such as Admiral J. E.

⁶⁸ Albion and Connery, 286. For the Navy’s influence over the science of oceanography from the 1930s through the 1950s, see Ronald Rainger, “Science at the crossroads: The Navy, Bikini Atoll, and American oceanography in the 1940s,” *Historical Studies in the Physical and Biological Sciences* 30, Part 2 (2000): 349.

King. In part, Forrestal's methods amounted to the realization of a version of Corporatism that he and his friend and colleague Ferdinand Eberstadt had envisioned when they sought to bring together organizational professionals with the government and thereby to create an administrative structure that benefited business and government.⁶⁹ For Forrestal, however, the practice was also an essential first step to securing authority. By incorporating like-minded and successful private individuals, some of them men from a list of sympathetic professionals—a list that Eberstadt called his “Good Man List”—and granting them rank and status, Forrestal fashioned his own devoted cadre of within the Navy's officer corps.

Those loyal supporters became avenues to influence after the war. As, for example, when Forrestal sought to diffuse Truman's support for the Army's unification plan in favor of his own “integrated” alternative. At that time, Forrestal turned to two of his supporters who were among Truman's most trusted advisors: Clark Clifford, his naval aide and later Chief of Staff, and George Elsey, a presidential aide and speechwriter.⁷⁰

Forrestal's dependence on “civilian” talent and his methods for rewarding loyalty

⁶⁹ As Dorwart explains, Eberstadt was the most important member of the partnership. For the relationship between the two men, the origins of Corporatism and their methods of employing it for defense, and for the makeup and use of Eberstadt's Good Man List, see Dorwart, *Eberstadt and Forrestal*.

One example of Forrestal's dependence on Eberstadt is illustrated by his reluctance to believe his own two favorable first impressions of David E. Lilienthal, the man that Truman had nominated to be the first Chairman of the AEC, and reluctance to support him without first learning that Eberstadt, though having no familiarity with Lilienthal's “political views...[or] economic theories” his competence and loyalty were “beyond question.” “Excerpts from telephone conversation between Honorable James Forrestal, Secretary of the Navy, and Mr. Ferdinand Eberstadt, 13 February 1947, relayed to Mr. Clark Clifford, 13 February, 1947; Clifford Collection, Box 1, Folder: AE-Lilienthal, David E., 1946-49; HST Library.

⁷⁰ Sander, 373. Although Clifford's support for Forrestal weakened as Forrestal became ever more inflexible, at the time when the unification debates got underway Clifford says that he “remained closer to Forrestal than any other official except Stuart Symington ... Assistant Secretary of War for Air.” Clifford, with Richard Holbrooke, *Counsel to the President: A Memoir* (New York, NY: Random House, 1991), 151. Truman turned to Clifford for insight into Soviet-American relations, asking him and Elsey to report on diplomacy after release of Kennan's “X” telegram, see Hogan, *A Cross of Iron*, 11.

affected the peacetime atomic program, too. Under Forrestal's tutelage, Lewis L. Strauss rose from Reserve Lieutenant Commander in the Bureau of Ordnance to Reserve Rear Admiral.⁷¹ After passage of the AEA, Forrestal's patronage and promotion of Strauss led to his nomination and appointment as one of the first of the "civilian" AEC commissioners—an event that benefited Strauss and gave Forrestal a militarily-supportive acolyte on the Commission. As significant as these loyalties were, Forrestal's dependence on professional, civilian, expertise achieved significance beyond the intra-personal level; it allowed him to prevent non-Navy civilian interference with Navy projects and to circumvent constitutional principles.

Forrestal used civilian administrators within the Navy's hierarchy as a means of subordinating civilian authority to military projects. It was a strategy that would become especially important with atomic science, where the chief issue was one of civilian vs. military authority. In contrast to Ernest J. King, Commander of Naval Operations during the war and Forrestal's most powerful rival among career officers, who was willing to draw the ire of Roosevelt by acting purposefully to limit civilian authority over the Navy's administration,⁷² Forrestal employed a strategy that Michel Foucault attributed to the modern state—the use of "tactics rather than laws"—and maintained an illusion of "civilian" oversight without suffering its restrictions.⁷³ Forrestal's administrative strategy was to operate in accordance with the letter, but not the spirit, of the military's subordination to civilian authority. During a wartime administrative reorganization, for

⁷¹ Albion and Connery, 223-225.

⁷² Albion and Connery, 97-102.

⁷³ The Navy employed, in Foucault's formulation, "tactics rather than laws." "Governmentality" in *The Foucault Effect*, 95-103.

example, Forrestal guaranteed that there would be no non-Navy interference with the Office of Naval Research (ONR) by insisting that ONR remain under the auspices of the Assistant Secretary of the Navy.⁷⁴ In this way, he asserted his authority over this important division while perpetuating the illusion that ONR was under “civilian control,” insulating it from outside oversight and protecting it from claims that it was operating strictly in the Navy’s interest. This is not to say that such conduct was unique to Forrestal, but rather to point out that within the history of atomic science, Forrestal was uniquely positioned to influence the uses the Navy made of the atomic program after the war and especially influential over the peacetime program’s administration. As Secretary of the Navy and later as Secretary of Defense, Forrestal was in charge of the Navy and its projects, but he was strictly a civilian, and his responsibilities extended to preventing such conduct. By practicing and endorsing administrative techniques that allowed the Navy to avoid civilian oversight, Forrestal sidestepped his responsibilities, violated constitutional principles, and provided the means for the military officers and their supporters to use the atomic program to achieve self-interested goals. As the peacetime program matured, military officers were as careful as Forrestal had been to prevent drawing the wrong sort of attention: they paid superficial, but not meaningful, deference to the civilian authority of the AEC and elected officials.

Forrestal’s sensitivity to creating favorable impressions can be seen in the way he went about receiving approval for and eliminating Army opposition to *Crossroads*. Forrestal understood that if *Crossroads* had any chance of being approved, it would have to be portrayed as serving the nation’s and not the Navy’s interests. Senator Brien McMahon was ideally suited to introduce the Navy’s plan, having already gone on record

⁷⁴ Albion and Connery, 56-57.

as opposed to continued weapons development and monopolization of atomic secrets. As reported in the *New York Times* on August 19, McMahon had sent a telegram to Truman urging generosity with regard to atomic science, arguing that the best way to find some sort of “constructive” use for atomic science would be to share the secret, so that “the united energies of scientists of the world be combined in some effort to discover causes and cures for the deadly diseases of mankind.”⁷⁵ McMahon’s authority and integrity were not enough to diffuse the suspicions that *Crossroads* was primarily a media event staged to bolster the Navy’s influence during military reorganization. But McMahon’s endorsement was enough to create the belief, at least in the minds of some, that *Crossroads* was also, and perhaps primarily, a national security imperative. In sum, it lent heft to the Navy’s arguments that *Crossroads* would be a valid military experiment, and an altruistic one at that, benefiting not just the Navy and the nation, but also all of mankind by providing a venue and logistical support for a broad range of scientific studies.

Political acumen of a similar sort, and no doubt endorsed by Forrestal, allowed the Navy to diffuse the Army’s opposition at the earliest stage of the *Operation’s* planning, a move that established a precedent for the use of atomic science to build an intra-service cooperative alliance. The Army’s opposition to *Crossroads* arose during a September meeting of the Joint Chiefs of Staff when General H. H. Arnold asked the Chiefs to deny the Navy’s request to hold atomic maneuvers. Arnold argued that the captured Japanese vessels the Navy planned to use should be reserved for the AAF for atomic bombing practice. His Navy counterpart, Admiral J. E. King, Commander-in-Chief of the United States Fleet and Chief of Naval Operations, eliminated Arnold’s

⁷⁵ *New York Times*, August 19, 1945, 6.

objections by inviting the AAF to drop the first bomb at *Operation Crossroads* and agreeing to portray it as a cooperative Army-Navy Operation.⁷⁶ Renamed officially *Joint Task Force ONE*, the Chiefs signed off on the Navy's plan and *Operation Crossroads* began to take shape.⁷⁷ Given King's documented uncooperative nature and lack of subtlety, the proposition bore all the hallmarks of a Forrestal solution. It also offers one of the first examples of how the ability to mobilize atomic energy for domestic political purposes operated as a mechanism that generated cooperation among the armed forces.

Though rivalries persisted, the military's right to use the atomic program and atomic weapons and to monopolize atomic resources for any reason that advanced military ambitions were goals shared by officers of every branch. Atomic science thus became a point where the potential for mutual benefit trumped intra-service rivalry. This unofficial cooperative alliance represented a departure from the usual practice of competition between the branches, competition that Presidents Truman and Eisenhower alike criticized as counterproductive and inefficient but that had, as atomic history illustrates about armed forces' cooperation, operated as an unofficial check on militarism. King's acquiescence to Arnold's ambitions led to the recognition by the upper echelon that there was utility in cooperation, and the JCS's approval of *Crossroads* paved the way for an era of cooperative exploitation of atomic science. After *Crossroads* had entered the planning stages, Groves's advisors, because of their interest in maintaining military authority over atomic science, provided avenues for the expression of this cooperative ethos that aligned officers from other branches with the Army's Manhattan Project,

⁷⁶ W.A. Shureliff, under the Direction of the Commander of Joint Task Force One, *Bombs at Bikini: The Official Report of Operation Crossroads* (William H. Wise & Co., Inc.: New York, 1947), 10-11.

⁷⁷ "Appendix I to Annex 'O' of ComJointTaskFor ONE. No 1-46" (4) O-I-2. Stafford Warren mss.

encouraging officers to “work in unison...to climb aboard the bandwagon before they get to the point of crashing aboard,” offering meetings and programs designed to familiarize them with atomic weapons and warfare, and suggesting studies that the Project could help them perform.⁷⁸ During the era of atmospheric weapons testing, and despite the contentiousness expressed in the media about issues such as which branch should be the first to respond to atomic attack, the armed forces—through the JCS—were allied where it mattered: at the level of domestic authority over atomic science. The JCS agreed that the armed forces should have priority, and authority, over atomic resources, production, and experimentation. The unified and coherent nature of their stance about atomic science during the atmospheric era meant that elected officials had no authoritative—militarily generated—reason to call into question JCS claims that the use of atomic science, including monopolizing its resources and engaging in risky experimentation, was excessive or unnecessary. In this way, cooperation allowed all branches to avoid restrictions imposed by civilians, whether elected or appointed.

Crossroads was an important ingredient in the JCS atomic alliance, instigating it and providing a foundation for cooperation that was strong enough to withstand the differences of opinion that occasionally arose within it over ancillary atomic issues.⁷⁹ Because of the alliance, no authoritative opposition to *Crossroads* emerged that might have kept Truman and congressmen from approving the *Operation*. Because of it, too, the Navy faced few obstacles in its ongoing efforts to leave the impression that the

⁷⁸ Stafford Leek Warren, December 1, 1945, “Recommendations,” Box 57, Folder 4, “Assorted notes and letters” December 1945-January 1946, Stafford Warren mss.

⁷⁹ One early instance of disagreement occurred during the final weeks of debate over the AEA. Army officials, and General Groves, believed that the creation of a military liaison committee gave the military as much authority as they might expect to receive under any legislation and that the military should drop its opposition. Bernstein, “Reconsidering the ‘Atomic General,’” 914.

Operation's primary goal was the preservation of national security. Even without significant interference or objection from the other branches, however, the Navy reiterated its position that the *Operation* was in the nation's, and not just the Navy's, interests to prevent the possibility that either the president or Congress would withdraw their support. In April 1946, almost four months after the president had signed off on the *Operation*, Navy officers were still preoccupied with efforts to correct the notion that self-interest drove the *Operation* by emphasizing that it was a national security imperative. In a memorandum to the president, one argued that the tests were "essential ... now" because "designers, tacticians, strategists, and medical officers" would otherwise be "groping their way along a dark road which may lead to another and worse 'Pearl Harbor.'"⁸⁰ As Groves had during Manhattan, Navy officers combined that sense of urgency and imperative with statements that minimized the project's projected expense in vague and even deceptive terms. To congressmen, Navy officers estimated the expense of the maneuver at \$3.7 million, the value of ships at ten dollars per ton for scrap, and the remainder "absorbed in current appropriations and ... finishing off the war."⁸¹ To the president, and included within the April memorandum that reiterated the importance of the *Operation*, the Navy responded to higher estimates of the program's cost as "gross exaggerations" and used percentages instead of hard numbers to minimize the expense. For example, "90%" of the ships were surplus, scrap or obsolete and, given the "high labor costs of scrapping," the value of those ships would "be only a few percent of the

⁸⁰ 2 April 1946, "Purposes of Atomic Bomb Tests and Reasons for Conducting Them at an Early Date," 3. Edward Hidalgo, Special Assistant to the Secretary, Department of the Navy to Commodore James K. Vardaman, the Naval Aide to the President. PSF, Box No. 175, "Atomic Testing: Misc." HST Library.

⁸¹ See Hanson Baldwin's summation of the Navy's case, *New York Times*, February 20, 1946, 9. See also Weisgall, 79.

original costs of the ships.” In its summary to the president, the Navy reported that the “total cost of the tests will only be a few percent of the annual naval appropriation, and will probably not exceed the total cost of one large new ship.” In a practice that would become routine as the peacetime atomic program matured, the Navy discredited unofficial statements as unauthoritative. An outside estimate that *Crossroads* would cost \$100 million had, according to the Navy, “no foundation whatsoever” because “neither the War and Navy Departments nor the joint Army-Navy Task Force...has ever published an estimate of the operating costs.”⁸² (Right after the *Operation*, however, the official historian for the *Operation* validated the \$100 million figure as an approximation of its “actual cost.”)⁸³ But for the Navy to benefit from *Operation Crossroads*, it needed more than assent from the JCS; it required convincing suspicious congressmen and engaged private citizens that the maneuvers were not only necessary but also that they were urgently so. Here, at a time when the Truman administration and Congress had barely had the opportunity to discuss the future of atomic science and while the American people, too, had had little time to digest the bomb’s implications, the Navy had the upper hand thanks to Forrestal’s determination, the institutional capacity for promotion that he had built into the Navy during the war, and his use and endorsement of subtle deceit to convince congressmen and others that the *Operation* was in the best interests of national security.

⁸² 2 April 1946, “Purposes of Atomic Bomb Tests and Reasons for Conducting Them at an Early Date,” 4-5. Edward Hidalgo, Special Assistant to the Secretary, Department of the Navy to Commodore James K. Vardaman, the Naval Aide to the President, PSF, Box No. 175, “Atomic Testing: Misc.” HST Library.

⁸³ Shurcliff, *Bombs at Bikini*. The actual cost of *Crossroads* has been estimated at \$3.1 billion, a figure that does not include later expenses associated with veterans’ compensation schemes or those connected with the settlement of claims brought by the Bikini islanders. O’Neill, “Building the Bomb” in *Atomic Audit*, 101.

While Forrestal's administrative and operational methods helped secure additional layers of support for the Navy and for the *Operation* within government circles, his promotional expertise and tenacity helped secure the support of the American public and, through them, enough political support to receive approval for *Crossroads*.⁸⁴ In the process of bolstering the Navy's position relative to the Army, Forrestal raised his own profile, ingratiating himself with influential members of Congress and, through his contacts with the Fourth Estate, with the public. After the war and during the unification debates, Forrestal cultivated supporters and engaged in what for most people would have been an exhaustive campaign to press his agenda with Congress. From January through July 1947, for example, Forrestal met socially or formally with congressional members on at least sixty-nine occasions, and from March through July testified before or attended hearings at least twenty-five times.⁸⁵ No less a political animal than Truman recognized that Forrestal enjoyed so much respect and popularity that, despite disliking him, he had no other option after Secretary of War Patterson had turned him down but to nominate Forrestal as the first Secretary of Defense.⁸⁶

Forrestal, as convinced of the value of publicity as he was committed to the Navy's future, turned promotion into an institutional imperative. At his first press conference as Secretary of the Navy, Forrestal made it clear that publicity was now Navy

⁸⁴ As W. Lance Bennett pointed out in his discussion of information as a political commodity, what the public learns is "symbolically packaged" to benefit those with an interest in the outcome. *Public Opinion in American Politics* (New York: Harcourt Brace Jovanovich, 1980), 311. For similar themes derived from editorial cartoons about the bomb, see William A. Gamson and David Stuart, "Media Discourse as a Symbolic Contest: The Bomb in Political Cartoons," *Sociological Forum* 7 (March 1992): 55-86.

⁸⁵ Drawn from compilation of meetings listed in Forrestal's appointment calendar and personal papers. Albion & Connery, 302-394.

⁸⁶ Cite. For Truman's appreciation of Forrestal's popularity during the unification debate, see also Hoopes and Brinkley, *Driven Patriot*, 328-331.

policy, he would “tell what the Navy was doing and let the facts speak for themselves.” Thereafter, he ordered the Navy’s top Intelligence Officer to hold weekly press conferences, despite the fact that the officer’s position meant that he might, inadvertently, reveal knowledge of future operations that could compromise the war effort.⁸⁷ To ensure that the Navy received credit in the popular imagination for what it was doing to win the war in the Pacific, Forrestal created a Public Information Office and appointed a PI Officer with the authority to hire and coordinate teams of journalists and photographers to generate stories for print, radio, and newsreels about the Navy’s Pacific accomplishments. By establishing a photographic studio on Guam where pictures could be instantly processed and transmitted to print outlets via radiophoto, Forrestal brought the Navy’s war home. Because of Forrestal’s efforts, the picture of the Iwo Jima flag raising on February 23, 1945, an event that he arranged to witness, made it into newspapers across America within two days, just in time to appear in Sunday editions. For Forrestal, the importance of capturing that event photographically had less to do with its historical importance than with its significance for future funding possibilities. It meant, in Forrestal’s own words, “a Marine Corps for the next 500 years.”⁸⁸

The importance that Forrestal attached to photography, and the influence he had on the Navy at large, is reflected in the emphasis during *Crossroads* of establishing a photographic record. To supplement the 328 automatic cameras that it installed in planes, for example, the Navy hired 500 photographers to record the event, a number of cameramen that was a bit shy of the number necessary to handle the 700 cameras it had

⁸⁷ Hoopes and Brinkley, 190-192.

⁸⁸ Quoted by James Bradley, *Flags of Our Fathers* (New York: Bantam Books, 2000), cited by Paul Stillwell in “Looking Back,” *Naval History* 14 (2000): 4.

purchased, but nonetheless enough to have used up half of the world's supply of film within minutes of the first shot, "Able."⁸⁹ For *Operation Crossroads*, the Navy relied on Forrestal's media connections, but most importantly, upon the institutional support for public relations that he had created. Though the media and the public would have been interested in anything having to do with atomic weapons, Forrestal's public relations machine was the primary reason that *Operation Crossroads* received more print and radio coverage than any other event of 1946.⁹⁰ One measure of the significance of the *Operation's* publicity machine is that in a poll asking respondents to rate the military officers they admired most, a list that included Eisenhower, McArthur, Marshall, and others who had distinguished themselves and been featured prominently in the media during World War II, Admiral King—who became a household name only after he was placed in charge of *Operation Crossroads*—ranked just below Omar Bradley.⁹¹

The Navy portrayed *Operation Crossroads*, conducted between July and August 1946, as a experiment to investigate the effect of atom bombs on ships, but, as some suspected from the beginning, the Navy's primary interest was with the promotional value of atomic weapons detonations. For the influence it had on the uses made of the peacetime atomic program and from the precedent it set for the use of the media, it can also be understood as an experiment in media relations. How many ways could the *Operation* be used to promote the Navy's significance? Could the Navy sustain media attention throughout the approval and planning phases of the *Operation*? How much interference with traditional freedoms would the media tolerate? During the year that

⁸⁹ Weisgall, 121.

⁹⁰ Shurcliff, 38.

⁹¹ *Public Opinion Quarterly* 10 (1946): 137.

Operation Crossroads was in the production phase, barely a week went by that some aspect of the *Operation*, one that the Navy positioned during this period as an essential step in tailoring ship design and material to the atomic age, did not appear in the *New York Times* and other influential newspapers. By March, after the *Operation* had received official sanction, the Navy's message shifted from the significance of the *Operation* to the significance of the Navy to the nation's security. It was not the *Operation*, but the Navy, that was essential for national defense. When some of the 250 support and target ships, 150 aircraft, 6,000 "experimental" animals, and 43,000 men, began to stage at Bikini Atoll, the Navy was ready to employ war-weary and homesick sailors in their public relations scheme. Men writing home chose from a wide selection of promotional postcards and envelopes and became what might as well be considered the bottom tier of the promotional effort. The mail-borne advertisements ensured that postal workers, family members, and friends from all corners of the United States were reminded of how vital the Navy was to their future. To herald the decommissioning of the U.S.S. Nevada, a ship destined as a target for "Able," the "Last Day P.O. Service" for March 14 left little doubt about the fact that the maneuvers were more about demonstration and promotion than about the gathering of scientific information:

THE SEA SPECTACLE OF THE CENTURY

ATOM BOMB vs 100 WARSHIPS.

In the place where a return address would ordinarily appear, the Navy had printed an image of a donut-shaped life preserver, adorned with four stars, lettered with "U.S. Navy," and flanked by two American flags. To prevent the possibility that the symbolic message might be overlooked, the Navy added lettering below its new seal, "The

Nation's Life Buoy.”⁹² The U.S.S. Nevada postal imprint continued to appear through June on envelopes, some simply embellished with “Target Ship Bikini Atoll,” others were more elaborately decorated, linking romanticism and patriotism. One portrayal, for example, consumed one-half of the envelope, with a picture of the ship on a cloud-banked horizon, foregrounded by five sailors sitting dockside and between palm trees as if for a sunset farewell, all superimposed on a scene picturing a flotilla of ships in the background. Above them, the wings of a soaring eagle spanned the width of the diorama. Above it all, a banner of printing reinforced the pictograph message: “OUR NAVY—FIRST LINE OF DEFENSE.”⁹³

The Navy's second promotional tier was composed of popular newspaper correspondents and radio broadcasters. Unwilling to count on the natural infatuation of the nation's press corps for the *Operation* and recognizing that the considerable expense of the assignment to cover the first peacetime atomic experiment would likely limit participation, the Navy transported and billeted the most influential print and radio commentators at Bikini for the duration. Except for the fact that they volunteered, these reporters were in all other respects commandeered. As a press corps designed to serve the military's interest, they lived in relative isolation and filed their stories from the U.S.S. *Appalachian*, a retrofitted “press” ship. Explaining in advance what the reporters could expect, the military stressed that they would be able to write about “all that they could see, without censorship.” Though seemingly satisfying a notion of freedom of the press,

⁹² Postcard mailed from Bikini to Lowell Blum of New York. Photocopy from the collection of Robert Stoldal. Photocopy in author's possession.

⁹³ Envelopes postmarked from the U.S.S. Nevada on 30 June, 1946, mailed to Hudson Heights, New Jersey and to Portsmouth, Virginia. From the collection of Robert Stoldal. Photocopies in author's possession.

the statement continued with language that betrayed its superficiality. In the interests of security, an issue of “great concern” to congressmen and the JCS, the military stated that it could be “controlled best by careful indoctrination and briefing.”⁹⁴ Though during *Crossroads*, the reporters so constrained did express frustration with the Navy’s conditions and the requirement that reporting be limited to that which the Navy provided during press briefings, it appears that there was only one instance where reporters did not obey the rules.⁹⁵ Such acquiescence can be explained as stemming from a combination of curiosity with what the bomb would do; professional pride at being chosen from the thousands who applied for credentials to witness the first peacetime atomic experiment; and by the operation of *habitus*—the ease with which reporters, familiar with censorship from recent wartime experiences, fell back into a routine of subordinating their rights to the military restrictions.⁹⁶

The restrictions the military placed on the media during *Crossroads* reinforced the routines of censorship to which reporters had become accustomed during the war and contributed to the acquiescence of reporters to military censorship throughout the era of atmospheric testing. Secrecy was, perhaps, the only excuse the Navy needed to protect itself from the possibility that reporters would uncover and report anything that varied from the Navy’s scripted performance. But the *Operation*’s proximity to wartime

⁹⁴ The Joint Army-Navy Public Information Section of Operation Crossroads, “Atom Test Curbs for Newsmen Set: Reporters May Tell All They See, but Four at Most Are Likely to View Event” Special to *New York Times*, March 9, 1946, 7.

⁹⁵ For an account, see United Press, *Santa Fe New Mexican*, July 2, 1946.

⁹⁶ In light of Pierre Bourdieu’s concept of *habitus*, the docility exhibited by reporters was a function of conditioning. The history of an individual—his successes and failures—conditions and influences, often in an unconscious way, his subsequent responses. This historical conditioning remains influential even in the presence of changing circumstances. Naval officers and Manhattan Veterans who participated in Crossroads were more accustomed to war than peace and relied on wartime tactics—including military urgency, secrecy, and methods of manipulating scientists—to address peacetime challenges. *The Logic of Practice* (Stanford, CA: Stanford University Press, 1990), especially 54.

ensorship and the effect of reporters' familiarity with that censorship helps to explain why reporters failed to challenge the terms and boundaries of censorship during *Crossroads*, making it easy for the military and its supporters to use atomic experimentation to suit their domestic needs. When viewed in light of James Scott's analysis of strategic representation, this amounted to the creation of a "dual culture," a strictly political and purposeful distortion of reality during the first peacetime weapons experiment that allowed elites to manage the public stage through censorship and the employment of rhetorical and ritual strategies. *Crossroads* was theatre and reporters the audience. Officers used secrecy not to preserve atomic secrets but to obscure from the view of subordinates that which was "negatively valued" or embarrassing. Officers presented a consistent "flattering self-portrait" to maintain their dominant position by avoiding criticism.⁹⁷

From a reporter's perspective, it seems reasonable that Atomic Secrecy would be enough to prevent reporting of any facet of *Crossroads* that could unintentionally jeopardize the effort to protect the nation's atomic secrets. It would not, however, have prevented them from making an effort to gather their own information about the *Operation's* participants or facets of their experiences at Bikini that would not have jeopardized national security aspects. Nor does it seem unreasonable, given that the two bombs of *Crossroads* were not enough to occupy all of their time, to suppose that reporters at Bikini might have been interested in elaborating on topics that were different than the ones the Navy wanted promoted about the experience but that were nonetheless newsworthy and relevant in the summer of 1946: military re-organization, for example,

⁹⁷ James C. Scott, *Domination and the Arts of Resistance: Hidden Transcripts* (Yale University Press: New Haven and London, 1990), 50-55.

or intra-service rivalry. Instead, reporters sequestered at Kwajalein between the two bombs of *Operation Crossroads* were prevented from reporting on anything except that which was permitted, “sitting in the heat ... drinking and tearing the air for something to write up.”⁹⁸ At least one of the reasons why so many reporters generally failed to challenge the type of censorship the Navy imposed at Bikini was because of the similarity of that experience to the restrictions imposed during wartime. In fact, the military itself mentioned that reporters would be familiar with restrictions at *Crossroads* because “the responsibilities and restrictions for correspondents will be approximately the same as that accorded war correspondents.”⁹⁹ Those reporters asked to attend *Crossroads* had already become accustomed to wartime restrictions and were likely more comfortable with the same type of restrictions placed on their movement and commentary. But it was not only the fact that the restrictions were similar, but that they were so similar to ones *recently* experienced that reporters, finding themselves within a familiar routine, consciously or unconsciously obeyed them. Had correspondents been barred from *Crossroads*, or had more time passed between the war and the first peacetime experiment with atomic weapons, reporters likely would have voiced their objections and, perhaps, would have forced a public discussion about what types of information could, and could not be, reported about atomic weapons experimentation.

Operation Crossroads did stimulate discussions about personal liberty and rights, but instead of invigorating debate about the ways that atomic secrecy and experimentation would affect the rights of Americans, the conversation about *Crossroads* was channeled into a discussion of the rights that Americans enjoyed, paradoxically

⁹⁸ Stafford Warren to Viola, 20 July, 1946, Viola Warren MSS, Box 5, Folder 2.

⁹⁹ “Atom Test Curbs for Newsmen Set,” *New York Times*, March 9, 1946, 7.

recently abridged by atomic secrecy, and how they could be expressed on the international front. During a radio broadcast special in late May 1946 when Harold E. Stassen, former Governor of Minnesota and a man who served later as Eisenhower's Special Assistant for Disarmament, suggested at that time that the U.S. consider granting some sovereignty over atomic weapons to an international organization, Supreme Court Justice William O. Douglas reminded him that "sovereignty was not something you could surrender but something you exercised."¹⁰⁰ With *Crossroads*, however, reporters seemingly overlooked, or had forgotten, their sovereignty—as citizens and as commentators. Unaccustomed to exercising their rights during wartime, they failed to exercise them during peacetime. Because *Crossroads* was held so soon after the end of the war, with restrictions for media coverage laid down only seven months after the end of the war, the military and its supporters were able to exact obedience from reporters. The lesson that military officers and their supporters took from *Crossroads* was that Freedom of the Press was easily suspended—that atomic experiments could successfully and profitably be staged as media events. Members of the media learned that if they desired to witness and report on atomic experimentation they would need to cooperate with the military and limit the content of their stories to that which the military wanted reported. *Crossroads* thus established a precedent for media manipulation by the military, a practice that would become even more significant over time with the creation of the

¹⁰⁰ Columbia Broadcasting System, "Operation Crossroads." Jack Gould, "A Radio Triumph" *New York Times*, June 2, 1946, X7. In a letter written dated May 24, Edward R. Murrow encouraged the Truman administration to take note of the program, mentioning a list of notables who would make an appearance, including Justice Douglas, Albert Einstein, Harold Stassen, Senator Vandenberg and a "cross section of average citizens." Murrow to Ross [Mr. Charles], Official File, Box 1523, Folder 692 "Misc (May-Dec 1946)" HST Library.

Nevada Test Site, increasing numbers of atmospheric experiments, and increasing numbers of military experiments staged as promotional events.¹⁰¹

The issue is not that reporters subordinated their personal and professional rights to the restrictions surrounding atomic science, but that they failed (consciously or because of *habitus*) to challenge the boundaries of Atomic Secrecy that the military claimed existed during *Crossroads* and after and, in that failure, became unknowing partners in helping the military—and with testing in Nevada, the AEC—use experimentation to serve political goals. The significance of the media’s malleability, and the factors that created the conditions for it in the first place and led to its continuance, is that it indirectly contributed to the injurious nature of atmospheric testing. Because the military was able to control the media, opposition to atmospheric testing based on well-founded anxiety about health hazards went unreported or was discredited, failed to gain popular attention, and failed to gain political traction, until after atmospheric testing at the Nevada Test Site had become routine. During the era of atmospheric atomic testing, and particularly at those times when concerns about the safety of experiments at the Nevada Test Site arose, the military’s control over the national press corps meant that the questions about safety were few in number or easily dismissed. In general, safety issues were raised by reporters who were independent or failed to cooperate with the military, individuals the military easily marginalized, discrediting them as ill-informed or suggesting that they were members of a radical, perhaps even treasonous, fringe. In 1953, for example, newspapers in Las Vegas not only carried reassurances from the AEC that

¹⁰¹ The similarities between the control of reporters’ movements and text during *Crossroads* and the packaged reportage of the Persian Gulf War in 1991 and “embedded” reporters during the Iraq and Afghanistan Wars suggests that lessons learned at *Crossroads* outlived the atmospheric era to be resurrected by the Pentagon following the Vietnam War, during which the relative independence of reporters and television news exposed the military to criticism.

radioactive fallout from a test that had fallen on a public highway and settled on the nearby community of St. George was not hazardous, they also followed the lead of public relations personnel and responded to concerns raised by a Utah congressman and residents by trivializing their anxieties.¹⁰² Although the AEC later admitted in 1960 that on May 19-20, 1953, St. George, Utah, registered the “highest measured concentration of radioactive fallout in the air over [a] populated area,” reporters at the time followed the AEC’s lead and minimized the incident.¹⁰³ Comments such as “fewer than 100 automobiles required washing,” “information men yesterday were working like proverbial one-armed paper hangers trying to deflate the mass hysteria” appeared under headlines that ranged from expressing skepticism to the mildly threatening: “AEC Men Deflate Reports of Utah Radiation Illness” and “AEC Takes Dim View of Utah Atom Protests.”¹⁰⁴ As if in league with the military officers who argued during an AEC meeting that it was not the radioactive fallout from the experiment, but the remedial measures such as car washing and radiation monitoring that was the problem,¹⁰⁵ a Las Vegas newspaper argued that the experimentation should continue.¹⁰⁶ The local calls for continued testing were no doubt anchored in the economic benefits for Southern Nevada.

¹⁰² See *Las Vegas Review Journal*, May 19, 21-22, 24, 1953 and *Las Vegas Sun*, May 20, 1953. Radioactive fallout was *not* something that people in Southern Utah willingly endured as a sacrifice to the Cold War. As an editor with Utah’s *Deseret News* said in 1952, “We are living in the atomic age whether we like it or not; but we don’t want the atomic age to be living with us.” May 9, 1952, 2B.

¹⁰³ Despite the admission, the AEC later put its own spin on the dose and concentration in January 1960, writing that although St. George residents had received over those two days a lung dose of “about 230 millirems” the AEC couched it by referring to an extrapolation of a “rough” national average of 25 millirems per week and then calculating the exposure of St. George residents as “equivalent to that received in about 10 weeks.” Atomic Energy Commission, “Annual Report to Congress of the Atomic Energy Commission for 1959,” (US Government Printing Office, Washington, D.C. 1960), Appendix 15, 562.

¹⁰⁴ *Review Journal*, May 21, 22 1953; and *Review Journal* and *Las Vegas Sun*, May 20, 1953.

¹⁰⁵ Miller, *Under the Cloud*, 177.

¹⁰⁶ “Nevadans Fight to Retain A-Tests” *Review Journal*, May 24, 1953.

It seems likely, however, that the enchantment with that particular brand of prosperity would have evaporated at the local and at the national level had reporters not been subject to military indoctrination and conditioned through the routinizing effect of wartime-style restrictions from *Crossroads* forward that fostered acquiescence and kept them from investigating and reporting the hazards of radioactive fallout that atmospheric tests in Nevada produced.

Such docility is not easily dismissed. Reporters cannot be said to have been ignorant of the possibility of danger, for knowledge about the potential for illness and injury had been in the news since the bombings of Hiroshima and Nagasaki, and precautionary measures such as the washing of exposed skin and foodstuffs before eating, had been reported in *The Bulletin of Atomic Scientists* and elsewhere. Reporters could have, then, without much difficulty investigated the hazards, if only by extrapolating rudimentary information about the risks from the interest in attack generated fallout raised in discussions about civil defense.¹⁰⁷ Nor can it be said that in pre-Vietnam, pre-Watergate, and pre-*Silent Spring* days, reporters were simply less suspicious and less inquisitive. For example, while the Southern Nevada press was dismissing radioactive fallout as inconsequential, an editor criticized a nearby manufacturing complex for emitting unhealthy levels of “dust and smoke.” He demanded an investigation so that

¹⁰⁷ On insufficient understanding of the long term effects, see Titus, *Bombs*, 168. For examples of the known hazards, see *Science News Letter*, June 22, 1949, “there is no dose without at least some slight risk” June 22, 1949, 379; research that showed that exposure to radiation caused “a shorter life and earlier appearance of cancer are likely” September 10, 1949, 171. On August 7, 1950, *Time* reported on the potential for radioactivated material as a weapon, see “Science: Death Sand.” In *Science Digest*, F. Leiber reported that radioactive particles in fallout, if in sufficient numbers, could result in “All human life extinguished by settling veils of some heavier and more virulent atomic dust” September 1950, 49. Even the *Saturday Evening Post* had reported that experimentation was not predictable, noting that an “atomic explosion is sometimes an eccentric thing.” January 7, 1950. See also Howard L. Andrews’s “Radioactive Fallout from Bomb Clouds,” *Science* 122 (1955) that reviewed techniques for reducing damage from exposure to fallout.

Southern Nevadans would “be protected against future industrial operations with the same sort of smoke menace.”¹⁰⁸ Media acquiescence and cooperation with the military was so complete that it took a groundswell of opposition from scientists and the international community for the American media to begin to voice the questions that might have justifiably been asked during *Crossroads* or after. In the mid-1950s, after both the U.S. and the U.S.S.R. had developed and begun experimenting with hydrogen weapons, members of the scientific elite unassociated with the AEC began drawing attention to the health effects of radioactive fallout; and the international community, especially Japan, complained so forcefully and persuasively about the dangers posed by the nuclear arms race that elected officials were forced to find ways to experiment underground.¹⁰⁹ The rapidity with which an alternative to atmospheric testing was found once opposition forced a political solution leads to a conclusion that the military’s manipulation of the media, and the media’s cooperativeness—in Southern Nevada and elsewhere, was at least part of the reason that opposition did not gain momentum before the number of atmospheric nuclear detonations in Nevada climbed to 100 and fallout increased exponentially.

The combination of media complicity and a national security imperative to justify testing had its origins in the Manhattan Project, but the peacetime manifestations began with Forrester. The publicity surrounding *Crossroads* coincided with and supplemented

¹⁰⁸ Hank Greenspun, *Las Vegas Sun*, November 29, 1954, 1. And, although radioactivity was invisible, fallout was not. As Joel A. Tarr discussed in *The Search for the Ultimate Sink: Urban Pollution in Historical Perspective* (Akron, PA: University of Akron Press, 1996) in his analysis of ordinances passed in Pittsburgh because of smoke from railroad engines, one of the measures for the perceptibility and appreciation of a hazard, and an outcry about the hazards of the phenomenon, was visibility.

¹⁰⁹ For representative articles of Japanese complaints, see *New York Times*, March 16, 1954, 1, and March 26, 1954, 19; For Great Britain’s call for a global pact to end testing, see *New York Times*, May 5, 1954, 18, and Hansen Baldwin, *New York Times*, November 8, 1954.

Forrestal's behind-the-scenes efforts to nurture a climate of receptivity within government circles and without for an increase in the military's peacetime presence. He relentlessly sought out, commissioned, and circulated, studies and reports about communist ideology, the strength of the Soviet state and its military, and the threats both posed to American security, all in an effort to convince those inside and outside government that demobilization would be ruinous and that the military should share space at the policymaking table with civilian leaders. After Forrestal's death, a former Assistant Secretary of War, Howard C. Peterson wrote that "as much as anyone in the Government, [Forrestal] kept this Nation alive to the possibility of Russian aggression."¹¹⁰ Forrestal's relentless generation and circulation of studies that comported with his own beliefs established a model for the use of academic, or academically styled, treatises and reports to generate political and public support. Forrestal's method of generating anti-communism to support peacetime mobilization, one that involved the selective use of professional opinion and expert reports in what would now be termed a media "blitz," was adopted by the Truman administration to build consensus for the Truman Doctrine as well as for generating political support for the development of the Hydrogen bomb. During atmospheric testing at the Nevada Test Site, the AEC's military supporters duplicated Forrestal's selective use of expertise, relying solely on expert opinion that suited their interest in continued testing, and on his use of anti-communism to court public favor. They also relied upon a cooperative media to denigrate those who opposed testing as "simpleminded;"¹¹¹ to refer to distinguished scientists as "so-called"

¹¹⁰ The comment appeared as part of a letter written to the *Washington Post* condemning Drew Pearson's criticism of Forrestal and championing Forrestal's legacy. Cited by Rogow, *James Forrestal*, 34.

¹¹¹ *Las Vegas Sun*, February 18, 1955.

experts; and to reinforce the military's claims that testing was essential to national security: "There are a lot worse things than death. Trying to live in a communist-dominated country is most of them."¹¹² Comments such as these mimicked the military's promotional efforts and can be traced to Forrestal and the success he had at the end of the war in using media outlets in his unsubtle and pernicious strategy of coercion.

As was the case with the April memo written by one of Forrestal's aides about the significance of *Crossroads* and transmitted to President Truman, it was typical for Forrestal to draw on material written by others, though often commissioned by him, to promulgate his opinions. The *Eberstadt Report* and George Kennan's *Long Telegram* were two studies that received a wide readership because of Forrestal and that have long been understood as ones that helped to shape attitudes and responses during the early cold war. But there were many more. Forrestal commissioned one on "Dialectical Materialism" from Edward F. Willett of Smith College and countless journal and magazine articles. He then arranged to have them delivered to fellow officers, government administrators, congressmen, and newspaper publishers.¹¹³ Between October 1945 and June 5, 1946, Willett alone wrote or summarized fifty-four studies for Forrestal.¹¹⁴ In this way, Forrestal appeared to be the bearer, but not the producer, of information that accorded with his own vision for the refashioning of the American state

¹¹² "Fallout Hysteria Lacking in Las Vegas" *Las Vegas Review Journal*, March 24, 1955.

¹¹³ In May 1945, for example, Forrestal sent articles from *The Economist* to Senator Homer Ferguson of Michigan, that encapsulated his belief that the "Marxian dialectic" of the "Bolsheviks" amounted to a "religion" and posed an unrecognized threat to the security of the US. Albion & Connery, *Forrestal and the Navy*, 184. Forrestal anticipated that Willett's paper would be an introduction to a more comprehensive study that he planned to commission. He was especially impressed with Willett's paper because, according to one of his biographers, "the views in it were very close to his own thinking about soviet ideology and objectives." See Arnold A. Rogow, *James Forrestal*, 150-153.

¹¹⁴ Albion & Connery, Appendix G, *Forrestal and the Navy*, 298-299.

and which was also likely to portend doom should it be disregarded. Forrestal's barrage of anti-communist tracts meant that the evidence that Stalin was engaged in finding ways to cooperate with the west, such as disbanding the Comintern in 1943, making it clear that socialism could take hold without Soviet intervention, limiting his assistance to Chiang Kai-shek, and other instances of a temporary softening of a hard line, Bolshevik approach, went unnoticed and underappreciated.¹¹⁵ There was nothing new in Forrestal's use of the media to manage public opinion. Shortly after World War I, Walter Lippman wrote that "the manufacture of consent" had become a "self-conscious art" necessary to the business of "popular government; and, by the 1930s, it had become a commonplace among elites to recognize, in Reinhold Niebuhr's words "the stupidity of the average man" and believe that it was necessary for leaders to shake "the masses" out of their "ignorance and superstition" with "emotionally potent oversimplifications."¹¹⁶ But, in the same way that Forrestal tapped into the trends that elevated the value of professional and specialized expertise and made them his own, elevating the significance (and consequences) of the practices themselves, Forrestal put his own twist on the using the media to generate support. In the hands of the tenacious Forrestal, the distribution of these studies amounted to more than the promotion of a certain point of view, more than an attempt to educate the "notoriously short-sighted" masses.¹¹⁷ Through them Forrestal sought to bring about a transformation of government and the press.

¹¹⁵ Campbell Craig, Sergey Radchenko, *The Atom Bomb and the Origins of the Cold War* (New Haven, CT London: Yale University Press, 2008), 59.

¹¹⁶ Reinhold Niebuhr, cited in Noam Chomsky, *Necessary Illusions: Thought Control in Democratic Societies* (Boston, MA: South End Press, 1989), 16-17.

¹¹⁷ In historian Thomas Bailey's words, cited by Noam Chomsky, *Necessary Illusions*, 17-18.

In circulating reports and studies of the Soviet menace to newspaper publishers and owners, Forrestal expected to remake the American press into an informal organ of state control. As early as 1940, Forrestal was seeking a merger of all radio and cable services into a “communications syndicate” that would, with “limited government supervision ... ensure enlightened operations.”¹¹⁸ The significance of the media in delivering an “enlightened” version of events explains why, according to the editor of his diaries, Forrestal was sometimes “oversensitive” to public opinion and newspaper reports, was “always in touch with newspapermen and commentators,” and paid “considerable attention to the Navy’s and later the Defense Department’s public relations.”¹¹⁹ Faulting the press for harboring what he considered “pro-Russian” sympathies, Forrestal sought to remake the American press along a model set by the British, which, he believed, granted “solid support” to its government’s foreign policy decisions.¹²⁰ In a discussion with Under Secretary of State Edward R. Stettinius, Jr., whose disagreements with Molotov during the San Francisco Conference in Spring 1945 had become the focus of an editorial, Forrestal compared diplomacy to a ballgame and a critical *Washington Post* reporter to a fan of the other team. Forrestal told Stettinius that the reporter’s comments were a “savage attack” against a “pitcher” who was entitled to “support and cheers rather than brickbats and pop bottles from the American grandstand.”¹²¹

¹¹⁸ Dorwart, *Eberstadt and Forrestal*, 6.

¹¹⁹ Millis (editor) commentary, *Forrestal Diaries*, 7.

¹²⁰ *Forrestal Diaries*, 54. If the British press was as supportive as Forrestal believed it to be, it is interesting to note that sometime between now and then the British and the American press seems to have swapped places.

¹²¹ *Forrestal Diaries*, 54.

Forrestal was apparently sincerely worried about the future of America and so his use of the media to promote the changes he believed necessary may have been provoked solely by national security imperatives, but he was, nonetheless, aware of the duplicity embodied in artful media manipulation. On at least one occasion he admitted the disingenuousness and self-interest inherent in promotional tactics and media manipulation. In the midst of a battle in the Mediterranean, Forrestal and a *Saturday Evening Post* reporter discussed the unassuming character of the commander, Vice Admiral Kent Hewitt. During that discussion, the attribute that Forrestal pointed out that, for him, demonstrated Hewitt's "genuine selflessness" was the fact that he avoided the media, seemingly oblivious to its presence. "Never in his life has it ever occurred to him to seek publicity." Forrestal told the reporter, "And if it had, I don't think he would have had the faintest idea how to go about it."¹²² This statement amounts to a concession by Forrestal, by all accounts a master of promotion, that officers who sought publicity were not acting selflessly and were thus motivated by more than national interest. It also offers an example of the significance of *habitus* as an explanatory tool. While arranging to position himself on the busy bridge of a ship engaged in battle to chat with a reporter about the qualities of the ship's captain, Forrestal was seemingly oblivious to the irony of the fact that in the process of making sure that Hewitt received notoriety not only for his accomplishments but for his self-effacing modesty, he himself—a Secretary of the Navy with the resources to draw attention to Hewitt in many different ways—was engaged in an act of self-interested promotion.

¹²² Quoted by George Sessions Perry, "Why Don't They Write About Hewitt?" *Saturday Evening Post*, Vol. 217, Issue 25, December 16, 1944.

Forrestal had perfected the art of media manipulation and his relationship with influential publishers gave him the ability to practice it. His diaries reflect that one of his first inclinations when informed of a problem during discussions with other government officials or during cabinet meetings was to recommend a media campaign or promotion to generate public support. Forrestal's enthusiasm for generating support through the press could be ill-considered, as Byrnes pointed out during a cabinet meeting in October 1945 after Forrestal had recommended that Truman "acquaint the people with the details of our dealings with the Russians ... and with [their] attitude." Byrnes alone seemed to have recognized the potential for Forrestal's use of the media to ignite a self-fulfilling prophecy: He "demurred" because it "would give the Russians an excuse for claiming we had furnished provocation which justified their actions."¹²³ Truman, and his cabinet, however, had reasons to be grateful for Forrestal's connections a few months later. When tens of thousands of military men angry about the slow pace of demobilization rioted in Paris, Frankfurt, and Manila, during the first week of January 1946, Forrestal recommended meeting the mutinous situation with a public relations barrage, "getting the heads of the important news services and the leading newspaper ... and state to them the seriousness of the present situation." Forrestal's quick cataloguing of those he called "reasonable and patriotic" men offers a sense of the scale of his familiarity with the national media. Forrestal suggested "Sulzberger of the *New York Times*, Roy Roberts [*Kansas City Star*], Palmer Hoyt [*Denver Post*], the Cowles brothers [*Minneapolis Star-Tribune*], John Knight [*Knight Newspapers, Inc.*], plus Roy Howard and Bob McLean of

¹²³ *Forrestal Diaries*, 102. Byrnes wrote in his memoirs that he was "sure Forrestal inspired the extensive publicity in newspapers and newsreels" that occasioned a speech that he made in 1948 at the 105th anniversary of the Citadel—a speech that stressed Soviet incursions and the need for a peacetime selective service. James F. Byrnes, *All in One Lifetime* (Harper & Brothers, Publishers: New York, 1958), 397.

the AP ... heads of the broadcasting systems be called in ... a canvass be made of the important radio commentators” using “the Association of Radio News Analysts—H.V. Kaltenborn, Lowell Thomas, John Vandercook, George Fielding Eliot, Bob Trout, Robert St. John, Johannes Steel, Raymond Gram Swing, and other representative men of that profession—which has a weekly luncheon in New York.”¹²⁴

One of the ways that Forrestal endeared himself to influential members of the Fourth Estate was to take them into his confidence, even if that meant revealing classified information. Forrestal’s handling of Eberstadt’s *Report to the Secretary of the Navy*, generally referred to as the *Eberstadt Report*, provides an example of Forrestal’s behind-the-scenes method for circulating an ideology that held the promise of substantially increasing his own influence, as well as the military’s policy-making authority even as he shifted the attention away from his influence over its creation. The *Report* itself amounted to an encapsulation of the principles for mobilization that Forrestal and Eberstadt had formulated over their years of friendship and collaboration. Forrestal made sure that his congressional allies received copies of the report before it was brought to the attention of the president. And yet, once it had drawn administrative attention, Forrestal pled ignorance. As Alfred D. Sander noted, in this way Forrestal preserved his “flexibility and freedom to maneuver” by claiming that he had not had “an opportunity to give Mr. Eberstadt’s report sufficient study.”¹²⁵ And yet, despite the fact that the report’s comprehensiveness caused the White House to classify it Top Secret until its implications

¹²⁴ *Forrestal Diaries*, 11 January 1946, 128-129.

¹²⁵ Sander, “Truman and the National Security Council,” 373.

for reorganization could be sufficiently studied,¹²⁶ Forrestal's diary reflects that he used the report—one he claimed not to have analyzed—to elicit support from the reportorial press. Lunching with Arthur Sulzberger, the publisher of the *New York Times*, Forrestal accepted praise for the Top Secret Report. When invited by Sulzberger to submit more material that supported the Report's recommendations, responded that he had already invited "Patterson, Eisenhower and Nimitz" to lunch the following week, a comment likely taken by Sulzberger to mean that Forrestal would be encouraging them to provide additional statements for the *Times*. Forrestal wrote that Sulzberger had been "very much pleased" to learn that, presumably, he would be receiving more content about the innerworkings of military reorganization for his *Times*.¹²⁷

For Forrestal and those Navy officers who supported him, *Operation Crossroads*, with its legions of photographers and reporters, was little more than an extravagant manifestation of the existing and institutionally supported impulse to use the media to achieve the Navy's goals. The significant difference was that, with *Crossroads*, promotion underplayed the dangers inherent in experimentation, dangers that presented considerable anxiety to the *Operation's* Medical officers and radiation monitors but that were easily underplayed by Navy officers because radioactive contamination was unobservable. In the event, the Navy's narrative carried the day: atomic science provided a dramatic display that reinforced the fears provoked by Hiroshima and Nagasaki; atomic secrecy ensured that the *Operation* met the Navy's promotional ambition to demonstrate its resilience in the face of atomic bombardment. As the drama unfolded and afterward, it became all too easy for the press corps, for participants, and perhaps even for upper-

¹²⁶ Dorwart, *Eberstadt and Forrestal*, 110.

¹²⁷ *Forrestal Diaries*, 117.

echelon Navy officers as well, to believe only that which was observable. Because of *Crossroads*, perception *was* the reality.

Remembering that those who participated in *Crossroads* carried with them vivid memories of Pacific warfare makes it easier to understand the cavalier and sometimes swashbuckling attitude of Navy commanders who ignored the warnings of science officers and boarded, and ordered sailors to man, ships with dangerously high levels of radioactivity. Wartime conditioning had more of an influence on participants' behavior than did the possibility of potential danger from radiation—something that could neither be seen, smelled, nor felt. For men such as the commander of the submarine *Skate* and his crewmen, the important fact was not that the *Operation's* radiation monitors had deemed the ship off limits, posting it with signs that said “DANGER! VERY RADIOACTIVE! KEEP CLEAR!” but that the Navy's image of invincibility had been preserved, and that invincibility could be demonstrated and photographically recorded. The *Skate* had survived “Able's” blast effects and, though heavily damaged, was operational enough to receive a salute from Admiral Blandy and his flagship as it cruised the lagoon.¹²⁸ The *Operation's* proximity to the war and the personal history of its participants meant that instead of the health and safety regulations that the Navy had prepared in advance of *Crossroads* and that radiation monitors sought to impose, the operative norms were wartime ones: it was *habitus*, and not the considered opinion of experts, that guided the behavior and responses of participants to the atom bomb. But it was not only officers with publicity in mind who reacted as though they were still at war. Warren wrote to his wife about the strong pull of wartime experience on Navy men and

¹²⁸ The story is drawn from Weisgall, *Operation Crossroads*, 195-196.

the difficulties he and his 400 radiation monitors had stopping them from trying to save their ships. “Mostly” he said “they are too dangerous yet to board and everybody is sitting around ... staring us in the face. ...It gets a little rough when a vessel starts to get critical and then sinks and I have to say it is not safe to pull her out.”¹²⁹ *Crossroads* may have, as one historian wrote, turned into something of an embarrassment for the Navy,¹³⁰ but it set precedents for how atomic science could be mobilized for domestic political purposes and established a pattern for risky practices during future peacetime experimentation.

Nearly a decade later, for example, the Marines took advantage of maneuvers at the Nevada Test Site much as the Navy had with *Crossroads*. Marine officers magnified their soldiers’ competence with atomic weapons and warfare through media promotion. The publicity, especially when combined with the efforts of local boosters to maximize the economic benefits of testing, resulted in the trivialization of atomic experimentation and radioactive exposures. In 1955, front-page news stories in Las Vegas echoed the game-like atmosphere of *Crossroads*: It would be an “all-Marine show” with “Baby” devices and the “Battle of Midgets.” As with *Crossroads*, the Marine’s maneuvers included a series of weapons effects experiments on animals.¹³¹ In what seems to have been an obvious effort to diffuse an animal-rights backlash, the Marines made sure that the press saw their tender side, introducing their English Bulldog mascot Maggie to the press. Maggie’s contribution to the Marine’s publicity machine was insignificant

¹²⁹ July 30, 1946. Stafford Warren to Viola, Viola Warren MSS, Box 5, Folder 2.

¹³⁰ Herken, *The Winning Weapon*, 225.

¹³¹ *Las Vegas Sun*, March 15, 1955. 1.

compared to the experimental animals: she suffered only the confusion that may have been involved in answering, if only for the duration of the maneuvers, to “Sergeant Roentgen.”¹³² As with *Crossroads*, no detail of the operation was so small that it could not become front page news: “Mess Hall, Garbage Cans Used As Guide To Weather” the *Las Vegas Sun* reported of Captain Williams’s unusual barometer.¹³³ Anxiety about the hazards, as when a tourist to Las Vegas remarked that his wife had worried that traveling here would affect his “procreative processes” were dismissed by a local newspaper editor as nonsense, “there is danger of losing one’s potency in Las Vegas but it wouldn’t necessarily come from radiation.”¹³⁴

There were a number of reasons why what occurred during *Crossroads* became a model for the use of military experimentation for publicity. First, it occurred while wartime memories and experiences were fresh in the minds of participants and reporters. For participants, the peacetime experiment was, on a practical level where orders are obeyed, little different from their wartime experiences. Similarly, wartime-style censorship was something with which reporters had become accustomed to take in stride. Second, radiation exposures, even overexposures, were not immediately apparent to either participants or reporters. The maneuver ended, in fact, by leaving the impression that safety officers had been unduly alarmist and overcautious about the dangers of radioactivity. When reporters asked about the about the fate of the experimental animals, for example, so important to the mission were they that the Navy retrofitted one ship to

¹³² *Las Vegas Sun*, March 12, 1955, 1; *Las Vegas Review Journal*, March 13, 1955, 1; “Maggie,” *Las Vegas Sun*, March 13, 1955.

¹³³ *Las Vegas Sun*, March 24, 1955.

¹³⁴ *Las Vegas Sun*, March 25, 1955, 1.

serve as a floating barn, the Navy said nothing about the number of deaths, only that scientists expected to “learn much by observing the effects of the rays” on animals.¹³⁵ When combined with fears that had been amplified by pre-maneuver publicity, tactics such as these had the effect of diminishing in the public’s mind the dangers of nuclear experimentation. Polls conducted in August and September, after the Navy hastily cancelled *Crossroads* because of the widespread contamination caused by “Baker,” showed that 53 and 58 percent, respectively, of those asked responded that the bomb’s destructive power had been less than they had expected.¹³⁶ Third, and as will be discussed more fully in the following pages, atmospheric atomic experiments became an ideal promotional vehicle for officers who demanded authority over the methods, conditions, and observers granted access to detonations. The autonomy the military enjoyed over atomic science allowed it to benefit from atomic secrecy, using it as a means of controlling the flow of information to generate favorable publicity; and to benefit from the selective exploitation of professional and scientific expertise, choosing only those opinions that suited the military’s purpose and devaluing, through publicity, dissenting viewpoints. While the Navy was, with *Crossroads*, establishing some of the practical boundaries for atomic experimentation and for the use of the media to promote military objectives, Forrestal continued his efforts to transform the American media into a promotional machine that would support national security objectives; or, given Forrestal’s objections to the president when officers from other branches adopted his methods, to achieve his own objectives.

¹³⁵ *The New York Times*, June 23, 1946; 10E; *Santa Fe New Mexican*, July 2, 1946.

¹³⁶ *Public Opinion Quarterly*, Winter 1946-47, 603.

Forrestal's efforts to transform government were aimed at his superiors as well as at the general public and involved (a) generating and circulating material that bore the trappings of intellectual and academic rigor and (b) ensuring that key positions in the postwar state went to friends and protégés who supported his vision for a mobilized society. In these ways, Forrestal contributed to laying the ideological terrain and structural foundations for the militarization of the atomic program and for cold war mobilization. In contrast to the top-down initiatives to generate consensus through "oversimplification" that conservative intellectuals and realists such as Lippman and Niebuhr proposed during the 1930s, Forrestal operated from a middle tier of influence. From his position as Secretary of the Navy and later of Defense, he used his platform, and intimacy with media elites, to position himself and military advisors as intellectual powerhouses, all in an effort to build political influence and to coerce elected and appointed policymakers—his superiors—to grant policymaking powers to the military. One of his strategies was to inflate the intellectual acuity of military officials while casting doubt and derision on elected officials. During a speech before the Senate's Committee on Military Affairs, Forrestal stopped just short of saying that congressmen were incapable of understanding the complexities of national security. He expressed dissatisfaction not only with Senate proposals for unification, but also with elected officials' intellectual ability to create what Forrestal envisioned was "a mechanism" to guarantee "that this Nation shall be able to act as a unit in terms of diplomacy, its military policy, its use of scientific knowledge and finally in its moral and political leadership." Forrestal compared the approaches of elected leaders and the Navy, and emphasized that the Navy's proposal was an intellectually rigorous one. "Many months ... of earnest

study” Forrestal said, had shown that legislative initiatives were, unlike the military’s “study and other studies of the subject,” ill-conceived: “the approach proposed in the legislation that you are now considering is an erroneous approach to a fragment of the intricate and complex problems that confront us.”¹³⁷ Forrestal’s method for discrediting the cognitive capacity of elected officials was one that AEC officials would use to argue that they, and they alone, had the intellectual and advisory capacity to determine the necessity, and safety, of atmospheric weapons testing.

Inaugurating a method of persuasion that was not so much designed to win over as to pummel into shape the thinking of the public and elected leaders, Forrestal contributed to transferring wartime momentum into peacetime, a process that Peter Novick has explained as a relocation of the “apotheosis of evil” from the Nazi enemy to Soviet Communism. In Novick’s analysis, the engine for this relocation was the repeated use of the term “totalitarian” throughout the popular press as a “rhetorical weapon” that homogenized America’s enemies and galvanized popular support against them. In a representative example, Novick writes that *Time*, in blaming totalitarianism for concentration camps instead of German fascists, drew the “appropriate anti-Soviet moral.”¹³⁸ The seeming appropriateness of that moral in the public sphere was due in large part to Forrestal.¹³⁹ In January 1946, in response to mounting publicity that favored

¹³⁷ James Forrestal, “Should Congress Create a Single Department of the Armed Forces?” *Congressional Digest*, Vol. 24, No. 12 (December 1945): 299

¹³⁸ Peter Novick, *The Holocaust in American Life*, 85-87

¹³⁹ Forrestal’s public campaign corresponded with another conducted first behind the scenes and then publicly by Harriman, who encouraged Truman to exert dominance in his dealings with the Soviets—a course of action that Roosevelt had rejected. Frank Costigliola, “After Roosevelt’s Death: Dangerous Emotions, Divisive Discourses, and the Abandoned Alliance,” *Diplomatic History* 34 (2010): 1-23, esp. 16-22.

rapid demobilization and to a suggestion by Walter Lippman that it was up to statesmen to find a way for “democracy and Communism” to exist simultaneously, Forrestal wrote to Lippman and also to Henry Luce. To Lippman, Forrestal enclosed a copy of Willett’s “Dialectical Materialism,” a study that discussed the incommensurability of Communism and democracy in the bluntest possible way, alluding to an atomic Armageddon and anticipating “push-button warfare.” In Willett’s phrasing, if

a true Communist could destroy the United States by pushing a button, he would do so. ... [It is] tantamount to suicide to do anything that tends either to strengthen the power of Communism or to weaken our powers to withstand it.¹⁴⁰

Forrestal sought to drive home Willett’s points, writing in a cover letter to Lippman that Russia was not a “state” in the ordinary sense, and that the problem the U.S. faced was that it was, instead, a “religion.” The notion might not have carried much weight with Lippman, but it echoed down the years to influence how military officers portrayed threats to American security. In its 1951 “Review of the Current World Situation,” the JCS resurrected Forrestal’s language in a survey that has been described as presenting “an apocalyptic vision ... a crisis of religious proportion.”¹⁴¹ To Luce, who had already received a copy of “Dialectical Materialism,” Forrestal sent another, and in a letter invoked Hitler in an unmistakable appeal to national security. Aware, perhaps, that his persistence was becoming irksome, Forrestal wrote that although “it is easy to ridicule”

¹⁴⁰ Rogow, *Forrestal*, 152.

¹⁴¹ Ron Robin, *The Making of the Cold War Enemy: Culture and Politics in the Military-Industrial Complex* (Princeton: Princeton University Press, 2001) 41. Robin’s emphasis on the post-National Security Council has caused him to understand the JCS’s vision in their 1951 Review as a departure from the standard “dry detachment” of previous military document. By examining Forrestal’s influence, and especially his use of emotive language, it becomes clear the JCS’s “emotional survey of events” in 1951 did not represent a departure, but rather a continuation, or perhaps a re-surfacing, of Forrestal’s anti-communist and anti-Soviet ethos.

the need for such a study, he cautioned Luce, “in the middle of that laughter we always should remember that we also laughed at Hitler.”¹⁴² Publicity for *Crossroads* drove Forrestal’s points home: “Atom Bomb Test Need. Large Political-Military Problem, Fear of ‘Another Pearl Harbor’ Involved.”¹⁴³ Forrestal’s anti-communism, his circulation of anti-Soviet material, and his wielding of national security arguments as a means of persuasion demonstrates that he played an integral role as an inter-governmental link between what one historian has found to have been an informal and temporary coalition between the conservative pessimists and liberal intellectuals that, together, contributed to the creation of the national security state.¹⁴⁴

Forrestal’s *modus operandi* was effective, and as adopted by others with their own reasons for fueling anti-communism, it became a means of policymaking-through-politics that limited the options from which elected officials could draw, tying their hands and constraining their ability even to consider, let alone establish, policy that interfered with military expansion. That Forrestal was unable to force the legislative changes that would have caused civilian leaders to share their policymaking responsibilities with military officers is not as important as the fact that he successfully wrested some of that responsibility from those civilian leaders by limiting the choices they could make. By creating and circulating a catalog of reasons for expanding the military’s influence and footprint, one that other officers and their supporters could draw upon to suit their own purposes, Forrestal and those who followed his lead amplified the military’s voice to such

¹⁴² *Forrestal Diaries*, 127-128.

¹⁴³ Hanson Baldwin, *New York Times*, April 10, 1946.

¹⁴⁴ For a discussion of how these two groups influenced the postwar state, and for how the fundamental tensions inherent in their ideological stances operated as limitations on the degree of conformity that the national security state ultimately engendered, see Hogan, *A Cross of Iron*, 420-474.

a level that elected leaders could not fail to hear, and to heed, it.¹⁴⁵ Forrestal's operational and administrative methodology amounted to a way of doing business that allowed the military to play an indirect role in shaping national policy to accord with the perceptions and objectives of the military's upper echelon.

Operation Crossroads cannot be considered apart from this process. Forrestal's methods of coercion became more effective, and consequential, when they were backed up by atomic experiments deliberately staged to portray not only the frightening potential of an enemy attack but of the American military's resilience in the face of it. Forrestal was instrumental in establishing the two essential conditions for the political use of atomic weapons: (a) the development of a sensibility that America's place in the world and its security required a powerful peacetime military presence, and (b) intra-governmental support for the ideological and economic commitment that such a sensibility would require. Forrestal established both by fostering during peacetime the wartime practice of drawing successful professionals from the private sector to serve in administrative positions and rewarding their loyalty—to himself and, indirectly, to military goals—with rank and prestige; and, by using the media to cultivate support. Neither tendency originated with Forrestal and neither allowed him to garner a level of political influence that would have granted him a legislative fiat to set policy, but both allowed him, and the military officers who adopted his methods as a model, to have a greater influence over policymaking than had previously been possible.

The continued development of atomic weapons systems required political and economic support—support that *Operation Crossroads* was designed to generate (and by

¹⁴⁵ And officially sanctioned in the National Security Act of 1947, a document that Hogan calls the “Magna Carta of the national security state.” *A Cross of Iron*, 24.

establishing a model, would help to sustain)—by building upon fears of atomic devastation while simultaneously providing a reassuring demonstration that the military, or at least the Navy, could with enough resources prevent atomic catastrophe. Thus, while the military’s Joint Committee on Atomic Energy and its War Department Atomic Energy Board probed behind-the-scenes into the possibilities for atomic weapons, the Navy, through Admiral J.E. King, Commander-in-Chief of the U.S. Fleet and Chief of Naval Operations; and Vice-Admiral W.H.P. Blandy, Commander, Joint Task Force One reached out to the American public, capitalized on atomic anxiety, and began to convince congressmen and their constituencies that atomic weapons experimentation was vital—an urgent, national security imperative.¹⁴⁶

The most compelling and significant strategy that Navy officials used to gain approval for *Crossroads* was their appeal to national security. It was certainly the most widely used: King, Blandy, and the Navy’s congressional supporters emphasized time and again that the *Operation* was crucial to America’s offensive and defensive capabilities and threatened that another Pearl Harbor might be the result of postponing *Operation Crossroads*.¹⁴⁷ Employed in conjunction with the assessments of Navy engineers and technicians, this rhetoric proved unassailable by critics—even those as

¹⁴⁶ For the psychological effect of the bomb on the American public, see Spencer R. Weart, *Nuclear Fear: A History of Images*, and Paul Boyer, *By the Bomb’s Early Light: American Thought and Culture at the Dawn of the Atomic Age*. Also, Hogan who assesses the post war ideological transformations involved in the postwar reconciliation between democratic traditions and increasing militarism. *A Cross of Iron*, 23-68. See Melvyn P. Leffler for the influence of Pearl Harbor and the atom bomb on post-war military planning and strategy in “The American Conception of National Security and the Beginnings of the Cold War 1945-1948,” *The American Historical Review* 89 (1984): 346-381, esp. 350. For the centrality of national security and America’s defensive posture to the negotiations associated with international control of atomic weapons, see Barton J. Bernstein, “The Quest for Security: American Foreign Policy and International Control of Atomic Energy, 1942-1946,” *The Journal of American History* 60 (1974): 1003-1044.

¹⁴⁷ For one example of many, see Hanson W. Baldwin “Atom Bomb Test Need. Large Political-Military Problem, Fear of ‘Another Pearl Harbor’ Involved” *New York Times*, April 10, 1946.

prominent at the time as J.R. Oppenheimer—who claimed smaller-scale or laboratory experiments could achieve the same results.¹⁴⁸ In the midst of the Navy’s press for approval, Robert Thompson of the House Military Affairs Committee complained that even common sense seemed to have gone missing: “With everything chaotic, why all the haste? We ought to talk a little about peace.”¹⁴⁹ Fear, however, tipped the balance in the Navy’s favor—trumping objections as stubborn as those concerning the *Operation*’s costs.¹⁵⁰ It is impossible to assess whether the arguments by Navy officials and their supporters generated new fears or merely fueled existing ones, but people were afraid. A study conducted in June 1946, a month before the maneuvers began, found that 64 percent of those surveyed believed that there was a “real danger” that atomic bombs would be used against the United States.¹⁵¹ Appeals to national security, made through media outlets, were persuasive—giving officers who made them the upper hand in receiving approval for projects that used atomic resources and contributing to building public consensus. As one of the strategic resources used by King and Blandy during the planning and implementation of *Operation Crossroads*, appeals to national security

¹⁴⁸ See Hanson Baldwin, *New York Times*, February 20, 1946, 9; Bulletin of Atomic Scientists, February 15, 1946, 1, 11. See also the letter from J. R. Oppenheimer to Harry S. Truman, May 3, 1946, declining to serve as Truman’s representative at the tests and his summary of general scientific opposition. Atomic Testing: General, National Security Council-Atomic, PSF: Subject File, Papers of Harry S. Truman.

¹⁴⁹ For Thompson’s comment, see *New York Times*, March 12, 1946, 17.

¹⁵⁰ For the complaints of Congressmen see James Forrestal, Walter Millis, ed., *The Forrestal Diaries* (New York, NY: Viking Press, 1951) entry date March 22, 1946; for Army complaints along these lines see *New York Times*, February 13, 1946, 13.

¹⁵¹ Based on a representative sample. Leonard S. Cottrell, Jr., Sylvia Eberhart, *American Opinion on World Affairs in the Atomic Age* (Princeton University Press, 1948; Greenwood Press, Publishers, NY, 1969), 107. I am mindful of Paul Boyer’s assessment that polling evidence from the period—including the Cottrell and Eberhart study—is contradictory and ambiguous for a number of psychological and historical reasons. *By the Bomb’s Early Light*, 22-26.

allowed them to neutralize objections to the program and to avoid civilian oversight and, thus, to assert broad discretionary power over the use of atomic energy.¹⁵²

As additional validation to its national security argument, the Navy positioned *Crossroads* as a legitimate scientific experiment—a feat it accomplished by inviting participation from the nation’s scientific community and by using the media to delegitimize the opinions of oppositional scientists. Those scientists who came out against the *Operation* did not suggest that the material and biological effects of radiation were not worthy of study, but instead argued that blast effects could be duplicated with non-nuclear explosives and that more could be learned of radioactive effects under controlled laboratory conditions than at Bikini Atoll. Scientists who opposed *Crossroads* were not part of a lunatic fringe, but members of the nation’s scientific elite. Their numbers included J. Robert Oppenheimer, who not only objected to the necessity of the *Operation* but also turned down a request from Truman to serve as an advisor, Lee DuBridge, president of the California Institute for Technology, and, H.S. Uhler, Professor Emeritus at Yale.¹⁵³ The significance of their standing was such that the Navy made discrediting

¹⁵² On the flexibility of the Navy and Army to maneuver around President Truman’s desires, see Hogan, *A Cross of Iron*, 40.

¹⁵³ For Oppenheimer, see Hanson Baldwin, *New York Times*, February 20, 1946, 9; *Bulletin of the Atomic Scientists*, February 15, 1946, 1, 11. See also the letter from JR Oppenheimer to Harry S. Truman, May 3, 1946, wherein he declined to serve as a representative at the tests and summarized general scientific opposition. Atomic Testing: General, National Security Council-Atomic, PSF: Subject File, Papers of Harry S. Truman. A sampling of opposing opinions illustrates the public debate: Lee DuBridge (then President of the California Institute for Technology), *Bulletin of the Atomic Scientists*, May 15, 1946, 14, and “Doubts Value of Tests” *New York Times*, January 13, 1946, 8; Stafford Warren and DeSeversky in Harold B. Hinton, “Atom Bomb Force in Big City Argued. DeSeversky, Disputing Army’s Scientists, Minimizes Effect as Compared to TNT” *New York Times*, February 16, 1946. Urey Scores Army on Atomic Power” “no real defenses against the bomb.” *New York Times*, March 3, 1946; H.S. Uhler, Professor Emeritus of Physics at Yale University “Bikini Explosions Might Project Disastrous Repercussions” *New York Times*, April 7, 1946, 10E. L.A. DuBridge, “Atomic Tests Queried” in Letters to the Times, *New York Times*, May 5, 1946; Ralph A. Sawyer, John von Neumann, “Atomic Tests Defended” in Letters to the Times, *New York Times*, May 19, 1946.

See Scott on the tendency of officials to stigmatize individuals who deviate from the official text--who “seem to call into question official realities.” *Domination and the Arts of Resistance*, 55.

those opinions one of its first priorities. In the official history of the *Operation*, W. A. Shurcliff discussed this process in a way that illustrates the vigor with which the Navy went about devaluing the expertise and experience of oppositional scientists and the importance of the media to that effort. His choice of words betrayed the extent to which the Navy considered oppositional scientific opinion primarily an issue of public relations and illustrates how language minimalized and rendered superficial legitimate and reasonable scientific differences of opinion. “The majority of the misconceptions” Shurcliff wrote, “were gradually dislodged by the steady stream of facts issued to press and radio.”¹⁵⁴ The effect this had upon the AEC’s use of expertise, upon the scientific community, and the public’s sense of the safety or danger of atomic weapons testing is discussed in a later chapter. For present purposes, the significant fact is that by March, the public relations effort had been so successful that an internal assessment found that the only “strong” opposition left to the project was from the Society for the Prevention of Cruelty to Animals.¹⁵⁵ Along with the Humane Society of America, that small segment of the population remained committed in their opposition to *Crossroads*, reacting with sympathy and anger at the sacrifice of 6,000 animals. The society launched protests in New York and Los Angeles in late July. Marching down Broadway and around Times Square with a rented stuffed goat adorned with a tart warning, “Today me. Tomorrow you,” the thirty-five protesters in New York were joined by the Harlem Ashram Center, two groups of Socialists, and the War Resisters League. In Los Angeles, the protest was

¹⁵⁴ Shurcliff, *Bombs at Bikini*, 35. The scientific nature of the Operation was a theme that the Navy emphasized in its stationery, with an atomic ‘neutron’ symbol superimposed over a globe and centered over Bikini—a logo that was surrounded by the words “U.S. Army*Science*U.S. Navy*Joint Task Force One.” For examples, see envelopes and letterhead included in Viola Warren MSS, Box 5, Folder 2.

¹⁵⁵ The comment appears in a Navy bulletin designed to guide reactions to criticism of the tests. “Public Information Estimate No. 1”, March 7, 1946, box 73, 74, Reel 1, Stafford Warren mss.

held as the feature presentation of the San Fernando Goat Fanciers' tenth annual show, a venue that gave protestors an advantage the New York group had not had: a live goat. They also faced opposition that New York protesters had not: complaints from a veterans group which was not necessarily voicing support for *Crossroads* but were objecting to the group's use of symbolism: the bugling of "taps" and a ceremonial flag lowering in honor of the sacrificed animals.¹⁵⁶ In hindsight, opposition from animal groups may have played right into the Navy's efforts to marginalize objectors.

The Navy's intentions were limited to gaining public support for maneuvers that it considered critical to its survival, but both the publicity the Navy generated for the plan and its simultaneous suppression of scientific information about fallout and radioactive hazards that would have drawn negative publicity were reasons why *Crossroads* became such an important training ground for the use of atomic bombs by military officers as instruments of public relations. Though analyzed in greater detail later in this dissertation, the Navy's manipulation of science and scientists increased the significance of *Crossroads* as an aspect of Militarization. In June 1946, one month before *Crossroads*, Rear Admiral Albert C. Read, Sr., professed an anti-scientific rationale and betrayed, if unconsciously, the superficial nature of the Navy's interest in the scientific value *Crossroads*. Read expressed disdain for oppositional scientists with an unlikely choice of words that suggested he no longer considered scientists members of the human race: "Scientists have their theories and they say this and thus can be done. But don't ever overlook the capabilities of man. He can do great things and undoubtedly he can defend

¹⁵⁶ "35 March in Protest to Atom Bomb Tests," *New York Times*, July 25, 1946, 2; "Protests Diminish Bikini Goats' Rites," July 22, 1946, 1.

himself against the A-bomb, theories or no theories.”¹⁵⁷ Similarly, in regard to the second bomb at *Crossroads*—“Baker”—a Navy official discounted the warnings that radioactive seawater would be the most dangerous component, saying simply that scientists “had been wrong before.”¹⁵⁸ But they were not: radioactive contamination that rained down on the lagoon and everything in it when “Baker” was detonated underwater, caused the postponement (forever) of a deeper underwater shot, “Charlie,” and a hurried cancellation of the *Operation*. In Warren’s description, “several thousand tons of radium combined with dust and water ... splattered over the target ships and the water of the lagoon.” After nearly a week, sailors were allowed to salvage instruments from the decontaminated ships, if they could do so in the ten to twenty minutes before exceeding what was considered at that time to be a safe tolerance dose. When they returned, they were tested for radioactivity, and showered and tested, and sometimes showered again. Lingering activity on their hands was eliminated by dissolving off the outer layer of their skin with “aqua regia.” Internal exposures to radioactive material posed the greatest hazard. If breathed into the lungs or taken into the mouth, “a microgram of fission material, which is about the weight of one puff of cigarette smoke, can do serious damage.”¹⁵⁹ Warren also wrote about the insidious nature of the biological hazard of environmental accumulations of radioactive material and the hazards it posed across the food chain:

Two weeks after the detonation, the little vegetable-eating fish of the lagoon began to die from radioactive material absorbed from the algae. If

¹⁵⁷ Rear Admiral Albert C. Read, Sr., Associated Press, *Arizona Republic*, June 10, 1946, 4.

¹⁵⁸ Lee DuBridge, president of the California Institute of Technology, warned in May that the radioactive spray would be unpredictable at best and potentially lethal. Lee DuBridge, *Bulletin of the Atomic Scientists* May 15, 1946, 14. For the officer’s response, see Weisgall, *Operation Crossroads*, 88.

¹⁵⁹ Stafford L. Warren, draft of article “The Victims of an Atomic War,” 3-6, Viola Warren MSS, Box 293, Folder 6.

you dried one of these fish and put it on a photographic film, it would take its own picture because of the radioactive materials deposited in its bones and stomach. At the end of the fourth week, the predatory fish died from eating the smaller fish. They disintegrated on the bottom, the algae absorbed their radioactivity and the cycle started all over again.¹⁶⁰

When Warren submitted his article to the AEC for the required review, the AEC distributed it to the Navy and defense officials for comment. Lilienthal's AEC approved the article's release, noting that it had no objection to the article's publication and, indeed, hoped that it would be published because it "might reawaken the lagging interest of the international control of dangerous aspects of atomic energy." Rear Admiral William "Deke" Parsons, the Chairman of the Joint Crossroads Committee, disagreed and refused permission—the Military Liaison Committee concurred. Parsons's analysis contained echoes of those Read had made before *Crossroads*. He wrote that Warren's explanation was "sensational," contained a "very pessimistic view ... not ... shared by other scientific and medical groups," that it ignored "the potential of an efficient civilian defense organization in minimizing the spread of contamination and panic," and concluded:

The public is entitled to receive from experts of Dr. Warren's standing not only the "dark" part of the picture, but also the more hopeful aspects. Any campaign of public education should be aimed not at spreading fear but at enlisting public support for measures of passive defense, and at presenting the need for efficient organization and discipline among the public in the event of disaster.¹⁶¹

By comparing the content to which the Navy objected and that which it permitted, it becomes clearer that the Navy was primarily interested in preventing the spread of

¹⁶⁰ Warren, "Victims," 4.

¹⁶¹ "Draft" with a handwritten note that it should be returned to "Corbin Allerdice, USAEC, Washington DC" Viola Warren MSS, Box 293, Folder 2.

information that would have generated opposition to continued weapons testing—and perhaps would have, as the AEC official stated, reinvigorated interest in international control, a circumstance that would have stymied military expansion. In contrast to Warren’s elaboration of the concentration and continual expression of radioactivity in the environment and its effect on living organisms, what can reasonably be said to have been a “just the facts, ma’am” discussion; David Bradley, a physician who served at *Crossroads* as a radiation monitor, and whose book *No Place to Hide* has gone down in history as a frank statement of the dangers that lingering radioactivity would present in the event of a nuclear war, took a tentative, “the jury’s still out” approach in the conclusion to his narrative of the same phenomenon:

Almost all seagoing fish recently caught around the atoll of Bikini have been radioactive. Thus the disease is passed on from species to species like an epizootic What the immediate results of this situation will be cannot be predicted. I believe that there is enough radioactivity present at the bottom of this lagoon to kill fish ... but it would take a careful study of the fish population extending over many months to prove it. I doubt that the amount of radiation carried away by migratory fish to other parts of the Pacific will constitute any hazard ... but whether we would be safe in that assumption in the event of an atomic war ... is another question.¹⁶²

Publicity that brought those and other facts about *Operation Crossroads* into the open stimulated debate and disagreements among scientists—disagreements that allowed the military, during *Crossroads* and after, to marginalize scientific opinion with self-serving choices. The Navy benefited from both manifestations of this process: it capitalized upon the public’s renewed appreciation for the accumulation of scientific information to bolster the importance of the maneuvers; it also relied upon and contributed to the disagreements among scientists by discrediting those scientists who

¹⁶² David Bradley, *No Place to Hide*, 2nd ed., 126.

opposed *Crossroads* and marginalizing their opinions. In the years that followed, the division and politicization of scientists engendered by *Crossroads* gave the Navy, and other branches that would come to devise their own experiments with atomic weaponry, an opportunity to discount cautious scientific opinion and to select instead the scientists and opinions that best suited their interests. A year after his experiences at *Crossroads* and while on a trip to Washington, D.C., Stafford Warren, the *Crossroads*' Radiation Safety Officer, wrote home to his wife Viola. In a self-professed "tizzy" he explained that he had been denied permission to publish a number of studies relating to data he had collected at *Crossroads*. Those studies, evaluations of the unpredictability of downwind radioactive contamination were:

too scary to publish now and they agreed to a panel of psychologists, psychiatrists, and social scientists with war experience to study this problem so that the info could be put out without causing mass hysteria There is a great deal more interest in the east now than ever before and it has the Navy and Army worried that the 'hysteria' will go in the wrong direction.¹⁶³

The military's suppression of Warren's findings meant that, like other scientific studies he and others had performed before and after *Crossroads*, it could ignore the inconvenient fact that radioactive fallout could not be evaluated for safety based on general dispersal predictions and measurements. In planning the next round of tests under the authority of the AEC, for example, the JCS demanded that responsibility for the setting of radiation exposure limits rested with the commander alone: "The task force

¹⁶³ Stafford Warren to Viola Warren, June 14, 1947, Box 1, Viola Warren MSS.

commander must have final responsibility in matters pertaining to hazards which may result in injury or death to personnel whether they be military or scientific.”¹⁶⁴

By the end of 1947, the Military Establishment was prepared institutionally and organizationally with Manhattan expertise and strategies to exploit the political climate and international events to establish complete authority over the atomic program.

¹⁶⁴ 12 November 1947 Pages 62-65 incl. Draft memorandum “Report by the Joint Proof-Test Committee to the Joint Chiefs of Staff on Armed Forces and Atomic Energy Commission Participation in Proof Test Operations for Atomic Weapons”, 64. RG 218 Records of the U.S. Joint Chiefs of Staff, Central Decimal File 1948-1950, 471.6 (8-15-45) Sec. 7-10; Box No. 223 HM1994.

CHAPTER FIVE

POLITICAL PATHWAYS TO CONSOLIDATION

The Atomic Energy Act and the National Security Act became stepping stones to influence and autonomy for military officers. Provisions in both acts that established congressional oversight failed to guarantee accountability. Instead, they politicized defense and atomic administration, putting military officers and program managers alike in positions where their achievement mattered less than their ability to weather or exploit shifts in the domestic political climate. Because of their experience in the political arena and familiarity with congressional actors, and because they had been able to shape provisions of both Acts, military officers had advantages in the political arena that the AEC and supporters of civilian development did not. The military also derived more benefit than supporters of civilian control from an institutional standpoint: the NSA provided the armed forces with institutional support for coordination of military goals. On the civilian side of the equation, AEA provisions that limited the terms of the first commissioners to two years guaranteed that it would be difficult for them to generate confidence in their abilities and build the relationships necessary to gain support for AEC programs unrelated to defense. This became immediately evident when a coalition of Republicans and conservative Democrats, many of them supporters of the military who had opposed the civilian-directed AEA, achieved a majority in Congress and took aim at Truman and at the AEC.¹ Although the cards were stacked against the AEC from the beginning, decisions that the AEC made in the first year to decentralize the operation of

¹ For a summary of the nature of this coalition and Truman's efforts to marginalize Congress so that he could lay the blame at Republicans to enhance his chances of re-election, see Richard S. Conley, "Divided Government and Democratic Presidents: Truman and Clinton Compared," *Presidential Studies Quarterly* 30 (2000): 224-225, 228-232.

the program before securing authority in its own right were also partially responsible for its inability to civilianize the atomic program after passage of the AEA.

The Atomic Energy Act

President Truman signed the Atomic Energy Act on August 1, 1946, while *Operation Crossroads* was entering its final stages at Bikini. After months of high profile hearings during which the issue of civilian versus military control was debated in Congress and throughout the press, the bill's supporters had included a provision for a military advisory panel. With that, General Groves and other supporters of military control, believing that the concession was the beginning of a trend and that amendments to the Act favorable to the military would be forthcoming, dropped their opposition to the civilian authority of The McMahon Act. The revision allowed the bill to pass unanimously in the Senate and with an overwhelming majority of the House. On its face, the Act reaffirmed the principle of civilian authority through the creation of an all-civilian Atomic Energy Commission answerable to the president and to the Act's newly created Joint Committee on Atomic Energy (JCAE). The JCAE was an eighteen member committee composed of nine senators and nine representatives, with each house represented by five from the majority and four from the minority, and it was to be kept "fully and currently informed" by the AEC. By November of that year, Truman had chosen and appointed the men who would serve on the first Commission. He granted them interim responsibility in advance of their formal nominations in January so that they could begin to acquaint themselves with what was already an up-and-running empire. A brief overview provides a sense of what those commissioners had taken on. In what was called a "small" liaison office in D.C., a staff of 535 coordinated the program's

operational arms. The program's headquarters was housed in facilities on 59,000 acres of restricted area in Oak Ridge, Tennessee, and other centers of operation were located in New York, Chicago, Los Alamos, and Richland, Washington. The program also had offices in Berkeley, Los Angeles, Schenectady, and Ames, Iowa. Nearly 4,200 full time staff worked outside of D.C., and the program employed another 40,000 as contractor employees, 235 military officers, and 2,500 enlisted men. By January 1, 1947 the budget for 1948 had been roughly estimated to be in the range of \$683 million dollars.²

The first Commission was a diverse and broadly skilled group. Its Chairman, David E. Lilienthal, drew opposition for his political and ideological viewpoints from the start. A full year before his appointment he had already run afoul of the Army by participating in a September 1945, conference on Atomic Energy Control at the University of Chicago. At that time, Lilienthal had helped thwart Army officers' plans to prevent that conference from taking place and had, moreover, antagonized officers and their supporters by advocating openness and the release of all information about atomic science except for that which could be shown to directly jeopardize national security. The only Democrat on Truman's slate and a seasoned New Dealer, Lilienthal was perhaps best known as the man who had built and managed the TVA. A Midwesterner, Lilienthal was a graduate of Harvard Law School and had experience with atomic issues, having worked with Acheson and Baruch on a plan for international control under the UN. Lilienthal's approach to domestic control was one that encouraged information sharing and public participation to generate what he called a "broad public understanding and

² Numbers of personnel and funding differ, in part, because of the size and complexity of the Manhattan Project and the transfer of some of Los Alamos's projects to Sandia. The figures included here were gathered at the time and published in 1948, and are likely to be accurate as any. Richard O. Niehoff, *Public Administration Review* 8 (1948): 91-102, esp. 94.

discussion of the issues involved.”³ According to one associate who had worked with him while he served on Wisconsin’s Public Service Commission, he was also a politically astute and crafty administrator: “tough, stubborn, and ruthless.”⁴ As Chairman of the AEC, Lilienthal drew an annual salary of \$15,000, which would amount to about \$140,000 today; and which at the time was slightly higher than a Senator’s \$12,500 salary and \$1,000 more than the \$14,000 that each of the other Commissioners earned.⁵ To round out the Commission, Truman appointed Robert Bacher, a forty-one year old scientist, who had been involved with the creation of the atom bomb and was head of nuclear research at Cornell; Lewis Strauss, fifty-one year old banker and philanthropist, who had invested in radioactive isotopes, appeared to outsiders as a shy, stylish dresser, and who, as a Forrestal protégé, was so proud of his rank that for the remainder of his life he asked to be addressed as “Admiral;”⁶ William Waymack, Pulitzer Prize-winning editor of the *Des Moines Register* and outspoken supporter of the McMahon Act; and, finally, Sumner Pike, an industrialist and bachelor at fifty-three.

The Commission restructured the program, dividing responsibilities according to their own preferred methods of management and in accordance with committees and divisions established by Congress for research, engineering, production, and military applications. Under the Act, the Commission was responsible for establishing policy, for appointing division directors, and naming a general manager. The two most important

³ Lilienthal, *The Atomic Energy Years*, 637. See also Steven M. Neuse, *David E. Lilienthal: the Journey of an American Liberal* (Knoxville, TN: The University of Tennessee Press, 1996).

⁴ Quoted in *Time*, “The Other Side of the Moon,” August 4, 1947.

⁵ Adjusted based on the Consumer Price Index calculator at <http://www.measuringworth.com/uscompare/>

⁶ A preference that he kept throughout his life. McGrath, *Scientists, Business, and the State*, 120.

Committees established under the Act were the General Advisory Committee (GAC) and the Military Liaison Committee (MLC). GAC members were selected by the president, expected to serve six-year terms, and were civilians, primarily physical scientists and engineers with expertise in atomic materials and issues. They were already familiar to readers of newspapers and magazines who had taken an interest in stories about the bomb and the Manhattan Project.⁷ The MLC was made up of representatives from the War and Navy Departments who were charged with the responsibility to “advise and consult” with the AEC on the military’s needs. The Act contained provisions to deal with disputes between the MLC and the AEC, but did so with language that gave the MLC wide latitude and authority with the expectation that the MLC would be in a position to advise the military establishment as well as the AEC. Should the MLC “conclude” that the AEC was operating in a manner that was “adverse to the responsibilities of the Departments of War or Navy,” for example, it was to refer the matter to the Secretaries of those departments, and should one or both of them concur with the MLC’s conclusion(s), they could then refer the issue to the president for a final decision.⁸

The Act contained no provisions addressing health and safety precautions, an indicator of their peacetime marginalization. As a remedy, the Commission itself established an Interim Medical Advisory Committee and made Stafford Warren its

⁷ AEA, Section 1 (b). The members of the original General Advisory Committee were Harvard President James B. Conant, who strove throughout the war and afterwards for the establishment of a National Science foundation; nuclear physicist Enrico Fermi of the University of Chicago; Lee A. Du Bridge, president of CIT, and that institution’s newest celebrity, Robert Oppenheimer; du Pont’s Hood Worthington; Nobel laureate in physics Isidor I. Rabi who during the war was the leader at the MIT Radiation Laboratory, Hartley Rowe, a division director at the National Defense Research Committee established in 1940 and a Los Alamos consultant; Cyril S. Smith, a metallurgist involved in metal fabrication for the bomb; and one of the co-discoverers of plutonium, Glenn T. Seaborg. *Atomic Shield*, 15-16.

⁸ AEA, Section 1 (c).

Chairman. Warren's first priority was to establish a biomedical research agenda for the AEC. By June of that year, a Medical Board of Review was meeting and ruling on procedural and ethical questions of researchers working under AEC contract who were, among other things, investigating the affect of radiation on human subjects.⁹ That Committee's successor, the Division of Biology and Medicine, was established in October 1947. The Commission chose Shields Warren, no relation to Stafford Warren, as its Director. Shields Warren graduated from Harvard Medical School, broke new ground by using isotopes in his work with endocrine disease and cancer, and as a Navy officer and colleague of Stafford Warren, performed systematic studies of radiation effects at Hiroshima and Nagasaki.¹⁰ During its first year, the AEC also set up a Medical Division that operated out of the New York office. Instead of relying on contractor personnel, as was the case throughout the program, the Medical Division ran its own laboratory with AEC staff. A recently discharged radiologist with the U.S. Army Medical Corps, Bernard Wolf, established the laboratory and brought in Merrill Eisenbud, then an industrial hygienist with Liberty Mutual Insurance Company and later became director of the AEC's Health and Safety Laboratory. In the 1950s, Eisenbud would be the one to implement the first worldwide fallout monitoring network.¹¹

⁹ Memorandum, ACHRE Advisory Staff to Members of the Advisory Committee on Human Radiation Experiments, May 25, 1995, Tab D-1, "New Documents Concerning Early AEC Ethics and Classification Policies." ACHRE online collection located at http://www.gwu.edu/~nsarchiv/radiation/dir/mstreet/commeet/meet15/brief15/tab_d/br15d1.txt (accessed April 9, 2008).

¹⁰ For the Division of Biology and Medicine, see Hewlett and Duncan, 233; See also *The Human Radiation Experiments, Final Report of the President's Advisory Committee*, 11-12, 154-155.

¹¹ Merrill Eisenbud, *An Environmental Odyssey, People, Pollution, and Politics in the Life of a Practical Scientist* (Seattle: University of Washington Press, 1990), 38-43, 132-133.

Lilienthal's strategy for structuring the organization reflected a combination of pragmatism and Jeffersonian idealism. With the Commission in the position of chief policy maker once held by Groves, the AEC chose Carroll Wilson to be General Manager and gave him responsibility over the day-to-day operations of the AEC. Wilson was an MIT graduate who had gained experience in government-funded science during the war working under Karl T. Compton and Vannevar Bush. Wilson remained in government service and after the war served as a secretary to the State Department board which prepared the Acheson-Lilienthal Report. At Lilienthal's suggestion, the AEC decentralized the authority for facilities and operations across America, situating it in regional offices and into the hands of Operations Managers who, for the short term at least, had been part of the Manhattan Project, and using military personnel in "key" administrative positions.¹² One of the goals of this strategy was to minimize disruption of the production schedule during the transformation. Another, at least from Lilienthal's perspective, was based on his experiences with the TVA. He sought to develop a system of satellite management as a strategy for democratizing the program, generating local interest and leading to the development of grass roots organizations that, he believed, would take an active interest in the atomic energy program and ensure that those people affected most by the program benefited from them. For Lilienthal, it promised an outcome that held "the best promise for the progress of the atomic energy program as a whole."¹³ But the TVA's goal to produce and deliver power rurally differed

¹² In 1948, the AEC was relying on the military for "key administrative, technical, and supervisory positions" to such an extent that it "depressed the importance of the civilian personnel office." Richard O. Niehoff, "Organization and Administration of the United States Atomic Energy Commission," *Public Administration Review* 2 (1948): 95.

¹³ The statement is drawn from an AEC position statement that Lilienthal sent to the administration taking a stand against governmental interference in a labor dispute between 850 maintenance workers at Oak Ridge

fundamentally from the atomic program because security regulations prevented locals from becoming involved in the program except as employees. The TVA model may have streamlined atomic production but the policy actually ran counter to Lilienthal's goals. During his tenure, Lilienthal's detractors pointed to his satellite system as one that would allow subversives to enter the organization; but the opposite occurred—the system itself prevented interference from subversives and locals alike, prevented Lilienthal's openness plans from taking hold, and resulted in the reinforcement of the (Manhattan) status quo. Because the AEC abandoned the consolidated, authoritarian, structure that Groves had wielded at the top of the Manhattan Project before it had managed to achieve its own authority over the program, decentralization resulted in the perpetuation of the ethos and culture of the Manhattan Project and the weapons-centric motivations and connections with private industry that had invigorated it.

Moreover, some of the assumptions built into the Act itself also hindered its effectiveness. Participants in the program who later set down its history likened the structure of the AEC to a corporation, with the Commission operating as a full-time board of directors, the General Manager acting as corporate president, and the JCAE in the position of corporate stockholders.¹⁴ Their analogy highlights the influence of private business models on the administrative state, and on what historian Brian Balogh

and Carbide and Carbon Chemicals Corporation, a government contractor. For Lilienthal, the strike was emblematic of the type of participation that would result from local governance, and would ultimately benefit the "American people." The negotiations involved approximately one-third of Oak Ridge's workforce. Lilienthal, AEC position statement, June 1, 1948, transmitted via F.C. Waller to Clark Clifford, June 2, 1948. HST Library, Clifford Collection, Box 1, AE-Lilienthal, D., E-Speech file, 4-7-48.

¹⁴ Corbin Allardice and Edward R. Trapnell, *The Atomic Energy Commission* (New York, Washington: Praeger Publishers, 1974), 66.

identified as the pro-administrative state's reliance on professional expertise.¹⁵ The analogy also provides a framework for exploring what mid-1940s methods of administration meant for the development and organization of the AEC and how it was then, and is now, understood. From a historical perspective, the analogy tends to leave the impression that the AEA was more carefully crafted than it was. In fact, in establishing the JCAE under the Act, Congress did not address how the joint committee would manage confirmation of commissioners, which house would provide the JCAE chair, or how bills would be handled. Similarly, the Truman administration neglected to consider its relationship to the JCAE and the effect on its authority. Under the Act, for example, the JCAE gained access to executive branch resources, including staff, facilities, services, and information.¹⁶ Such inattention to detail might be construed as insignificant in light of how committed elected officials were to getting the bill passed. But, the mechanics that Truman and the bill's congressional supporters overlooked were ones that dealt with substantive issues of how authority and political power would be distributed and betray some fundamental assumptions built into the Act. Those assumptions, as with the assuredness in a civilian/military divide based on profession instead of interest, weakened the ability of the first Commissioners to assert the civilian authority over atomic energy that was the Act's aim. Among those assumptions were a shared confidence in the constitutional separation of powers, satisfaction that if traditional divisions of authority were not enough to safeguard executive and congressional prerogative that each would be

¹⁵ Balogh, *Chain Reaction: Expert Debate and Public Participation in American Commercial Nuclear Power, 1945-1975* (New York: Cambridge University Press, 1991).

¹⁶ Harold P. Green and Alan Rosenthal, *Government of the Atom: The Integration of Powers*, a study sponsored by the National Law Center of the George Washington University (New York, London: Atherton Press, Prentice Hall, 1963), 4.

up to the task of policing and correcting infractions;¹⁷ that a business model was adaptable and suitable for administering a program as important to national security—and as fraught with hazard—as atomic energy; and, additionally, that a Commission could be found with the ability, wherewithal, and flexibility, to implement that model and carry out the Act’s mandate.

Confidence that the constitutional and democratic process would win out and that a corporate-type administrative structure was an appropriate way to manage the program failed to take into account two factors that stood in the way of an outcome that would have satisfied the provisions for civilian authority over atomic energy: (a) the political tug-of-war over control of the program, and (b) the militaristic nature of the existing program. The AEC’s ability to secure its authority over atomic science was, in fact, stifled by the rabid partisanship that poisoned the confirmation process and challenged Lilienthal’s ability and thus his right to authority from the start. In addition, the existing operational and managerial structure of Manhattan, one that the AEC adopted, limited the Commission’s ability to substitute its authority for military leadership and to reorient the program toward a civilian, deconsolidated, hierarchy.

As Chairman of an independent agency, Lilienthal was responsible for reporting to and satisfying the president while also answering to Congress. For Lilienthal, as later for Strauss, it was an unenviable position that put the AEC chairman at the intersection where the often competing ambitions of the president and congressmen met and clashed.

¹⁷ For an example of boundary policing, see April 4, 1946, memo about the authorization for use of navy ships during Crossroads and a letter from the president, based on the opinion of the attorney general, that a section of a resolution that gave the legislature the right “to authorize the use of naval vessels to determine the effect of atomic weapons upon such vessels” represented an “invasion by the Legislative Branch of the functions of the Executive branch.” Truman reinforced the attorney general’s opinion with an appeal to tradition, referencing General Washington’s statement that “the boundaries fixed by the Constitution between the different departments should be preserved” Memo from “bcd” to Harold D. Smith, Director, Bureau of the Budget, April 4, 1946, Official File, 692 (1945-1947), HST Library

This was similar to the problems faced by other agency directors and officials, but the situation was exacerbated because the AEC—the board of directors in a “corporate” formulation—had no control over the military side of the program. An example from early days of the AEC illustrates how little control the AEC and Lilienthal had. In early 1947, Secretary of War Robert Patterson asked Lilienthal for his thoughts on the possibility of appointing General Groves to the Military Liaison Committee—the organization created under the Act to guarantee that the program would continue to provide military support. Lilienthal wrote that the suggestion “flabbergasted” him, and he asked for time to consult with the Commission. An hour later, Lilienthal was advised that the appointment had already been made.¹⁸ In a single stroke, the Commission was thus prevented from contributing to the making of a decision that would, by its very nature, influence how atomic resources would be used. The incident also illustrates how provisions of the AEA operated as a mechanism for the institutionalization of the pre-AEA military versus civilian conflict. In this instance, the AEC was put in the position of partnering, on a routine basis for purposes of national defense, with Groves, the man who had been in charge of the organization that the AEC replaced, who had personified the opposition to civilian management of atomic energy and, by extension, opposition to the Act itself. In this way Groves, who as the Director of the Manhattan Project had previously kept the program out of the government’s bureaucratic structure, became part of it. Patterson’s appointment of Groves guaranteed continuation of the conflict that had

¹⁸ Lilienthal, *The Atomic Energy Years*, January 31, 1947, 136. It is likely that Groves had been tapped for the position months before his name was suggested to Lilienthal. See Memorandum No. 533P36 from the Chief of Naval Operations dated 11 December 1947 establishing Groves as Chief of the Armed Forces Special Weapons Project, and Rear Admiral W. S. Parsons and Colonel Roscoe C. Wilson, USAF, as Deputy Chiefs. RG 218 Records of the U.S. Joint Chiefs of Staff, Central Decimal File, 1948-1950, 471.6 (8-15-45) Sec. 8, Box 223, Box 2 of 2.

stalled passage of the AEA. More importantly, however, it added legitimacy to the opposition to civilian authority that had been one of the defining characteristics of Groves's management of the Manhattan Project. Partisan politics also hobbled Lilienthal's and the AEC's authority.

On the congressional side, the Chairman answered to the JCAE. In the abstract "corporate" administrative model, the JCAE assumed the responsibilities of a stockholder and was charged with protecting the government's investment. In reality, however, the attention of its members was divided. Unlike a group of stockholders, JCAE members could not count on their fortunes to rise and fall with the expansion and success of the corporation alone, but also on their individual political acumen, their party's electoral successes, and on the changing relations between Congress and the president. In addition, JCAE responsibility for oversight extended their responsibilities beyond those of business-world stockholders. To perform meaningful oversight, the JCAE would have had to gain a working knowledge of the extent of the program and its operation. It was a task that JCAE members seriously underestimated. These factors affected the relationship between the AEC and the JCAE, and made more difficult the job of the AEC. The Commission—the board of directors—was not judged in the way it might in the corporate world: on ability, administrative acumen, or demonstrable results recorded and routinely provided to the JCAE in a report that delineated progress in capacity and production. Instead, the Commission was as likely to be pilloried or praised because of partisan politics or other factors outside its realm of authority.¹⁹ Because of the

¹⁹ Balogh makes the point that the JCAE focused on issues ancillary to the administration of atomic energy, such as anticommunism, was that they were more comfortable addressing issues with which they were familiar. *Chain Reaction*, 73.

significance of the atomic program and because the leadership of the JCAE changed according to the majority party in Congress, JCAE members often discounted substantive oversight and used their positions as political platforms. Except for the two month period of time between their interim appointments and nomination, the members of the AEC were given no honeymoon to acquaint themselves with their responsibilities to establish the mechanisms and funding for the program. Passage of the AEA and the naming of Commission members occurred during the final months when Democrats controlled Congress and the liberal minded McMahon chaired the JCAE. During 1947 and 1948, when Lilienthal and the Commission were trying to establish their authority, the Republicans achieved the first majority they had held since the Hoover administration, and the Commission, Lilienthal, and the Act itself became prime targets.

The character of JCAE inquiries during this period illustrate that the hearings were more important to the committee members as a venue for re-visiting historical antagonisms than they were for addressing topical concerns. Some of these were arguments and animosities left over from the controversies that had stalled passage of the AEA, some politically motivated, others ideological positions deeply felt and not easily abandoned.²⁰ Others were certainly based in the simmering anxiety that some lawmakers, just as some people throughout the country, felt. As one 67-year-old Virginia farmer put it when asked after *Crossroads* whether he thought an atom bomb would hit the United

²⁰ James M. Jasper's findings about the universality and incommensurability of opinions shaping nuclear power debates seem applicable to the divergent viewpoints about the atomic program. Jasper argues that differences in policymaking approaches stem from fundamental differences of approach taken by those that he has termed, "cost benefiterers," "enthusiasts," and "ecologists." He explains that because each approach is anchored in "different forms of rationality" they "cannot communicate ... each seems irrational to the others" and they avoid "negotiation and compromise" on a political plane by trying to shape policymaking with methodological approaches. Respectively, these are: "cost benefit analyses ... technological development ... moralistic rules." *Nuclear Politics: Energy and the State in the United States, Sweden, and France* (Princeton: Princeton University Press, 1990), 25-26.

States, “I couldn’t tell you. Afeered it will.”²¹ Divisive holdovers from Manhattan and debates over atomic energy legislation also contaminated post-AEA hearings. Some members of the JCAE asked questions aimed at resolving old as well as current issues. Brien McMahon, for example, used Lilienthal’s confirmation hearings to validate his year-long commitment to the AEA, the bill that bore his name, by interrogating Lilienthal about the importance of civilian authority over atomic science. In doing so, McMahon lured Lilienthal into unintentionally taking sides in an older argument that arose during the final months of the war, about which Lilienthal was apparently unaware.²² It was widely recognized at the time that the most virulent innuendo-laden attacks made by Republican members of the JCAE had no legitimate basis in fact.²³ Still, the persistence and inflammatory nature of those remarks during confirmation hearings planted seeds of suspicion and put the Commission’s civilian leadership on the defensive from the beginning. In the words of Edward Teller, then one of the editors of the *Bulletin of Atomic Scientists* who opposed an amendment to the AEA that would have shortened the term of the AEC Chairman as a disingenuous way of replacing him without legitimate grounds for criticism, “Old guard Republicans would like the chance of nominating the chairman. ... They certainly are not enthusiastic about Lilienthal.”²⁴ Such attacks helped to reinforce the support Groves was already receiving from Truman and congressmen.

²¹ Leonard S. Cottrell, Jr., and Sylvia Eberhart, *American Opinion in World Affairs* (New York, NY: Greenwood Press, 1948), 67.

²² See the comments to Lilienthal made by then President of Harvard, James Bryant Conant, on February 2, 1947. *The Atomic Energy Years*, 138.

²³ Hewlett and Duncan, *Atomic Shield*, 91.

²⁴ “Editorial to Appear in the June Issue of the Bulletin of the Atomic Scientists”, attachment to letter sent from Edward Teller to Clark Clifford, May 5, 1948, Clifford Collection, Box 1, Folder AE-Lilienthal D., E-Speech File 4-7-48, HST Library.

They lent encouragement to the general and others that Congress would revise the Act to re-situate control in military hands.

Moreover, routine and sometimes baseless attacks meant primarily to keep pressure on the Truman administration drew the JCAE's attention away from their primary responsibility—oversight of the AEC and the program. The JCAE's preoccupation with incidental and partisan matters during the first few years meant that substantive issues went unaddressed. Only in 1949, for example, and only after a newspaper article drew attention to the possibility that the AEC was unable to locate a small amount of radioactive material did the JCAE learn how the program (and before it the Manhattan Project) secured, shipped, and accounted for the radioactive substances that were, under the AEA, owned solely by the U.S. government. In this incident, the Chicago Research Division had noticed that one bottle of U-235 enriched oxide shipped from the Division's laboratory in Chicago in September 1947 located at a secure AEC facility outside of town could not be located when the shipment was finally opened in February. After an internal search and investigation to establish if there had been an error in the quantities identified on the shipping label or if the bottle had simply been misplaced, the Chicago Division reported the material as missing to the Washington Division of Research on March 21. On March 28 the AEC authorized the Division to contact the FBI. On April 20, the AEC discussed the missing material at a meeting and, on April 27, with investigation by laboratory and AEC officials, as well as the FBI, continuing, notified the JCAE of the loss via a "security violations report." The JCAE took no action as a result of the report from the AEC. Only after the story appeared in the newspaper did the JCAE ask for an explanation from the AEC and schedule the May 18,

1949, hearing.²⁵ Early in the hearing, one member of the JCAE interrupted Lilienthal's testimony to ask for an explanation of what was being discussed—he was unaware of the problem as well as of the newspaper article that had caught the committee's attention.²⁶

As the hearing got underway, the content of the AEC's explanations and the JCAE's questioning of AEC witnesses illustrates how little the JCAE, or at least some of its members, had learned about the program's operation and the management of radioactive material in the more than two years since the AEC took charge and began reporting to the Joint Committee. How radioactive material was measured and inventoried were among the operational facts about which the JCAE was ignorant. In particular, it was during that 1949 meeting that the JCAE found out that the Manhattan Project had not kept track of its radioactive material at all. It had produced only a partial inventory with a rough estimate of radioactive stock in July 1947 at the insistence of the AEC and in August 1947 supplemented that estimate. After that, it had taken the AEC a year to check the facilities and acquire some measure of confidence about material reserves. During the hearing, witnesses testified that it was in the process of ensuring the accuracy of the new accounting system that the loss that gave rise to the FBI investigation (and the JCAE hearing) came to light. As the hearing progressed, and as AEC witnesses discovered how rudimentary the understandings of some JCAE committee members were, the witnesses adjusted the sophistication of their answers to meet the elementary thinking of some Committee members. They explained how radioactive material was measured and inventoried, pointing out that it could not be not

²⁵ Minutes of an Executive Meeting of the Joint Committee on Atomic Energy, May 18, 1949. *Records of the Joint Committee on Atomic Energy*, microfilm edition, 3-9.

²⁶ The member was Rep. Paul Kilday. "Minutes" 2.

measured in the same way as money, or as some other refined product such as flour might be. Instead of a quantity based solely in terms of value, volume, or weight, radioactive material was inventoried in terms of both quantity and refinement. The AEC representatives explained that once a refined quality was established, for the purity of a rod, for example, it was that measure that was henceforth used as a basis for establishing the quality of any shavings or scraps of material that was machined from it during the production process. Additionally, they tried to further the Committee's understanding of the innocent and unavoidable ways that losses occurred. No matter how intricate the measures and mechanisms put in place to account for radioactive material, witnesses explained that it was impossible to recover and account for all of it because some minute amount was inevitably lost at various stages in the production process when it became airborne and settled on walls, lodged in machinery, air ducts, and on the clothing of workers, or when it melded with other material during refining and machining.²⁷ A segment of testimony delivered by Walter J. Williams, who was Director of the Production Division, illustrates the difficulty he had in explaining the accounting problems to a committee that was far less informed than he had anticipated:

Williams: We are getting into more and more detail. There is some installation where we have to set a limit that we will strive for in accountability because the accounting is so uncertain. ... In the K-25 cascade, we have thousands of miles of pipe. We have to depend on a very complicated system of calculations to determine how much material is in this cascade.

Senator McMahon: What's the cascade?

Williams: The entire gaseous diffusion plant. This consists of many, many pipes. At the present time, we know—I think we know—within 8 per cent—7 to 8 percent of how much material is unaccounted for. That is as close as we have been able to come and we have done a great deal of work on it. To understand why you have this loss, it is necessary to go

²⁷ "Minutes" 3, 12, 29.

back to the construction of this plant. All of the equipment is nickel-plated to prevent irradiation from uranium hexafluoride, and the sides of the pipe and pumps have all been fluorinated. But you can't be sure you have done a perfect job. For that reason, if we put material in the bottom of that plant, you might not get any out at the top. Now in a year—a year's report showed that we have 7.9 percent of the material put into the K-25 plant that we think is in the plant.

How do you account for it? You have to take simultaneous readings from all over the plant. Many, many meters. You have to take all of these on a form; you have to put them through a calculating machine—it takes several weeks. Maybe the pressure meter is off a little—all of these add up to a discrepancy.²⁸

This testimony came after Williams had explained that in between the time when the JCAE was notified of the loss and the hearing, the AEC had re-analyzed the original source rod and discovered that because of an error in the purity of the source rod, all but 4 grams of material that was thought to be missing had been accounted for.

By the hearing's conclusion, McMahon expressed satisfaction that the missing material had neither been stolen nor lost as a result of administrative mismanagement. Another congressman, Senator William F. Knowland of California, was unwilling to let the matter rest. Knowland disagreed with McMahon's comment that he did not think that the loss had occurred because of a theft and that he did not "think any particular harm will come of it." Instead, Knowland, who later pushed for the elevation of E.O. Lawrence's California laboratory into a "national" laboratory and the creation of the Lawrence Livermore National Laboratory,²⁹ directed a final attack on the AEC:

Knowland: Certainly from the procedures which were shown in this case, I don't believe there is anybody in the Commission who knows whether the bottle was ever shipped, whether it was lost in transit, whether it was ever received and put in the safe and if it was withdrawn. I am utterly amazed.

²⁸ "Minutes" 31-32.

²⁹ Lotchin, *Fortress California*, 293-294.

... If a person in a banking institution, dealing with dollars, would take an unsupported certificate in this way, I don't know how they would protect the banking institution. Certainly the other thing may have happened—that there was deliberate effort to steal this material, that there were one or two people involved. ... I don't know what control you have over your existing inventories. I am utterly amazed on the procedure.³⁰

Thus, even after the AEC's explanation of the incident and of how it accounted for material in the normal course of business, at least one committee member insisted on using the incident to criticize the AEC's administration of the program. Neither Knowland nor other members of the JCAE brought up their own committee's delay in responding to the report of the incident over the course of the hearing.

One of the reasons Knowland and other AEC detractors launched baseless, vague, or anti-communistic attacks against the AEC was that, from a performance standpoint, there was little about which they could complain. As mentioned earlier, between 1947, when the AEC assumed responsibility and 1950, it had devoted almost all of its energy to weapons production. The AEC had taken what it received from Manhattan and used subsequent appropriations to put seven additional defense-related facilities into production and to increase the number of bombs in the nation's arsenal from eleven to 369.³¹ The complaints against AEC administration can reasonably be said to have had nothing to do with national security and everything to do with the desire of armed forces officers and their supporters to re-gain the type of autonomous authority over the program that Groves and Nichols had wielded over the Manhattan Project. National security, and the role the atomic program—and the AEC—played in preserving it,

³⁰ "Minutes" McMahon 34, Knowland, 34-35.

³¹ Kevin O'Neill, "Building the Bomb" in *Atomic Audit*, 102-194; 589-594.

provided congressmen with a convenient means of attacking the Truman administration. National security was not what was at stake in the partisan battles for authority that took place before and after passage of the AEA. What brought military officers and congressmen together was the possibility of increasing their own influence at the expense of President Truman, his administration, and his domestic agenda.

Control over the program amounted to a contest for political influence and entitlement, an issue that strengthened the partnership between Congress and the military. Forrestal's diary entries provide examples of the formation and solidification of this partnership. During a meeting on January 22, 1947, for example, five days before Lilienthal began the ordeal of Senate confirmation, armed forces officers and their congressional supporters were already pinpointing what they argued were dangerous influences in the AEC. At a meeting between Iowa's Senator Bourke B. Hickenlooper, Forrestal, and Rear Admiral Parsons of the Military Liaison Committee that Forrestal recorded in his diary, Hickenlooper complained of Lilienthal's "tremendous power and responsibility" and a "pacifistic and unrealistic trend" within the Commission.³² Having identified a "trend" in a spanking-new Commission that had yet to be confirmed and that had a history merely a few months long, Hickenlooper remained on the lookout for more instances to verify what he had recognized as a consistent pattern of activity and continued reporting to Forrestal. After a month of confirmation hearings, he hinted to Forrestal that Lilienthal had been negligent and was possibly lenient toward communists, complained of Lilienthal's "intransigence and inflexibility," and asked Forrestal to advise the president that Lilienthal had hired appointees without having them screened by the

³² *Forrestal Diaries*, 240-241.

FBI. Forrestal wasted no time in using the information to discredit Lilienthal, contacting Truman and also AEC Commissioner Lewis Strauss that very evening.³³ Forrestal continued to collect evidence against Lilienthal and his administration of the program that he gleaned from congressional and personal contacts. While using it as a way of turning President Truman against Lilienthal, Forrestal also kept Strauss in on the “military” side of the loop, keeping him informed of the opposition that was building against Lilienthal from outside the AEC. After Lilienthal’s confirmation, Forrestal noted in his diary that he had told Strauss that the MLC had complained to him that Lilienthal had been uncooperative.³⁴ Simultaneously, opponents of Truman’s policies within his administration, in Congress, and in the private sector, used the atomic program as a way to undermine the president’s authority. In February 1948, Forrestal, Hickenlooper, and the president of Bethlehem Steel discussed their “vague misgivings” about the direction of the AEC over lunch. Hickenlooper objected to the content of Lilienthal’s public speeches, claiming that Lilienthal’s repeated references to control by “the people” of atomic energy smacked of “statism.” A few days later, Forrestal wrote that the AEC’s Director of Security, Rear Admiral John Gingrich, had said that Lilienthal had been lax about security, having distributed \$40 million to Brookhaven Laboratories through which “nine universities” participated.³⁵ It was not just security, but resources, that concerned Forrestal. In a letter that he wrote to Hickenlooper explaining the military’s estimated atom bomb requirements, Forrestal explained that the calculation for the number of

³³ *Forrestal Diaries*, 225.

³⁴ *Forrestal Diaries*, 319.

³⁵ *Forrestal Diaries*, 379-380.

bombs was based on strategic requirements as well as on a desire to prevent the use of “wasteful processes” and “to avoid wasteful expenditure of funds.”³⁶ For Forrestal, then, expenditures that were not devoted to bomb-making were, in his own words, “wasteful.” As Secretary of the Navy and Secretary of Defense, Forrestal worked with Truman’s opponents in Congress, friends and associates in the private sector, and with former subordinates, to undermine the authority of the AEC from the top down, through Truman, and from the inside out, through Strauss.

Additionally, all of Truman’s opponents benefitted from decisions reached by Lilienthal and the AEC Commissioners themselves that, in hindsight, limited the Commission’s ability to establish the type of authority they might have commanded under the AEA. Expedience and administrative principles caused the AEC to leave in place the functional organizational and material structures of Manhattan while de-aggregating the authority that Groves had accumulated during the war. The AEC replaced Groves’s consolidated, authoritarian, model with one that distributed authority into a satellite system of regional and operational managers. For Lilienthal, decentralized management was ideologically and administratively sound. He championed decentralization as a governing principle “essential to the operation of democracy in a modern society,” and was most comfortable with administrative methods that he believed would foster, on a local and regional basis, support for the program by encouraging citizen involvement, stimulate grass roots interest, and which would provide for a better-informed public that could then participate in future decision-making about atomic

³⁶ Forrestal to Hickenlooper, undated reply to January 15, 1948, letter. Enclosure A to JCS 1745/13. RG 218 Records of the U.S. Joint Chiefs of Staff, Central Decimal File, 1948-50, 471.6 (8-15-45) Sec. 8, Box 223, Box 2 of 2.

resources and facilities.³⁷ Arguing against a continuance of the wartime-style atomic secrecy in a speech delivered to a Community Public Meeting on the campus of Wabash College and broadcast over the CBS network, Lilienthal made it clear that he believed the American people had a duty to educate themselves about atomic energy and to prevent the repeated lowering of a veil of secrecy:

Look upon this task of becoming familiar with the essentials of atomic energy as an obligation directly to your children—and if there are grandchildren, to your grandchildren; or to those nice likeable youngsters next door. This is at least as direct a way of doing your duty to your children as the sacrifices you make without hesitation to get them an education, or the right diet and good doctors. If schemers or fools or rascals or hysterical stuffed shirts get this thing out of your hands—it may then be too late to find out what it is all about. Do this for your children.³⁸

Lilienthal's diary entries reveal that he was not naïve about the difficulties he and the AEC faced in trying to open up an operation that had been built on the most strident security regulations ever imposed, a system that during the war had been so secure and so at odds with the constitutional system of government that a handful of enemy spies knew more about Manhattan than did congressmen or state officials, and remained vital to national security. Nor, as a seasoned New Dealer who was well aware of pro-military forces in Congress, was he naïve about the tenor of the approaching political battle. He did, however, underestimate, or perhaps not fully appreciate at the outset, how ineffective his efforts to build grass-roots support for a democratized atomic program—with monthly addresses, for example, to groups as disparate as the Civic Organizations of Crawfordsville, Indiana, the *New York Herald Tribune* Forum, and the American Farm Bureau's Annual Meeting in Chicago—would be against the military's behind-the-scenes

³⁷ Hewlett and Duncan, *Atomic Shield*, 19-20.

³⁸ David E. Lilienthal, "Atomic Energy is YOUR Business," 13. Papers of Clark M. Clifford, Box 1, Folder: AE-Lilienthal, D.E. Speeches, HST Library.

campaign to discredit him and the support it received toward that end from cooperative congressmen.³⁹ Increasing material production and the number of bombs more than thirty-fold was not enough ammunition for Lilienthal to combat the insider attacks and political backbiting of self-interested military officers and the AEC's congressional detractors that undermined both his goals and national security.

From a functionalist perspective, the AEC's decision to maintain the integrity of the working components of the Manhattan Project seemed to make perfect sense as a means of enlarging the program for the purposes of peacetime and military applications. While Lilienthal sought to develop peacetime applications, he was committed to, and did, increase the stockpile. It was Lilienthal, for example, who made Truman aware of how few bombs there were in the nation's arsenal and who then sought approval for increasing production. And it was Lilienthal who, paying more than lip service to the national security importance of bomb production, decided to keep reactors at Oak Ridge and Hanford online and in production while AEC managers and military advisers worked out their disagreements about whether and to what extent the reactors required repair, replacement, or updating.⁴⁰

From a structural perspective, however, the decision to leave so much of Manhattan intact prevented the AEC from achieving substantive authority over the atomic program. That decision allowed for the perpetuation of the wartime style of management of Manhattan and provided inroads for Groves and Nichols to reassert their authority over the peacetime program. Had the AEC secured its authority over the

³⁹ Speeches delivered Fall 1947. Papers of Clark M. Clifford, Box 1, AE-Lilienthal, D.E. Speech File, HST Library.

⁴⁰ Hewlett and Duncan, 141-142.

program by dismantling the organization that Groves had begun establishing at the end of the war and the chain of command that he established leading directly to him, devised its own scheme aimed strictly at weapons production at Sandia, Los Alamos, or at some other facility, and appointed managers with clear lines of responsibility running up to the AEC General Manager and the AEC itself, it would have been less likely that Groves would have been able to insinuate himself so thoroughly into the Military Establishment. Inaction on the AEC's part during the crucial transformation phase allowed Groves, Nichols, and other officials to exceed their advisory authority and likely made more remote the possibility that civilian authority could be achieved at a later date. In one sense, the decision to assert civilian authority only at only the highest levels of the organization structure might have been predicted to fail because it duplicated Groves's organizational platform without incorporating what had given it its strength—namely the consolidation of authority secured at the top through the chain of command and adherence to strict codes of military discipline. More than a failure of comprehension, however, the decision was based on what seemed appropriate given the need to produce atomic weapons, administrative trends, and assumptions—some misguided—about the civilian/military divide, as well as the likelihood that locally managed facilities would lead to the democratization of the program and, thus, invigorate and generate support for civilian, peacetime, programs. From a historical perspective, the AEC's failure to sever military lines of authority at the outset made the prospect of civilianizing the program more remote over time, especially after passage of the National Security Act.

The National Security Act

The aim of the National Security Act of 1947 was to coordinate and streamline national defense. The Act created the National Military Establishment, later transformed by way of the 1949 Amendment to the Act into the executive level Department of Defense (DOD); the National Security Council (NSC) to advise the president on all foreign or domestic matters; the Joint Chiefs of Staff (JCS) to represent the armed forces and provide military advice; and the Central Intelligence Agency (CIA).⁴¹ Also incorporated into the new Military Establishment was the Armed Forces Special Weapons Project (AFSWAP) which had, with passage of the AEA, assumed the responsibility for coordinating the goals of the branches for the use and development of atomic energy.⁴² AFSWP's first two commanders were Manhattan's General Leslie Groves, and Kenneth D. Nichols, who had been Groves's deputy. Debate about how the armed forces should be reorganized had been controversial since before the end of the war and the issue of unification was one that pitted the branches, Congress, and members of Truman's own administration against one another. The Act has long been understood as a mechanism that contributed to the politicization of defense, increasing the political influence of military officers and the armed forces and the formation of an alliance of sorts between politicians and military officers that contributed to energizing the national

⁴¹ National Security Act of 1947, U.S. Congress, U.S. *Statutes at Large*, 80th Congress, 1st sess., 1947, vol. 61. For an overview of the Act and its effectiveness, see Charles E. Neu, who finds it was an insufficient vehicle for eliminating intra-service disputes, that "open political warfare" ensued, and that despite revision of the Act in 1949 to strengthen the hand of the Secretary of Defense in an effort to reduce military authority, "parochialism ... remained strong." "The Rise of the National Security Bureaucracy," *The New American State*, Galambos, ed., 88.

⁴² The Armed Forces Special Weapons Project absorbed the military personnel who had been assigned to the Manhattan Project when the Atomic Energy Act took effect on January 1, 1947. "Memorandum to: Chief of Staff, United States Army; Chief of Naval Operations; Chief of Staff, United States Air Force" October 21, 1947. RG 218, Records of the U.S. Joint Chiefs of Staff. Central Decimal File. 1948-1950. 471.6 (8-15-45) Sec. 7-10. Box No. 223, HM 1994.

security state.⁴³ That alliance, however, and the expansion of military influence that occurred after passage of the NSA, owed much of its vitality to Truman, who overestimated his ability to manage the armed forces as commander-in-chief and underestimated both the military's ambitions and the importance that it attached to the atomic program as a means of achieving them. Opposition to the Act within the administration, and the way that Truman sought to eliminate that opposition, sheds light on Truman's contribution to the military's increasing postwar influence

There were two ways of looking at the proposed Act and its provisions. In Truman's view, the Act involved only one aspect of governance—defense. From the standpoint of Secretary of State George C. Marshall, it reached more deeply into the structure of government itself and threatened fundamental principles of civilian versus military authority. For Truman, the bill would help to protect national security and economize the defense budget, bringing the armed forces together in common purpose and reducing costly inter-service rivalries. Toward those ends, and as a result of his limited notion of the significance of the Act, he viewed opposition to the Act straightforwardly. For Truman, the primary problem was the longstanding Army versus Navy divide that had erupted because the proposed bill was more closely related to the Army's plan than the one that the Navy and its Secretary James Forrestal had developed and promoted since the war's end. Truman interpreted the Navy's chief argument against the bill, that it would “weaken civilian control ... [leading] to expanded military influence throughout American life”⁴⁴ in light of his own perceptions of military re-

⁴³ For an example of increasing military budgets resulting from armed forces' lobbying, see Hogan, *A Cross of Iron*, 112-114.

⁴⁴ Crabb & Mulcahy, 12.

organization, and the Army versus Navy rivalry shaped by his own military experiences and what he had witnessed since taking office.⁴⁵ That may be why Truman, ironically, seems not to have given much thought to the fact that although the Navy's argument against the bill was a self interested one that reflected Forrestal's administrative strategy to create a chimera of civilian authority where none existed, it was identical to Marshall's argument that the bill would sacrifice civilian authority to the military. Marshall feared the Act would give the military too much influence, allow it to direct the president's foreign policy choices, undermine the secretary of state's diplomatic efforts, and provide the military with unwarranted control over non-military, national assets.⁴⁶ It was the Navy's opposition, however, expressed throughout well publicized hearings on the Act, that seems to have carried the most political weight for Truman.⁴⁷ Truman bridged the impasse over re-organization by acquiescing to the Navy's concerns and (reluctantly) nominating Forrestal as the first Secretary of Defense.⁴⁸ The politically expedient move was a concession on Truman's part to Forrestal's popularity and image as a levelheaded and responsible man, which Forrestal himself had cultivated through congressional

⁴⁵ See, for example, Forrestal's threat to resign in June 1946 should the president back the "mass play-steam roller tactics of the Army." In that instance, Truman conceded that Forrestal's misgivings were justifiable and assured Forrestal that he would "see that such tactics were not successful." Forrestal, June 19, 1946, "Meeting with the President," *Forrestal Diaries*, 169.

⁴⁶ Hogan, *A Cross of Iron*, 56-57. Later, as Secretary of Defense, Marshall announced he would restrain the military's influence over national security. During a June 27 meeting of the National Security Council, Marshall announced that he would abide by the statutory requirement to relay JCS recommendations but also that he was under no burden to agree with them and would state his own opinion at meetings. As to recommendations from the secretaries of the branches, Marshall would consider them a factor only in his own, personal, deliberations depending upon their "importance." "Minutes of the 95th Meeting of the National Security Council" Wednesday, June 27, 1951. MNSC, Third Supplement.

⁴⁷ As the *New York Times* put it: "It has been painfully evident all through the long hearings that there are many in the Navy who still distrust the whole idea." July 27, 1947, 8.

⁴⁸ *Forrestal Diaries*, 87. See also Lord, *The Presidency and the Management of National Security*, 69.

supporters and the press. The *New York Times* hailed Forrestal's appointment as "the best guarantee that ... unification of the services will be carried out intelligently and efficiently."⁴⁹ It is unlikely that the vast expansion of military authority that Forrestal by turns engineered and fostered, one that was costly and duplicitous though not immediately apparent to outsiders, was what the *Times* had in mind.

As with the military's relationship with the atomic program, Truman's belief that military authority was only an ancillary aspect of government meant that he underestimated the difficulty of corralling or controlling it within the sphere of defense-related institutions—The Military Establishment, as it came to be called after passage of the NSA. That this is the case can be seen from the way that Truman chose to deal with the NSA's National Security Council—a committee whose permanent members included the president, the secretaries of state, defense, the Army, Navy, Air Force, and the chairman of the National Security Resources Board. For Truman, the Council was a congressionally-established committee that came too close to usurping the authority of the executive in matters of foreign policy and he chose to limit that interference with his prerogatives as president by refusing to participate in the NSC's meetings. He opened the first meeting, appointed then-Secretary of State Marshall to preside in his absence, and attended only a handful of meetings thereafter. Though apparently secure that he would have the final say in whatever plans the NSC formulated, Truman's absence from NSC meetings meant that his understanding of committee decisions was second-hand, limited to summaries of background information and justifications for action—justifications written by NSC members who had formulated the plans in the first place. Moreover, his refusal to attend meetings meant that he was unable to exert any influence over plans

⁴⁹ *New York Times*, July 27, 1947, 8.

while they were still in the developmental stage—before compromises to keep the peace among the Council’s military members caused it to become an instrument of military expansion. With the NSC as a venue for the coordination of military authority, the NSA became, along with the AEA, a mechanism for the military to extend its reach into all other agencies and to affect policy at the highest levels—just as Marshall had prophesied.⁵⁰

With an imbalance between members supporting diplomatic or “civilian” solutions and those preferring military involvement, the NSC did little to temper, and much to accommodate, armed forces ambitions and, in fact, rewarded intra-service competition. As Secretary of Defense, Forrestal adopted a conciliatory approach with branch officers and purchased appeasement at the cost of common sense and economy. An example from 1948, when Greece’s civil war provided the opportunity for a scrimmage between capitalism and communism, illustrates the contributions Forrestal and the NSC made to postwar military expansion.⁵¹ In September 1947 the CIA reported that the Greek government was in danger of falling to communist guerrillas, advising that “U.S. armed intervention may be required” to salvage a strategic advantage in the Eastern Mediterranean and to prevent “profound psychological repercussions throughout Western

⁵⁰ This viewpoint builds on Charles E. Neu’s argument that at this time, the NSC was little more than a forum for “open political warfare.” See “The Rise of the National Security Bureaucracy” in *The New American State*, Galambos, ed., 88. On Marshall, see Richard Neustadt and Ernest May who characterize Marshall as conscientious and mindful of potential consequences. Marshall was a “gifted” leader who, unlike others, thought in a time stream, looking “not only to the coming year but well beyond, and with a clear sense of the long past from which those futures would come.” *Thinking in Time* (New York: The Free Press, 1986), 248.

⁵¹ For the way that U.S. and British interference in the civil war stimulated a radicalized form of communism that had not existed previously, see Todd Gitlin, “Counter-Insurgency: Myth and Reality in Greece” in *Containment and Revolution*, David Horowitz, ed. (London: Bertrand Russell Centre for Social Research, 1967; Boston, Beacon Press, 1967), 140-181.

Europe and the Near and Middle East.”⁵² In January 1948 the Council discussed alternative methods to determine the extent of Soviet involvement. During the discussion, Secretary of the Navy John L. Sullivan, who has gone down in history for resigning in 1949 after his plans for a flush-deck, super-super, carrier were scrapped, ridiculed a State Department proposal that all branches share in an intelligence survey. Sullivan argued “that the Council could get all the information it wanted from Admiral Sherman without any formal action.” The Council rebuffed that offer and introduced an item concerning air intelligence. Anticipating Sullivan’s resistance, Forrestal diffused the confrontation by guaranteeing that the Navy would have a role in intelligence gathering—by air. Forrestal stated that although he had already issued a directive to the CIA giving the Air Force primary responsibility he had now decided to modify his earlier decision and intended to protect the Navy’s interests in the field of air intelligence.⁵³

Truman’s decision not to attend Council meetings, as well as his preference for turning to the advisors he had relied upon prior to the formation of the NSC, may have marginalized the group and kept it separate for a time from the privileged ranks of the administration, but the move amounted to little more than a symbolic gesture. Though Truman’s decision to allow the Secretary of State (Marshall) to manage the meetings frustrated Forrestal, who had expected to be put in charge of the defense-oriented council and believed State had no authority over Defense. Forrestal, although technically a civilian, remained the highest ranking military officer and became the one who

⁵² “Review of the World Situation as it Relates to the Security of the United States” September 26, 1947, HST Papers, President’s Secretary File, Microfilm collection, Georgetown University Library.

⁵³ “Minutes of the 5th Meeting of the National Security Council, January 13, 1948, 5. HST papers, President’s Secretary File, Microfilm Collection, Georgetown University Library. For Sullivan, see Hammond, “Super Carriers and B-36 Bombers” in *American Civil-Military Decisions*, Harold Stein, ed. (University, AL: University of Alabama Press, 1963).

negotiated the settlements over turf that led to duplication of effort and resources, and, thus, armed forces expansion. Moreover, Council decisions carried weight as policy decisions. So, with or without the president's imprimatur, when Forrestal soothed ruffled Navy feathers by directing its inclusion, along with the Air Force and the CIA, in intelligence gathering operations in Greece, it inevitably led to duplication and an enlargement of the entire apparatus. Truman's effort to minimize the importance of the NSC actually had the opposite effect, licensing autonomy and excess. When Forrestal made his decision about Navy intelligence in 1948, the Army, the Navy, the Air Force, the Department of State, and the CIA, were each maintaining separate intelligence services.⁵⁴ Among the consequences of the decision that Forrestal made in January 1948, and others made in the same way and for the same reasons, was overseas expansion: by 1949, twenty-one different agencies, the armed forces among them, maintained overseas posts.⁵⁵

The NSC provided Forrestal with a venue for constructing an inefficient and insidious system that rewarded duplication of effort and stimulated and legitimized armed forces expansion, autonomy, and influence. NSC decisions such as the one described above illuminate the process that Ronald Steel characterized as the "unmooring" of national security, where the replacement of "defense" with "national security" meant that decision-making "became a function of power and an aspect of psychology" that was not conditioned by an objectively-situated appraisal but by abstraction. As Steel described it, the result was that "the perimeter expand[ed] in relation to the amount of power

⁵⁴ CIA, "Review of World Situation" March 10, 1948. President's Secretary File, Harry S. Truman Papers, microfilm collection, Georgetown University Library.

⁵⁵ Neu, "The Rise of the National Security Bureaucracy," 88.

available.”⁵⁶ The atomic energy program, and the military’s use of it, was the core around which the abstractions described by Steel were built. Whether through the battles for control of the program or because of fear of atomic warfare, atomic science was intrinsic to the “unmooring” that Steel described; the issue that military officers, their supporters, and Manhattan veterans used to generate the political will necessary to expand the perimeter of the defense establishment, its resources and its influence.

The Joint Chiefs of Staff organization created under the Act provided a mechanism for coordinating the common ambition of achieving control over atomic energy, for dealing with the varied needs of each branch in a way that kept animosity under wraps while pressing for ever increasing resources to suit the requirements of each branch. All this was to be done presumably in the interests of national defense and made the JCS a committee that was stronger than the sum of its parts. The man Lilienthal chose to serve as the Director of Military Applications, though not without seeking out and then failing to get alternative recommendations, was Kenneth Nichols, Groves’s right-hand man during Manhattan. Lilienthal reluctantly deferred to the unanimous recommendation for Nichols’s appointment, suspecting that he was either deliberately “dense” or still working primarily for Groves.⁵⁷ Along with the Director of Military Applications, two additional separate agencies also met the military’s atomic needs and both contributed to the continuation of the authority and organizational approaches that became commonplace during Manhattan. Coordination for atomic development on the military side of the equation was managed through AFSWP, headed by Manhattan’s General

⁵⁶ Ronald Steel, “A New Realism” *World Policy Journal* 14 (1997): 1.

⁵⁷ Lilienthal, *The Atomic Energy Years*, 120-122.

Groves. Groves also served on the Military Liaison Committee (MLC), which under the Act was established as an intermediary between the AEC and the armed forces. In a postdated Memorandum that served as the MLC charter, the MLC became active on December 31, 1946,—the day before the Atomic Energy Act took effect—and absorbed all military personnel on duty with the Manhattan Project.⁵⁸ MLC members were incorporated as part of the Atomic Energy Committee of the Joint Research and Development Board, the successor to the wartime Office of Scientific Research and Development, and envisioned as a mechanism for coordination of military development. The board was to serve as an arbitrator for resource allocations and divvying up projects to benefit the Army and Navy equally and, in the process, educating Pentagon officials about weapons and development.⁵⁹

Both the AEA and the NSA provided mechanisms that streamlined the continuation of Manhattan's managerial structure and for the continuation of an institutional culture distinguished by a high level of centralization and organization. Although it might be said that these are qualities that exist within any military or military-type organization, the practices carried over from Manhattan and adopted as an operational guide by the MLC appear to have been more stridently hierarchical than even the armed forces were accustomed to. Nearly a year after the creation of the MLC, it became necessary for the Committee to issue a directive to the armed services members appointed to the MLC, the JCS, the Executive Director of the Research and Development

⁵⁸ Memorandum to Chief of Staff, United States Army, Chief of Naval Operations, Chief of Staff, United States Air Force, 21 October 1947, Subject Armed Forces Special Weapons Project. RG 218, Records of the U.S. Joint Chiefs of Staff, Central Decimal File, 1948-50, CCS 471.6, (6-15-45) Sec. 7.

⁵⁹ Bush pushed for the organization as an inter-governmental temporary measure to maintain the momentum of the OSRD prior to passage of a bill to establish a National Science Foundation. *Atomic Shield*, 17-18.

Board and the Director of the Munitions Board, and to ASFWP's Chief, reminding them all that "all communications ... which establish or affect policy ... the establishment of new projects ... or are of a controversial nature" between them and the AEC were to be directed to the MLC for consideration, approval, routing, or information. After "establishment" of policies of projects, direct communication was allowed with the proviso that informational copies of all correspondence be provided to the MLC.⁶⁰ Thus, for issues involving atomic weapons and other types of atomic development, the MLC operated as more than a conduit or coordinative body. It became an organization with authority (whether assumed or granted) over the JCS itself.

As the overlapping tiers of military authority created under the AEA and NSA became more organized, Lilienthal and the AEC found it ever more difficult to assert civilian authority over the program and its resources. The process used by the MLC and AFSWAP to evaluate whether administrative decisions or agreements operated to the benefit of the military provides an example of how these tiers worked to stifle civilian authority. Groves and Nichols used the process established for reviewing decision-making, one designed to prevent inadvertent releases of information that might have jeopardized national security, to elevate their authority beyond what might have been expected from their positions as advisors in the interagency channels established between the AEC and the military's upper echelon. In addition to providing the military with a mechanism for protecting its atomic energy interests as congressmen seem to have intended, Groves, Nichols, and their supporters, converted those positions into ones that resembled in practice and in effect the Manhattan Project, where civilian interest and

⁶⁰ Memorandum dated November 12, 1948, Subject "Communications Between the Atomic Energy Commission and the National Military Establishment" J.B. Knapp, Colonel, USAF, Executive Secretary MLC to AEC. RG 218, CCS 471.6 (8-15-45) Sec. 13, Folder "Control of Atomic Weapon and Tests."

civilian authority were entirely subordinated to military necessity. Instead of safeguarding national security from administrative decisions that might have inadvertently jeopardized it, the evaluative process became a means for Groves, Nichols, and the upper echelon to delay or prevent any decision that might have created conditions for civilian interference or oversight and thus may have challenged the military's domestic goals for increased autonomy and authority. On occasion, such self-interested decision-making compromised national security initiatives.

The AEC's inability to assert its authority over the program gave Groves, Nichols, and others who supported them numerous opportunities to exert influence outside the boundaries of their positions and to interfere with AEC goals. The old Manhattan guard, well thought of by influential Republican congressmen and Truman, who trusted Groves instead of specialized advisors for information about atomic weapons,⁶¹ gained time to build their organizational strength and demonstrate their worth to the JCS and other members of the upper echelon. Groves and Nichols then turned that support into a buffer when, months after taking office, the AEC recognized that the men and their supporters were seizing considerable institutional ground. One example of the how Lilienthal's acceptance of the operational status quo contributed to undermining the AEC's authority comes from 1947 and involved the pre-AEA transfer of ordinance and weapons responsibilities from Los Alamos to Sandia, near Albuquerque. Groves arranged the transfer after the war in an effort to preserve the military's hold over atomic weapons. Because Sandia lacked manpower, facilities, and expertise to assume those responsibilities, Groves had to have known that although personnel from Los Alamos

⁶¹ Gregg Herken, *Cardinal Choices: Presidential Science Advising from the Atomic Bomb to SDI*, rev. ed. (Stanford, CA: Stanford University Press, 2000), 32.

were assisting and would help streamline the transfer, it would cause certain delay in weapon development and production. Because the transfer was only partially complete at the time that the program was pressed to produce weapons for *Operation Crossroads*, Groves's decision interfered substantively with the program. According to a Los Alamos report, the "effect on the Ordnance Engineering (Z) Division split between Los Alamos and Albuquerque was enormous and resulted in almost total stoppage of their development and engineering programs."⁶² This transfer caused additional confusion after passage of the AEA. Nearly a year later, in June 1947, Groves, who by then was head of AFSWAP, detailed ten officers to Sandia to learn about atomic weapons assembly and testing. In July, when the AEC's representative arrived at Los Alamos, he was unsure how to deal with the Z Division personnel and resources at Sandia because he had no authority on a military base. The situation was no more clear at the base. Though the Colonel at Sandia in charge of weapons and materials took direction and reported to AEC General Manager Wilson, his direct superior was the Commanding General at Sandia who, in turn, reported directly to Groves.⁶³ By September, AFSWAP's Groves and AEC administrators were on their way to reaching a compromise that would have allowed for administrative coordination of the programs at Sandia and Los Alamos. On paper at least, this would seem to have been enough to resolve the problems that threatened to prevent the rapid expansion of weapons production and assembly that the upper echelon had insisted was a crucial priority.

⁶² Edith C. Trustlow, Robert Carlisle Smith, *Manhattan District History, Project Y, The Los Alamos Project, Vol. II, August 1946 through December 1946*. "Report written 1946 and 1947, distributed December 1, 1961." LAMS-2532 (Vol. II), 23.

⁶³ Hewlett and Duncan, 136.

But, in an example of how the layers of responsibility built by the AEA and the NSA operated as organizational units to protect and defend the military's bid to have sole control over atomic weapons, the compromise required the approval of the MLC. The MLC, a committee on which Groves also served, refused to approve it. For the MLC, the agreement was not an administrative solution, but a compromise that it was not willing to make, even if it would speed up bomb production. For the MLC, the agreement could possibly be interpreted as one that demonstrated the military's willingness to relinquish its right to weapons custody. In this instance, officers, including Groves, Nichols, and, presumably, the JCS, used a national security argument to block the agreement, claiming that it would amount to a concession, by the military, that it did not need "instant access" to atomic weapons in "times of crisis."⁶⁴ The military's appeals to national security were elastic enough, in this case, to be stretched around an imperative to increase production and the stockpile as well as a willingness to sacrifice that imperative temporarily in the interests of protecting a measure of control over the custody and use of atomic weapons. Thus, military officers used national security as cover to subordinate weapons production to the future control of atomic science.

Although Lilienthal, along with the other members of the AEC, had received legislative authority to administer all aspects of the atomic program, the fact that they did not exercise that authority at the outset meant that they were hamstrung by the issue of civilian versus military control a full six months after they had taken office and well after the issue of control had ostensibly been settled. Sandia became more problematic than necessary, and the production of weapons was affected because Groves was in a position to stifle AEC goals and "civilianization" of the program. This was more than

⁶⁴ Hewlett and Duncan, 137.

meddlesome interference. The authority Groves assumed over Sandia was no less comprehensive than it had been when he was in charge of Manhattan. By holding up contracts for material, facilities, and housing for civilian engineers and scientists relocated to Sandia whose job it was to help the military set up its own weapons plant, Groves interfered with a national security goal and shifted the blame for the consequent delays to the civilian commission.⁶⁵ To further discredit Lilienthal and the AEC, Groves told officers at Sandia “it wouldn’t be long until the Commission’s mess of things would throw the whole business back in the Army’s hands.”⁶⁶ Problems at Sandia, and the fact that it was dedicated solely to the production of weapons components, led to a decision in mid-1949 by the University of California Board of Regents to ask that they be relieved of their administrative responsibility because it was “no longer appropriate to an academic institution.” By that time Sandia’s operation had grown so large that it took Lilienthal three-and-a-half single-spaced pages to explain what it did to Leroy A. Wilson, president of American Telephone & Telegraph Company, who had expressed interest in taking over UC’s contract.⁶⁷ For Lilienthal’s part, the arguments he made to the Joint Chiefs and also to Eisenhower, whom Lilienthal seems to have found sympathetic, to have Groves removed or replaced at AFSWP and on the MLC, were unsuccessful.⁶⁸ Truman supported Lilienthal wholeheartedly in private, and like Eisenhower, seemed to sympathize with his dilemma. On at least one occasion, Truman called Nichols and Lilienthal to his office and told them that they needed to get along. Thereafter, Nichols temporarily took a position at

⁶⁵ Hewlett and Duncan, *Atomic Shield*, 139.

⁶⁶ Lilienthal, *The Atomic Energy Years*, 250. Also cited by Hewlett and Duncan, 139.

⁶⁷ Draft, Lilienthal to Wilson, June 24, 1948, Clifford Collection, Box 1, AE-Lilienthal, HST Library.

⁶⁸ Lilienthal, *The Atomic Energy Years*, 247-252.

the Army's War College but he remained close to the atomic program and loyal to Groves, becoming part of the team that lobbied for H-bomb development. Lilienthal did not take all this lying down, but instead of making public his complaints about Groves, Nichols, and military overreach generally, he generally discussed them only with upper echelon officers and high level officials.

Lilienthal's reluctance to respond publicly to the military's subversion of the program stands in sharp contrast to the publicity against him generated by military officials and their supporters. During speaking engagements, in articles, and in his testimony before Congress, and despite his commitment to opening up the atomic program so that the public could play a larger role in its evolution, Lilienthal made his case for the development of peacetime applications without criticizing the military. In an article published a year after the Commissioners took office, the Assistant to the AEC's General Manager claimed that the transfer of the Manhattan Project and the AEC's jobs under the "much broadened and more complex peacetime charter" had been successfully accomplished. In that account, Groves and Nichols and other Manhattan officials had not hindered the AEC's mission, but had helped complete the transition. He expressed appreciation for the efforts of "the active cooperation of the key military officials of the Manhattan District who continued to assist the commission ... some through September 1947."⁶⁹ Moreover, and although surrogates such as Teller publicly defended Lilienthal, his public responses to congressional criticism were straightforward and it was only in private correspondence and conversations that he complained about elected officials who unjustifiably criticized his administration. And even in that more private venue, he

⁶⁹ Niehoff, "Organization and Administration of the United States Atomic Energy Commission, *Public Administration Review* 8, (1948): 95.

shrouded his irritation with oblique arguments. In 1949, for example, he responded to Senator Hickenlooper's statements that the program had failed, that it was plagued by "incredible mismanagement, "misplaced emphasis," and "maladministration," by recommending that the JCAE, a committee that Lilienthal characterized as a "continuous Congressional investigating committee," put a stop to "fears and misapprehensions" by analyzing the AEC's performance based on substantive criteria and in comparison with the Manhattan Project.⁷⁰

In contrast, congressional opponents of civilian control used the press to circulate vague and unsubstantiated claims about the inability or unwillingness of civilians, and by extension President Truman, to prevent communist subversion within the program. Just as the publicity surrounding *Crossroads* cast the military in a positive light compared to civilian scientists and other officials, the military's congressional supporters provoked press coverage that elevated the military by denigrating civilian authority. The way that the controversy over atomic energy energized and lent significance to anti-communist rhetoric can be illustrated by an example drawn from July, when the House took up debate on the McMahon Act. Several days prior to the scheduled debate, the *New York Times* and the *Chicago Tribune* published a "preliminary report" by the chief counsel for the House's Military Affairs Committee that claimed national security had been jeopardized by scientists at Oak Ridge who had been linked to societies "devoted to the creation of some form of world government...to the support of international civilian control..." and that moves were afoot to "unionize all workers" at Oak Ridge. The coverage drew attention to House debates and specifically to one representative in

⁷⁰ Draft of letter from Lilienthal to McMahon, May 25, 1949, submitted to Clark Clifford for review. See Clifford Collection, Box 1, AE-Lilienthal, HST Library.

particular, New Jersey Republican J. Parnell Thomas. Thomas, a permanent member (and soon-to-be Chairman) of the Committee on Un-American Activities who was also seated on the House's Military Affairs Committee, took aim against McMahon's bill and its supporters, claiming that it was "undoubtedly the most dangerous bill ever presented to the Congress in the history of the United States."⁷¹ The attacks continued after the bill's passage. Thomas remained an outspoken opponent of all aspects of civilian leadership, using the press and his position as Chairman of the Committee on Un-American Activities to cast suspicion on scientists, including Albert Einstein. He also waged a vendetta against Edward U. Condon, the eminent physicist who was known at the time as a defender of civilian authority and an advisor to Senator McMahon. Thomas penned an article for *Liberty* magazine entitled "Reds in our Atom Bomb Plants" and castigated (or rhetorically castrated) Lilienthal in 1947 as a New Deal liberal: a "Mrs. Roosevelt in pants."⁷² For encouragement and details, Thomas could count on Groves, who floated at least one sensational atomic spy story to discredit Lilienthal and the civilian commissioners of the AEC.⁷³ Thomas may have been among the most vitriolic, but he was only one of those who set out to eliminate, or reduce, civilian control of atomic

⁷¹ Information about release of the report and Thomas's relationship to it is drawn from Lewis Herbert Carlson, in "J. Parnell Thomas and the House Committee on Un-American Activities, 1938-1948," (Ph.D. Thesis, Michigan State University, 1967), esp. 201-203. As cited, the full text of J. Parnell Thomas's speech and the preliminary report that was submitted for inclusion are published in the *Congressional Record* 79-2, July 15, 1946, 9001, and July 17, 1946, 9257-9258, respectively. For a synopsis of attacks on the commission by Thomas and others, see also Hewlett and Duncan, *Atomic Shield*, 88-95.

⁷² See Carlson Thesis, 208-220 for scientists, 206 for Lilienthal and the *Liberty* article—a commentary that Thomas also entered into the *Congressional Record*, June 9, 1947, 80-1, 2729-2730. For the attacks on Condon as a case study in how anti-communism affected the relationship between scientists and the government during the early Cold War years, see Jessica Wang, "Science, Security, and the Cold War, The Case of E. U. Condon," *Isis* 2 (1992): 238-269, for Thomas especially, see 244-247.

⁷³ A transparent effort that reporters at *Time* recognized, and put into print, as likely a manifestation of Groves's frustration. July 21, 1947.

science. When Thomas's article appeared in *Liberty*, for example, there were six pending bills seeking repeal of the Atomic Energy Act.⁷⁴

The criticism that Lilienthal was "soft" on communism only increased over time, and the ideological and political divisions that existed between Lilienthal and Strauss became media fodder. When a dispute arose over Lilienthal's opinion that the AEA did not prohibit the export of radioactive material to friendly nations for non-weapons purposes, he came under attack from all sides. Arthur Krock writing in the *New York Times* stopped just short of calling Lilienthal a communist while siding with Strauss, Vandenberg, Hickenlooper, and Truman, who had also disagreed with Lilienthal's interpretation of the Commission's authority. For the *Washington Times Herald*, the issue was not about whether the AEA prohibited exporting radioactive material for medical and other peacetime applications, but about the political leanings of those on each side of the debate. The *Times-Herald* used the issue as a way to champion Strauss's up-by-the-bootstraps Republicanism: Strauss's difficulties with Lilienthal were "philosophic," the "shy and sensitive" man had been "in agony" over his disagreement with Lilienthal.⁷⁵ A week later, the *Times Herald* claimed Strauss had been unjustly singled out by bureaucrats who "hate the successful businessman who has earned a fortune," and accused Lilienthal of stooping to "the old New Deal trick" of smearing him as a "former banker" so that Lilienthal could continue "to award valuable government scholarships to

⁷⁴ The investigation that ensued ultimately recommended that Oak Ridge add guards and improve "security facilities." Karen Fitzgerald, "Origin of a Culture," *Spectrum, A journal of the Institute of Electrical and Electronics Engineers* (1991): 46.

⁷⁵ Arthur Krock, "In the Nation: One Instance Where the Law Is Plain," *New York Times*, August 5, 1949; Tris Coffin, "The Daybook," *Washington Times Herald*, August 5, 1949.

Communists.”⁷⁶ This is but a singular example of many such attacks that illustrate the way that congressmen, and the military officers who used those same congressmen as proxies in their battles for control, used the atomic program instrumentally, for political gain. By 1949, Truman also began to use the program in a similar way. Finding Lilienthal and his support for peacetime applications inimical to his domestic political standing, the president began to make decisions about the program that favored the viewpoints of his congressional opponents and that were contrary to Lilienthal’s recommendations.

Before Lilienthal became little more than a political bargaining chip for Truman, however, Lilienthal’s opinions carried a lot of weight, particularly behind the scenes and over the issue of a continental testing site. During this time, and partly because military officers were reluctant to go public with a demand for continental testing, or even to have their unsuccessful bids for weapons custody publicized, Lilienthal was successful in holding the line on continental testing, which officers claimed was a national security necessity, and prevented the military and its supporters from completely commandeering the program.⁷⁷ Beginning in 1947, Army officers began to lobby for a continental test site where it could experiment with lower yield tactical weapons and troops.⁷⁸ The Army refused to consider the hazards of continental testing, insisting that the sooner Americans became accustomed to “the possibility of an atomic explosion within a matter of 100 or

⁷⁶ George Sokolsky, “These Days,” *Washington Times Herald*, August 12, 1949.

⁷⁷ After Truman had refused one of the military’s requests for custody, Lilienthal reported that Forrestal had received the news “graciously” but had “objected strongly” to Truman’s plan to announce the decision publicly. In Lilienthal’s words, Forrestal questioned “why it should be announced that he had been overruled.” Lilienthal, *The Atomic Energy Years*, 392. Stuart Symington campaigned for the Air Force, boasting in an early 1949 speech about the suitability of B-36s for atomic bombing.

⁷⁸ Summaries of the Army’s official requests and officers’ unofficial lobbying of conservative members of congress are in Lilienthal’s diary entries. Lilienthal, *The Atomic Energy Years*, 121-123, 217-219, 233-234, 348-351, 373-377.

so miles of their homes” the better.⁷⁹ The AEC refused that 1947 request. When the Army renewed it in 1948, the AEC again refused, citing “unresolved questions concerning off-site hazards to the United States Public.”⁸⁰ On the same day that Truman agreed with Forrestal to send B-29s into England as a means of convincing Stalin to end the Berlin Blockade, Forrestal requested a meeting with the president and the AEC to discuss transfer of weapons. On July 21, Forrestal, the Joint Chiefs of Staff, and members of the MLC presented a formal request from the “National Military Establishment” for custody of the bomb. Lilienthal objected, and Truman agreed, saying “You have got to understand that this isn’t a military weapon ... [W]e have got to treat this differently from rifles and cannon and ordinary things like that.”⁸¹ But, for the military, the bomb was an ordinary weapon. As the Secretary of the Air Force resolutely said to Truman: “[O]ur fellas need to get used to handling it.”⁸² Yet again in 1949, military officers argued for the creation of a continental site in advance of the already-planned Pacific *Greenhouse* Series. Yet again, the AEC refused citing health and safety considerations. Only after Lilienthal’s resignation and the appointment of Gordon Dean, a favorite of Truman’s congressional opponents, did Truman approve the military’s requests for a continental site.

Relentless criticism and the military’s insider campaign for more control over the atomic program prompted Truman to begin using the program as an instrument to

⁷⁹ Memorandum to Army Chief of Staff from Commanding Lieutenant General Hull, cited in International Physicians for the Prevention of Nuclear War and The Institute for Energy and Environmental Research, *Radioactive Heaven and Earth* (New York: The Apex Press, 1991), 53.

⁸⁰ Committee on Operational Future, Nevada Proving Ground, “Summary of Minutes” January 14, 1953.

⁸¹ *Forrestal Diaries*, 455-461.

⁸² McCullough, *Truman*, 650.

improve his own political standing. He was not as disinterested in polling and public opinion as some of his comments may have indicated.⁸³ In one instance, he conceded that he took public opinion and his political future into account in deciding against allowing the military to have custody of atomic weapons. According to Forrestal, and as already discussed, Truman refused a July 1948 request for custody, saying it would be disadvantageous politically to transfer custody at that time, but that he would reconsider the issue after the election.⁸⁴ To a greater extent than foreign policy or national security, the domestic political scene, including anti-communist rhetoric from elected officials and the press, pressure from supporters of military control within the Military Establishment and the help it received from AEC Commissioner Strauss, influenced Truman's decision in late 1949 to develop an H-bomb and his subsequent 1950 decision to approve a continental test site.

It was a decision that, because of its timing, has appeared to coincide with the Soviet's development of an atom bomb and Truman's decision that maintaining a lead was the only way to preserve national security. But it was, in fact, Truman's second concession to the military's desire for conventionalization of atomic weapons. Truman had, in fact, already made the ideological concession that atomic weapons could be substituted for conventional weapons. Though understood as a move anchored firmly in foreign policy and instigated by the failure to reach a diplomatic solution to the Blockade, it amounted to a domestic turning point in the history of the atomic program—the first symbolic evidence that officers and their supporters received from Truman that the

⁸³ See Brandon Rottinghouse, "Reassessing Public Opinion Polling in the Truman Administration," *Presidential Studies Quarterly* 33 (2003): 325-332, esp. 326.

⁸⁴ *Forrestal Diaries*, 460-461.

political pressure they and their supporters had been exerting on the administration for a resituation of military authority over atomic weapons was working.

The Berlin Airlift

The turbulent domestic and political atmosphere of 1947-1949 complicated the mission of elected officials to strengthen the nation's peacetime defenses as well as that of military officers and their supporters to demonstrate the importance of their respective branches to that mission. Army officers saw their branch steadily losing ground compared to the Navy and the Air Force. The Navy, after the attention it received from *Crossroads* and with Forrestal as popular and savvy as ever, was in the ascendency—easily receiving authorization in May 1947 from Truman to spend \$30 million to build two experimental submarines based in part, it argued, on information gleaned from *Crossroads*.⁸⁵ The Air Force built on the significance of bombing during the war and looked forward to expansion, letting contracts for equipment and commissioning planning studies by political scientists and international relations specialists such as Bernard Brodie, who would become one of the founding members of the RAND Corporation.⁸⁶ In June 1948, the Berlin Blockade, one of the first crises of what would become the Cold War, catapulted the Air Force back into the public's eye. Major newspapers dedicated a full page to two pictures and captions received from the Air

⁸⁵*New York Times*, May 17, 1947, 28.

⁸⁶ For a discussion of the survey and how the AAF and its supporters worked to ensure that the World War II bombing survey presented bombing in the most favorable light possible from the perspective of one of the analysts, see Richard Parker's *John Kenneth Galbraith: His Life, His Politics, His Economics* (Farrar, Strauss and Giroux: New York, 2005), 182-190. Parker argues that Galbraith feared the military had become so powerful that it could "skew economic and national priorities" and was "appalled by the level of misrepresentation and concealment he had witnessed" as a member of the survey team. In his history of RAND, Alex Abela traces to five-star General Henry "Hap" Arnold the wartime planning for a scientifically-astute peacetime Air Force. *Soldiers of Reason: The Rand Corporation and the Rise of the American Empire* (Orlando, FL: Harcourt, Inc., 2008), 10-14. See also Fred Kaplan, *Wizards of Armageddon*, 38-39.

Force: one, a C-47 bomber flying over Berlin and, the other, planes arrayed on a tarmac in Wiesbaden being loaded with half a million pounds of flour and foodstuffs.⁸⁷ The crisis, and the Air Force's management of it, was an irresistible drama for filmmakers. By December 1948, Columbia had registered its intent to make "Berlin Blockade," Paramount, the "Berlin Airlift," and Warner Brothers, the "Berlin Air Corridor."⁸⁸ The U.S.S.R. ended its Blockade in May 1949 after Truman, at the behest of Forrestal and the NSC, ordered a squadron of heavy bombers into England, signaling to Stalin that he might be ready to end the stalemate with atom bombs.⁸⁹ The planes were not armed, and there may not have been any way they could have been, but the airlift and ploy had reassured American allies that the U.S. would act decisively to keep the peace in Europe, brought together the North Atlantic Treaty Organization, and gave Stalin reason to believe that, if pressed, atom bombs might be used as readily as any other weapon in the arsenal. When combined with the Soviet's intransigence over international control of atomic weapons and blustery rhetoric and expansionism, the Soviet's Blockade gave military officers and their supporters in Congress additional reasons to target the Truman administration and his plan to cap the 1950 defense budget at \$14.4 billion-dollars.⁹⁰ That partnership between Truman's congressional opponents and the military is among the

⁸⁷ "Breaking Berlin Blockade: Loading American Planes in Germany," *New York Times*, July 3, 1948, 3.

⁸⁸ Thomas F. Brady, "Metro is planning low-budget films," *New York Times*, December 21, 1948, 33.

⁸⁹ *Forrestal Diaries*, 455-457.

⁹⁰ Rosenberg writes that the military feared that this limit would result in the "total loss" of Western Europe unless atom bombs could be employed from Great Britain and Cairo. For that reason, the military argued for an increase in the cap to at least \$16.9 billion, a sum which would provide for conventional forces to maintain "some foothold" in Western Europe and to protect the Mediterranean in the event of war. Rosenberg, "The Hydrogen Bomb Decision," *Journal of American History*, 69.

reasons that historians point to the domestic political scene of 1947-1949 as formative ones in the creation of the national security state.⁹¹

The Berlin Blockade and Truman's management of it provided military officers and their supporters with reasons and ways to monopolize atomic resources, to assert their authority over the atomic program, and to combat budgetary limits. Truman's threat to use atom bombs to end the Blockade lent credence to the argument that the military had made since passage of the Atomic Energy Act that to preserve national security the military required custody of completed atomic weapons. Prior to that threat, Truman had resisted the military's argument for custody of completed weapons as energetically as officers had pursued it. Afterward, Truman found it more difficult to combat the military's arguments that atom bombs should be included as part of the military's own arsenal of usable weapons. This departure in Truman's public stance that atomic weapons could not be used in an ordinary way—one he had held since passage of the AEA in August 1946—led the military and its supporters to assume that Truman's commitment to that policy was not deeply felt. It also lent post facto legitimacy to strategies that breeched the boundary between conventional and atomic warfare that Truman had established. On May 8, 1948, for example, just weeks before the Blockade, the JCS briefed Truman about "Halfmoon," an atomic war plan that included the possibility of dropping fifty atom bombs on twenty Soviet cities. Truman rebuffed the JCS and asked that it replace the "Halfmoon" strategic plan with one that relied entirely on conventional

⁹¹ On the conservative coalition of Democrats and Republicans aligned against Truman in favor of the military and of that coalition's support of military control, see Hogan, *A Cross of Iron*, 5-7; 237-238. See also C. Wright Mills' analysis that the military employed techniques perfected by the armed forces during World War II designed to prevent postwar demobilization, *The Power Elite*, 202-224.

weapons. On May 19, however, the JCS approved “Halfmoon.”⁹² Whether the decision represented little more than a dereliction of duty or an outright disregard by the JCS for the desires of the Commander-in-Chief became irrelevant once Truman, himself, used a threat of atomic bombardment to end the Blockade. In hindsight, the strategy has become, at least in one case, little more than an example of the military’s keen interest in preparedness.⁹³ And yet, it is also illustrative of the disparity between the foundations of Truman’s policy to hope for peace while preparing for conventional war and the military’s expectation that no weapon, even one with such hazardous residual effects as the atom bomb, was too horrendous to deploy.

Truman’s conviction that civilians should maintain control over the program and completed weapons may have begun to waver in the early months of the Blockade. In Fall 1948 Forrestal asked Truman to shift custody of completed weapons from the AEC to the military so that it would be in a position to deploy them. Truman refused. He might have based his refusal on the philosophical and ideological grounds that had dominated his public assertions—that the atomic program and atom bombs should only be managed by civilians because of the president’s constitutional authority, the principle of civilian leadership, the legislative conditions of the AEC, or on a conviction that categorizing atom bombs as something akin to conventional weapons would make more likely the abhorrent possibility of atomic warfare. Instead, Truman told Forrestal that the domestic political climate prevented him from considering Forrestal’s request for a shift in

⁹² For “Halfmoon,” see Rosenberg, who asserts that the military was less optimistic than Truman about the possibilities for an international agreement—having decided, in 1947, that there would be no global, political, arrangement for control of atomic weapons. “The Hydrogen Bomb Decision,” 68.

⁹³ Rosenberg, for example, discusses the JCS’s approval of “Halfmoon” in advance of his discussion of Truman’s request for a conventional plan.

custody.⁹⁴ That concession weakened, at least for those aware of it, Truman's assertion of July 24, 1948, that, as president, he "regard[ed] the continued control of all aspects of the atomic energy program, including research, development, and the custody of atomic weapons, as the proper functions of the civil authorities."⁹⁵ It also sanctioned an elevation of armed forces lobbying and contributed to the total militarization of the atomic program.

Whether at that moment Truman was merely placating Forrestal or realized that he had just given Forrestal the green light to inflate national security imperatives and to lobby congressmen ever more vigorously for funding, authority, and for the military monopolization of the atomic program, cannot be known. Nonetheless, by citing domestic politics as the reason why he could not transfer custody of atom bombs to the military, Truman was complicit in the military's use of the political forum to assert authority over the atomic program and to pursue increasing its footprint and ratcheting up its influence. Similarly, Truman's "atomic diplomacy" reverberated wildly. The atom bomb threat helped to validate Soviet claims that the U.S. was not seriously interested in participating in a system of international control, but was negotiating in bad faith and using the possibility of international control as a masquerade while solidifying the U.S. monopoly and hindering Soviet development. As Boris Izakov remarked in *Pravda*,

⁹⁴ See Truman's July 24, 1948, statement that captures the sense of what he believed his responsibilities to be under the Atomic Energy Act and Constitution, by declaring that "the continued control of all aspects of the atomic energy program, including research, development and the custody of atomic weapons" was "the proper functions of the civil authorities." Sec. II, "Military Application" "Custody of Stock Pile of Atomic Weapons" Atomic Energy Commission, *Fifth Semiannual Report of the Atomic Energy Commission*, January 1949, 43.

For more on the relationship between the Berlin Crisis, Forrestal's push for custody, and Truman's statements, see Herken, *The Winning Weapon*, 259-266.

⁹⁵ Harry S. Truman, "Statement by the President Reviewing Two Years of Experience with the Atomic Energy Act," July 24, 1948. *Public Papers*.

Bikini “explode[ed] something more important than...out-of-date warships, it fundamentally undermined the belief in the seriousness of American talks about disarmament.”⁹⁶ Domestically, it cast in a disingenuous light Truman’s repeated assertions that the bomb was not a weapon in the ordinary sense, but something to be shunned, “a frightful weapon that threatens to destroy all of us.”⁹⁷ The point of this review of Truman’s management of the Berlin Blockade is not whether his ruse was necessary or to what extent it was effective, nor even whether the military’s approval of “Halfmoon” exhibits prescience or disobedience. Instead, it is to explain how and to what extent Truman’s inconsistent and contradictory decisions about atom bombs and their use helped the military achieve greater authority over the atomic program and lent encouragement to the military’s use of the political arena to achieve the appropriations and influence that Truman seemingly opposed. Truman’s conceit seems to have been to believe, at least prior to 1949, that through strength of will and words he could prevent the military, growing stronger by the day in political influence, from achieving practical, if not official, authority over the atomic program and its resources.

While asserting that atomic weapons and warfare were anathema, Truman had, in fact, taken a first step toward conventionalizing atom bombs. Officers and their supporters, who had argued for custody and control over atomic weapons because the weapons *might* be used found Truman—the man who had persistently cited the extraordinary nature of atomic weapons as a reason to refuse the military’s requests for

⁹⁶ As reported in the *New York Times*. Drew Middleton, “Russian Questions U.S. Faith on Atom,” July 4, 1946, 4.

⁹⁷ Excerpt from the speech Truman gave in May 1946 on receiving an honorary Doctorate of Laws from Fordham University. Will Lissner, “Truman, here, asks education for use of atom in peace,” *New York Times*, May 12, 1946, 1.

custody and for creation of a continental testing site and had resisted all arguments that anyone but the president could make decisions about use by saying that the “grave responsibility” for the weapons use rested solely on the shoulders of the president—making decisions that lent more support to their arguments than to his own.⁹⁸ The effect of Truman’s inconsistent position about whether atom bombs could, or should, be used, becomes evident in the following discussion of 1948’s *Operation Sandstone*. Army officers who had drawn inspiration from the Navy’s *Operation Crossroads* and had been seeking to demonstrate their own particular versatility with atom bombs to show the value of the Army in an atomic war, found reasons in the antagonistic relationship between the U.S. and the U.S.S.R. as well as Truman’s use of an atomic threat as tacit acceptance of the “ordinariness” of atomic weapons, to promote and argue in their evaluation of *Sandstone* for the creation of a continental testing site where routine atomic experiments involving troops could be held and, of course, publicized. In the view of Army Lt. Gen. Hull, it was not the hazardous nature of atomic bomb experimentation that was standing in the way of a continental testing site but the atom bomb’s unpopularity. His argument was that Americans had simply become altogether too afraid of the bomb and needed to be re-educated to accept continental weapons tests.⁹⁹ The process of re-education that he envisioned involved the manipulation of information that made its way into the popular media for public consumption, but also that which was provided to the president, elected officials, and civilian administrators so as to exaggerate the necessity for experimentation while downplaying the hazards. To a greater extent than national

⁹⁸ Cited in Sec. II, *Fifth Semiannual Report of the Atomic Energy Commission*, January 1949, 43.

⁹⁹ Memorandum to Army Chief of Staff from Commanding Lieutenant General Hull, cited in International Physicians for the Prevention of Nuclear War and The Institute for Energy and Environmental Research, *Radioactive Heaven and Earth*, 53.

security imperatives, it was the support for military buildup explicit in the anti-communist rhetoric of Truman's congressional opponents as well as Truman's implicit concession that atom bombs were conventional weapons that brought closer to reality the proposals such as the one for a continental testing site and others that put military officers in a position to experiment with atom bombs at will, closer to reality.

The next chapter examines the behind-the-scenes circumstances and the ways that the atomic energy program strengthened that congressional/military equation. It explains how military officers and their supporters used the program to expand the military's postwar influence and footprint; how their successes affected the atomic program; and, the significance of the relationship between the military and a militarized atomic program to mobilization. At the beginning of Consolidation, Manhattan personnel and a reincarnation of the Manhattan administrative structure and ethos became part of peacetime armed forces administration. Aided by the organizational strategies employed by Manhattan veterans to re-assume authority over the program, military officers used wartime-style strategies of control, including secrecy, deceit, and media manipulation, to achieve the increase in influence and extent of authority that Forrestal and the upper echelon had envisioned during wartime. At the same time, events outside the military's sphere of influence—specifically the increasing tensions between the U.S. and the U.S.S.R. and Truman's inconsistent approach to the use of atomic weapons created conditions that helped the military achieve its goals. Truman's handling of the Berlin Blockade was an exercise in the management of international relations as well as a defining Cold War event. It was also an event that military officers exploited to increase

their leverage over the atomic program and their influence in the public and congressional spheres.

CHAPTER SIX

CONSOLIDATION

In August 1946 the military and its supporters adopted a more clandestine approach to achieving control over the atomic program and weapons. Having narrowly avoided disaster in the Pacific and having officially lost their bid to maintain control over atomic energy, military officers pulled back from the media circus that had characterized *Operation Crossroads* and re-evaluated their options. Before long, they had adjusted to and were exploiting the new institutional arrangements brought about by the AEA and the NSA as well as capitalizing on support from the first Republican Congress to be seated since 1930.¹ Asserting their authority over the atomic energy program and commandeering as many atomic resources as could be managed were issues that armed forces officers, now more competitive than ever because of disagreements over unification and reorganization, could agree on.

This analysis pries apart the tiers of institutional and political circumstances and action that led to the militarization of the atomic program, beginning with a brief overview of Consolidation and the importance of Manhattan's managerial elite to the process of militarization; a discussion of the role Los Alamos played in it, and a condensation of the military's postwar goals as laid out by the JCS in the findings and recommendations of the Operation Crossroads Evaluation Committee. This chapter then evaluates the rudiments of Consolidation, assessing how military officers and their

¹ Workers and businessmen disenchanted with regulation, the pace of reconversion, and with Truman's policies generally translated into victories for Republicans throughout the U.S. For a case study of a failed New Deal program and how consumers affected by the Office of Price Administration's regulation of the meat industry influenced postwar electoral politics, see Meg Jacobs, "How About Some Meat?": The Office of Price Administration, Consumption Politics, and State Building from the Bottom Up 1941-1946," *The Journal of American History* 84 (1997): 910.

supporters exploited the support they received from congressmen and other high level government officials to assert control over the program's resources and its production schedule. *Operation Crossroads* and the deployment of Manhattan-style strategies of control provided important experiences for military officers who worked throughout the 1947-1949 period during which Manhattan's managerial force became part of the postwar state and the military consolidated its authority and expanded its influence. Manhattan managers were an integral part of this process, lending impetus and expertise to military officers interested in regaining control over atomic energy by employing and contributing to the widespread use of strategies of control that they had routinely used during wartime. Simultaneously, the ongoing debate about the extent to which military officers should exert control over the program energized and solidified the bond between Congress and the armed forces even as their leverage of the program to achieve domestic political goals led to its militarization and laid the foundations for Atomic Governance.

The passage of the Atomic Energy Act did not resolve the competition between supporters of military control and civilian authority and interests—it institutionalized it. This allowed political and ideological partisans to use government assets, in this case the material and human resources of the atomic program, to achieve political goals. While congressmen were primarily interested in asserting their own authority over the program—having, for example, more of a say over choosing the members of the AEC, or in picking away at aspects of the program and its administration to discredit Truman—the military's ambitions were more comprehensive. Some military officers, including Groves and Nichols, who assumed positions of authority after passage of the AEA, sought

nothing less than autonomous control over the atomic program.² To achieve authority over the rate of production, experimentation, and atomic resources, they and those who received assurance from them that such autonomy was possible, were willing to sacrifice increased production of atom bombs and enlarging the stockpile—a mission that was one of the most important national security initiatives of the early postwar years. By mid-1949, when the ethos and influence of the wartime Manhattan Project was fully integrated into the peacetime state, Groves, Nichols, and other like-minded officers and officials had amassed enough support from inside and outside government circles to force Truman’s hand in making one of the most significant decisions in postwar history: the decision to develop a hydrogen bomb.

Manhattan Project administrators and personnel assisted with and streamlined the military’s takeover of the atomic program. They lent organizational acumen, continuity, and momentum, to a process that was otherwise fraught with institutional, administrative, and political contingencies. The sense of mission they brought to the task of monopolizing atomic resources was invigorated by the same fervor, urgency, and single-mindedness that they exhibited during wartime—an important contribution to an intra-governmental climate in transition, one where ad hoc decision making and happenstance could be as significant as the purposeful strategies of the Joint Chiefs of Staff. As William H. Sewell explains: “Any array of resources is capable of being interpreted in varying ways and, therefore, of empowering different actors and teaching different

² The Armed Forces Special Weapons Project absorbed the military personnel who had been assigned to the Manhattan Project when the Act took effect on January 1, 1947. AFSWP’s first two commanders were Leslie Groves and Kenneth Nichols, who had been Groves’ deputy on the Manhattan Project. “Memorandum to: Chief of Staff, United States Army; Chief of Naval Operations, Chief of Staff, United States Air Force” October 21, 1947, RG 218, Records of the U.S. Joint Chiefs of Staff, Central Decimal File, 1948-1950, 471.6 (8-15-45) Sec. 7-10, Box No. 223, HM 1994.

schemas. ... [T]his seems to me inherent in a definition of agency as the capacity to transpose and extend schemas to new contexts.” Actors (such as Manhattan veterans) “reinterpreted[ed] and “mobiliz[ed] an array of resources in terms of cultural schemas other than those that initially constituted the array.”³ Manhattan personnel helped upper echelon officers exploit the atomic program and to make strategic and tactical adjustments based on what they had learned from *Operation Crossroads* and in response to new legislation in the form of the AEA and NSA to engender even more support from Congress. A combination of factors, including assistance from Manhattan personnel and wartime-style techniques, coordination of strategic initiatives, and a keen readiness to exploit coincidental events, allowed military officers and their supporters to turn what had been an anti-military tide during the immediate postwar period to their favor and to amass the political and private support necessary to wield absolute authority over the atomic program.

Throughout it all, the upper echelon was as careful as Forrestal had been to give the appearance of conforming to the rubrics of deference while routinely subverting civilian authority. They also adopted a more conservative approach to media relations and promotion, a modification that was perhaps more evident because of its contrast with the media-intensive *Operation Crossroads*. Rank-and-file officers, those on the fringes of the program, the public, and many elected officials who were not privy to the upper echelon’s informal conversations, strategy sessions, and classified communications, likely took many of the operational changes that occurred during this period in stride, as nothing other than business as usual. Adapting to changes in the institutional environment and exploiting opportunities, political or otherwise, is something that is routinely

³ William H. Sewell, “A Theory of Structure: Duality, Agency, and Transformation,” 19.

expected of officials in any government agency and an especially prized trait when it belongs to the forces upon which the nation's security depends. With the atomic program as the goal, however, such adaptations were anything but benign. When military officers gained enough institutional and political support to militarize the program, they used their authority to establish radioactive exposure levels weighted toward military utility instead of safety. In November 1947, for example, the JCS made it clear that military officers would be the only ones to evaluate and act on radioactive hazards that might arise during the *Sandstone* tests: "The task force commander must have final responsibility in matters pertaining to hazards which may result in injury or death to personnel whether they be military or scientific."⁴

During Consolidation, the wartime Manhattan Project became part of the business of peacetime government and an organizational engine for peacetime military entitlement. When Groves and Nichols assumed advisory and managerial level positions at the intersection of the atomic program and the military, they did more than act as liaisons between the two institutions and give technical advice—they became an organizational nexus for military officers and their supporters. Manhattan personnel greatly elevated the significance of the Military Liaison Committee from that envisioned by Senator Arthur H. Vandenberg when he proposed it in March 1946 as an amendment to McMahon's atomic energy bill. At that time, Vandenberg believed the committee would operate to protect the military's interest in atomic energy and declared that it "would have no affirmative powers." McMahon opposed Vandenberg's proposal, fearing

⁴ "Draft Memorandum for the Atomic Energy Commission" November 12, 1947, JCS 1795/12, 64. See also, Memorandum 850-25-8 titled "Armed Forces Special Weapons Project," October 29, 1947, establishing that the Chief would coordinate "radiological safety measures of the Armed Forces." RG 218, Records of the U.S. Joint Chiefs of Staff, Central Decimal File 1948-1950, "Control of Atomic Tests," 471.6 (6-15-45) Sec. 7.

that it would “retard the development of atomic energy for peaceful purposes.” Secretary of Commerce Henry A. Wallace was less subtle: In his view, the amendment created the potential for “military fascism.”⁵ As it turned out, with leadership drawn from the Manhattan Project, the MLC fell somewhere between Wallace’s dire scenario and McMahon’s, but nonetheless achieved much more influence than Vandenberg had envisioned. In a schematic flow chart of the program the AEC would later provide to the JCS, the MLC was positioned directly opposite Congress’s Joint Committee on Atomic Energy.⁶ MLC members elevated their responsibilities above the level of intermediaries by insinuating themselves into everyday routines of armed forces administration, into 1948’s *Operation Sandstone*, the only experiments with atomic weapons conducted during the period, and interfered with the AEC’s ability to carry out its mandate. In this way, they employed and coordinated the deployment of wartime-style strategies of control such as media manipulation, deceit and subterfuge, and atomic secrecy, to enlarge their own authority within the postwar state and to help other armed forces officers enlarge theirs. Thus, the Manhattan Project, which had existed for all practical purposes save funding outside of regulatory or administrative confines, became part of the peacetime state, regaining much of the authority and autonomy that characterized its wartime existence.

Reorganization of the military under the NSA provided additional institutional support for cooperation among officers of each branch who sought control over atomic science and for the coordination of branch-specific goals. This made the exploitation of

⁵ Leviero, “Voice for Military on Atom Approved,” *New York Times*, March 13, 1946, 1, 6.

⁶ RG 218 Records of the U.S. Joint Chiefs of Staff, Central Decimal File, 1948-50, 471.6 (8-15-45) Sec. 7, Box 223, “Control of Atomic Tests.”

congressional support a more efficient process and also streamlined the integration of wartime strategies of control into the operational components of the Military Establishment. Through a mixture of the authority that Groves and Nichols carried with them into their new appointments and their aggressive ratcheting up of their own importance once in office, they accumulated enough influence during Consolidation to wield power over the Joint Chiefs of Staff and the atomic program. Over the same period of time that Groves, Nichols, and other like-minded officers were concentrating their efforts and increasing their influence, those congressmen, administrators, scientists, and others who had contributed to securing passage of the Atomic Energy Act were losing theirs. As a result of administrative and politically-motivated decisions, the impulses that had invigorated the belief that the program could—through sufficient oversight by elected officials and administration directed at balancing the development of peacetime and military applications—be “civilianized,” became more diffuse and decentralized. Simultaneously, the political climate and the peacetime program’s structure operated against the ability of the AEC commissioners to assert their authority and to supervise and manage the program in a way that would have balanced the national security importance of atomic development with civilian interests, particularly the health and safety issues that arose with experimentation. From an organizational standpoint, the military benefited most from postwar legislation, even the AEA under which, officially, the military lost its authority over atomic science.

When Truman signed the AEA in August 1946, there was every reason to believe that the military had lost its best shot at maintaining its control over atomic science. By 1949, however, the relationship between the military and the atomic program had been

firmly re-established. While the AEC funded weapons production and experiments,⁷ military officers controlled the rate of production, the conditions for experimentation, and permissible levels of radiation exposure. By the end of Consolidation, military officials had achieved enough influence to begin using the program to influence diplomacy and domestic policymaking.

Los Alamos: A Vision for the Future

In October 1945, nine months before *Operation Crossroads* and while the question of postwar control over the atomic program remained a topic of active debate, Norris Bradbury, a University of California, Berkeley-trained physicist and wartime Navy Commander who had abandoned his plans to return to Stanford as a physics professor when Oppenheimer chose him as his successor to be Director of Los Alamos, delivered an address to laboratory personnel that encapsulated his vision for the laboratory's future.⁸ At that time, Bradbury and the personnel gathered to listen to him had more reasons to feel insecure about the future of their laboratory than military officers did about the future of the conventional armed forces. Bradbury's solution, and the urgency with which he sought to implement it, provides a lesson in the significance of individual initiative and the desire to maintain postwar integrity during an era, and in a

⁷ For an example from *Sandstone*, see "Report by the Joint Proof-Test Committee to the Joint Chiefs of Staff on Armed Forces Participation in Proof-Testing Operations for Atomic Weapons" where the cost summary was brief: "Generally, it is proposed that the AEC bear all the costs beyond the normal operating costs of the services concerned." October 21, 1947, 2. RG 218, Records of the U.S. Joint Chiefs of Staff, Central Decimal File, 1948-50, 471.6 (8-15-45) Sec. 7, Box 223.

⁸ Commander N.E. Bradbury, "Dr. Bradbury's Philosophy. Outline of policy for interim period of Laboratory operation. Presented by Dr. Bradbury to Coordinating Council, October 1, 1945" Notes, October 8, 1945, included as Appendix Number 1, Edith C. Truslow and Ralph Carlisle Smith, *Manhattan District History, Project Y, The Los Alamos Project*, Vol. II, August 1945 through December 1946; Los Alamos Scientific Laboratory, LAMS-2532. 115-125, quoted material drawn from 119-121.

program, that is often interpreted as one dominated and driven by the Cold War's national security imperatives.

Bradbury's plan for saving the laboratory included a kernel of what would grow into *Operation Sandstone*. He offered it at a time when some of the top scientists had already begun moving on to civilian work in universities and other private laboratories and workers still at Los Alamos had begun expressing openly their desire to work on something besides weapons. Bradbury encouraged scientists, technicians, and others at Los Alamos to stay and help him realize his goal: creating a laboratory that would be as essential during peacetime as it was during the war. Recognizing that it would be impossible to persuade them to stay under the same conditions and with the same mission that had occupied them during the war, Bradbury acknowledged their disdain for the status quo—a sensibility that had surfaced among scientists in the form of “embryonic organizations” to block the military's continued control over the atomic program as then proposed in the May-Johnson Bill.⁹ He conceded that weapons work was “repulsive to all of us,” but added that there was no way to stop bomb “construction now” and urged the remaining scientists and technicians to help him find a way to transform the laboratory from a wartime enterprise to something more broadly useful. Part of Bradbury's argument was that the status quo was manageable, even improvable. Keeping the laboratory alive meant working on weapons; but Bradbury was thinking less about the use of the weapon and more about perfecting it, with refinements in engineering, reliability, assembly, and other features that would lead to “a better weapon.” While challenging his division leaders to come up with imaginative new projects for the

⁹ Alice Kimball Smith provides an overview of the reactionary activity of scientists following the bombing of Japan in “Scientists and the Public Interest, 1945-1946,” *Newsletter on Science, Technology, & Human Values* 24 (1978): 25.

laboratory to pursue, he also proposed using the Sandia base—where Groves was establishing a rival group to build bombs for the military—as a field test site for weapons testing: “It may not last there for more than a year, but we will learn how the ideal field test site for weapons should be set up.”¹⁰ Bradbury’s philosophy for keeping scientists and keeping the government interested in Los Alamos involved additional experiments, “subsequent Trinity’s.”

The way he explained this demonstrates that in his mind, at least, he had already made a distinction between making a bomb and making a weapon—and it was one that he encouraged his audience to take to heart by explaining the difference as he saw it, and the way that experiments would suit the needs of laboratory personnel and the government.¹¹ “The TR [Trinity] bomb was a bomb and not a weapon if you will permit the distinction.” Bradbury also compared work on the bomb with cancer. This analogy suggests that he was ready to acknowledge, along with the scientists who were pushing for international control of atomic science and agreements to prevent the use of atom bombs, that atomic phenomena were so incompletely understood and the hazards so profound that, like cancer, they could become a plague on mankind. “One studies cancer—one does not expect or want to contract it—but the whole impact of cancer on the race is such that we must know its unhappy extent.” Bradbury, interested in keeping

¹⁰ Emphasis in original. Bradbury, “Dr. Bradbury’s Philosophy. Outline of policy for interim period of Laboratory operation. Presented by Dr. Bradbury to Coordinating Council, October 1, 1945” Notes, October 8, 1945, included as Appendix Number 1, Edith C. Truslow and Ralph Carlisle Smith, *Manhattan District History, Project Y, The Los Alamos Project*, Vol. II, August 1945 through December 1946.

¹¹ Hugh Gusterson describes this cognitive phenomenon in mature weapons laboratories across several planes of experience, from the relationship between physicists and the machines of the laboratory; humor and analysis that allow scientists to distance themselves from the consequences of exposure (through statistical tables or scientific analysis or jokes that make light of radioactive hazards); and the process of preparing for a test—something of a ballet engaged in by physicists, chemists, metallurgists, engineers, technicians, and professionals of all sorts, in Gusterson’s description. *Nuclear Rites*, 100-135.

scientists at the laboratory and keeping the laboratory open, appealed to the professional and ideological sympathies of his listeners.

Bradbury insisted that the only difference between bomb-making as a perilous enterprise and bomb-making as an innocuous one resided in approach and perspective. He argued that detonations would advance scientific understanding and might generate public support for international control, convincing “more people than any manifesto that nuclear energy is safe only in the hands of a cooperating world.” He asserted that detonations could be an invigorating experience all around: “further TR’s may be a goal which will provide some intellectual stimulus for people working here ... and lacking the weapon aspect directly, another TR might even be FUN.” Moreover, and in the spirit of using the military’s interest in bombs to generate funding for his laboratory in such a way to prevent alienating scientists opposed to improving the art of warfare, Bradbury argued that the laboratory engage in work that would be non-productive. Bradbury proposed working on a project that Teller had been dissuaded from pursuing during the war and what Bradbury—then—believed might be impossible, the hydrogen bomb:

We will propose that the fundamental experiments leading to the answer to the question “Is or is not a Super feasible?” be undertaken. These experiments are of interest in themselves in many cases; but even more, we cannot avoid the responsibility of knowing the facts, no matter how terrifying. The word “feasible” is a weasel word—it covers everything from laboratory experiments up to the possibility of actually building—for only by building something do you actually finally determine feasibility. This does not mean that we will build a super. It couldn’t happen in our lifetime in any event.¹²

¹² Emphasis in original. Commander N.E. Bradbury, “Dr. Bradbury’s Philosophy. Outline of policy for interim period of Laboratory operation. Presented by Dr. Bradbury to Coordinating Council, October 1, 1945,” Notes, October 8, 1945, included as Appendix Number 1, Edith C. Truslow and Ralph Carlisle Smith, *Manhattan District History, Project Y, The Los Alamos Project*, Vol. II, August 1945 through December 1946; Los Alamos Scientific Laboratory, LAMS-2532. 115-125, quoted material drawn from 119-121.

Thus, in the interests of guaranteeing future laboratory funding and guaranteeing that scientists would continue to man the laboratory, Bradbury suggested that they work on something that many of them believed could not be used as a weapon: the H-bomb. For Bradbury, creating more and better bombs would benefit scientists and weapons would satisfy the military, while government investment in both would secure the future of the laboratory. Bradbury gave institutional impetus to the notion of an H-bomb—at Los Alamos and within government circles—while confiding to laboratory insiders that he believed its creation was such a remote possibility that the idea was little more than a harmless means of generating funds. There is no way to know whether Bradbury was being disingenuous with those in his audience or with those within government who learned of his plan. Nor is it possible to know, in the months and years that followed, whether military officers, elected officials, policymakers, or the AEC, realized that Bradbury was not sincere in his promotion of a hydrogen weapon. Teller had certainly believed that it was not impossible and had been frustrated during and after the war at the reluctance of Manhattan officials to allow him to pursue the “Super.”¹³

What is known is that Bradbury proposed the possibility of producing an H-bomb for no other reason than to save Los Alamos. As it turned out, and as will be discussed later in this chapter, Bradbury’s plan gained traction and for that reason, three “subsequent Trinity’s” were held as the focus of 1948’s *Operation Sandstone*—experiments designed to proof test some of the theoretical advances made as a result of the plan he put forth in October 1945. Bradbury delivered his proposal before *Operation Crossroads* had been approved and before anyone knew whether the peacetime program

¹³ Teller’s views are summarized by K. R. Rao’s memorial, “Edward Teller, 1908-2003,” *Current Science* 98 (2003): 1372-1374, esp. 1373.

would be in military or in civilian hands. He had, however, correctly perceived that the military's coattails were the ones to which Los Alamos should cling.

The Evaluation Report of Operation Crossroads: A Military Vision for America

Bradbury's plan fit right in with military goals devised after *Crossroads*, when those officers and their supporters had a better idea of the value of atomic science to their future. "The Evaluation of the Atomic Bomb as a Military Weapon; The Final Report of the Joint Chiefs of Staff Evaluation Report for Operation Crossroads," completed June 30, 1947, brings to light the importance of *Operation Crossroads* as a maneuver that allowed the military to test the boundaries of what was possible to achieve during peacetime, the centrality of atomic science to unifying the branches into common purpose, and the organizational capacity that the armed forces gained during Consolidation.¹⁴

"The Final Report of the Joint Chiefs of Staff Evaluation Board for Operation Crossroads" was the product of a civilian/military committee that Truman established in response to mounting public and political opposition to the Navy's plan for *Operation Crossroads* and to quell suspicion about the Navy's objectivity.¹⁵ The civilian members of the Board were Karl T. Compton, president of MIT, Bradley Dewey, president of the American Chemical Society and president of the Dewey and Almy Chemical Company, and Thomas F. Farrell, former Major General and Deputy Commander of the Manhattan

¹⁴ "The Evaluation of the Atomic Bomb as a Military Weapon. The Final Report of the Joint Chiefs of Staff Evaluation Board for Operation Crossroads" 30 June 1947; United States National Archives, RG 218, CCS 471.6, Sec. 13, folder "Control of Atomic Weapons and Tests" (8-15-45). The report is also now available from the Harry S. Truman library on the World Wide Web, http://www.trumanlibrary.org/whistlestop/study_collections/bomb/large/documents/fulltext.php?fulltextid=27 (Accessed July 27, 2008); also in *America's Plans for War Against the Soviet Union, 1945-1950*, Steven T. Ross and David Alan Rosenberg, eds. (New York: Garland Publishers, 1989), [collection unpaginated].

¹⁵ Hanson Baldwin, "U.S. Defense Held in Peril" *New York Times*, February 17, 1946, 32.

Project. The committee's military members were Lt. General L. H. Brereton, Vice Admiral John H. Hoover, Rear Admiral Ralph A. Ofstie, and Lt. Gen. A. C. Wedemeyer, a replacement for General Joseph W. Stilwell, who died before the report was completed. Truman charged the Board with evaluating the effect of the detonations at *Crossroads* and with preparing "two preliminary, public reports" and a final report that would elaborate on the atom bomb effects and, additionally, provide strategic and national security information.¹⁶ Though the Committee promised to provide, at least in part, information that the public could use to form opinions about atomic weapons and atomic science, there was debate even before *Operation Crossroads* about whether it would provide anything but the most general information.¹⁷ The domestic political situation and the military's official standing vis-à-vis the atomic program changed dramatically between the time Truman signed off on the Committee and the date it issued the Report. Truman had approved the Committee before the passage of the Atomic Energy Act. By the time the Committee delivered its Report, military officers had begun to consolidate their authority and focus their attention on regaining control over the atomic program that they had officially lost under the AEA.

The report has gone down in history for its incendiary discussion of the likely consequences of atomic warfare, for the complaints lodged by Karl T. Compton that the Final Report omitted paragraphs that he expected included, and for how promptly

¹⁶ Since three detonations were planned for Crossroads, with the deep water "Charlie" blast cancelled after the maneuvers were underway, it is likely that the original plan was for the committee to report on all three detonations. "Report" Part II, (2)(3), 8.

¹⁷ Chairman Vinson of the Naval Affairs Committee who had warned in March that the findings of the committee would be controlled: "The information [would be] kept in the bosom of the Joint Chiefs of Staff." *New York Times*, March 12, 1946, 17.

Truman ordered it classified.¹⁸ The Report can be understood in three ways. First, as what it purported to be: an evaluation by respected civilians and members of the upper echelon about atom bomb effects and what the bomb's development might mean for society and for the state. Second, as a political document through which the Board's military and civilian members advanced arguments to support policies that they believed important or essential. Third, as a blend of the first two. This makes sense in view of the institutional perspective of the instant analysis, but also because the *Crossroads* experiments were expected to provide additional scientific information about atomic detonations.

Moreover, Truman, who approved the commission, other government officials, and interested members of the American public, all anticipated that the report would not only provide important information for the military and policymakers, but also that portions of it would be made available to the public. All expected that the Final Report would provide a summation of the value of an atom bomb as a weapon in the U.S. arsenal and its dangers—what it might mean for national security if and when other countries developed atomic technologies.

The Final Report did that, and more, because the Joint Chiefs of Staff had control over the document's preparation. The JCS's version of the Report encapsulated the military's vision for the future with an argument for the radical expansion of military presence and influence. Officers used findings and extrapolations derived from *Operation Crossroads*, expanded upon what was already known about atom bombings and the

¹⁸ For a discussion of the Report, the reception it received in the Truman administration, as well as Compton's disagreement with JCS deletions and the efforts to retrieve Compton's copy, see Weisgall, 288-298. Though misinformed in claiming that the third test of Crossroads, *Charlie*, was cancelled to preserve scarce nuclear resources, Guy Oakes discusses the Report's influence on military planning, see Guy Oakes, *The Imaginary War: Civil Defense and Cold War Culture* (New York: Oxford University Press, 1994), 35-36.

hazards of residual radioactivity derived from Trinity, Hiroshima, Nagasaki, and combined that information with what they learned at *Operation Crossroads* about the value of dramatic public demonstration. They took that information and used Atomic Secrecy to prevent the possibility of creating a backlash against weapons experimentation and, perhaps also to hinder diplomatic efforts, to generate public and political support for military expansion. The Joint Chiefs of Staff stifled civilian input, and especially the portions of the Report Karl T. Compton believed important, and packaged that information into a report that presented a unified version of how the military expected officials to preserve national security in an atomic age. As presented to the Truman administration, the Final Report anchored atomic science to military expansion and recommended what can without exaggeration be called a revolution in governance: an unprecedented expansion of military authority and a proposal to allow for pre-emptive atomic war.

The Report stirred up nearly as much controversy as *Operation Crossroads* itself. Weisgall wrote that after *Crossroads* disbanded, the JCS feared that the report would raise “serious political problems for the military” and neutralized it by altering, fragmenting, and deleting the conclusions of civilian board members when delivering the preliminary report.¹⁹ This was immediately problematic because the Pentagon had previously assured Compton, the committee’s chairman, that civilians and the public would have access to the board’s findings. Compton resigned in protest, but returned briefly when the JCS told him that the omissions and changes had been the result of inadvertent clerical errors. Compton repeatedly refused to relinquish his copy of the

¹⁹ Admiral William Leahy to civilian members of the commission, Karl Compton and Bradley Dewey, cited in Weisgall, *Operation Crossroads*, 289.

report, and after his death in 1954, AFSWP tried unsuccessfully to retrieve his copy. They ultimately turned to the FBI to investigate.²⁰ From the Truman administration's perspective, Clark Clifford said the final report so "outraged" Truman that the White House requested all copies be turned over to the JCS, who immediately suppressed the document because, as a military official told reporters, its conclusions were, "so disturbing and frightening ... and the recommendations so sensational."²¹ The report presented an alarming scenario of what types of devastation would occur in the event of an atomic attack or all-out atomic warfare. The underwater detonation of the "Baker" bomb and the fallout hazard that resulted, for example, demonstrated that radioactive fallout could "depopulate vast areas of the earth's surface, leaving only vestigial remnants of man's material works."²² Though some of the Report's findings were leaked to the press, and despite repeated requests from newspaper reporters and commentators that the public had been promised it would be allowed to view the Evaluation Board's findings, the Report remained entirely classified until October 1975.²³ For its alarming portrayal of the consequences of atomic warfare, the arms race that it prophesied, and the effect of its findings on those privy to the Report in its entirety—especially Truman, who ordered it classified and locked away—the Report and its history seem to reflect a

²⁰ Maj. Howard D. Elliott, Armed Forces Special Weapons Project to President, MIT, letter, May 24, 1955, cited in Weisgall, *Operation Crossroads*, 298. Given the interest in retrieving Compton's copy, it may be that it was the only complete version—the only one that included the comments that Compton made and that the JCS omitted from the version of the Report delivered to President Truman.

²¹ Weisgall, *Operation Crossroads*, 294.

²² Especially if employed "with other weapons of mass destructions as, for example, pathogenic bacteria," Part III, "Conclusions and Recommendations" *The Final Report of the Joint Chiefs of Staff Evaluation Board for Operation Crossroads* June 30, 1947, JCS 1691/10. For information about the biological warfare program, see Stephen Endicott and Edward Hagerman, *The United States and Biological Warfare* (Bloomington: Indiana University Press, 1999).

²³ Per markings on document located at HST Library.

transitional moment in U.S. history when both the atomic age and the national security state—as well as the increased tensions between civilian ideals and national defense that resulted—were in their infancy.

But, both the timing of the document's release and its contents suggest that it makes more sense to understand the Final Report as the product of the military's maturing political strategy. First, the document's findings did not provide new information about atomic effects. The JCS Evaluation Board first released the Report in June 1947—nearly a year after the end of *Crossroads* and the passage of the Atomic Energy Act, a few weeks before the creation of the National Defense Establishment under the National Security Act, and nearly two years after the bombings of Hiroshima and Nagasaki. The document's findings had little to add to what was already known publicly and within the administration about the effects of atom bombs. In fact, the Report's elaboration of atomic effects did little more than reaffirm the dramatic and poignant findings contained in the bombing surveys of Hiroshima and Nagasaki, dated June 19 and 30, 1946, and completed before the *Able* bomb was dropped at Bikini. Those surveys not only detailed the human and social toll of the bombs, but also elaborated on the danger of lingering radioactivity and ventured that devastation similar to what had been found in Japan would result should American cities come under atomic attack.²⁴ As the Board admitted, “the phenomena attending the explosions of both bombs, followed to a

²⁴ Two versions of the bombing survey provide elaborate detail about the damage caused by the bombs to residents of both cities, infrastructure, and the psychological effects of the bombings, social dislocation and the disruption of vital services in the aftermath of the attacks. See especially 19, 23, 33, 39-44, U. S. Strategic Bombing Survey: The Effects of the Atomic Bombings of Hiroshima and Nagasaki, June 19, 1946, President's Secretary's File, Truman Papers, ; and 15-22, 25, 33, 38-43, “United States Strategic Bombing Survey: The Effects of the Atomic Bombs on Hiroshima and Nagasaki,” June 30, 1946. Confidential File, Truman Papers, HST Library.

remarkable degree the predictions made by civilian and service experts.”²⁵ Second, the Report was, for the upper echelon as well as Compton, primarily a political document, one its authors expected could be used to mold domestic policy. As late as December 1948, for example, the JCS expected that it would be successful in having portions of the document released to the public.²⁶ Third, because of the use of Manhattan-style strategies of control employed during its preparation by the JCS and the influence of the Military Liaison Committee on the JCS—a letter from the MLC reminding the National Military Establishment of the requirement to submit all communications between it and the AEC to the MLC included along with the document in JCS files—it makes sense also to understand the Report as a product of Integration.²⁷

The officers who produced the final version of the Report capitalized on the status of the Board’s civilian observers even as they tailored its contents in ways that disregarded civilian influence. In late December 1948 an unsigned note to General Alfred Gruenther, first Director of the JCS and General Eisenhower’s bridge partner, suggested that “any publicity could be confined to only the Conclusions and Recommendations” because “the prestige of the Board” would substitute for the findings that led to those

²⁵ Report, “Section Two--General Phenomena” 18.

²⁶ See the cover letter attached to the copy of the document in JCS files to General Gruenther advising him that a copy of the Report with suggestions for release of portions of the document had been delivered to the Secretary of Defense in anticipation of selected public release of the Report. Signed [illegible] handwritten note to General Gruenther, dated 12/27/48, JCS 16[illegible]1/10. United States National Archives, RG 218, CCS 471.6, Sec. 13, folder “Control of Atomic Weapons and Tests” (8-15-45).

²⁷ Memorandum, November 12, 1948, J.N. Knapp, Colonel USAF, Executive Secretary (MLC to AEC) to Senior Army, Navy, Air Force Members of the MLC, JCS Secretary, Executive Secretary of the Research and Development Board, the Director of Staff of Munitions Board, and Chief Armed Forces Special Weapons Project [Groves]. United States National Archives, RG 218, CCS 471.6, Sec. 13, folder “Control of Atomic Weapons and Tests” (8-15-45).

conclusions.”²⁸ Censoring civilian contributions to the Report made up for the inability of military officers to control Compton and other civilian members of the committee during *Crossroads* as the Navy had controlled the reporters invited to Bikini. In doing so, military officers betrayed Compton’s trust, disregarding his contribution to the Report after assuring him that he would be able to contribute fully, and then deceived him, and Truman as well, by explaining away as an inadvertent error omissions that were almost certainly purposeful given the attention paid to the content of the Report. The military members of the Evaluation Board also went beyond their mandate to “be available for advice to the Task Force Commander during preparation of the tests,” to “examine and evaluate” the results of the tests, and to include in the final report “pertinent comments on strategy, tactics, and technical information.”²⁹ Officers not only “commented,” but recommended changes to national policy and, in line with what Forrestal had been pressing for since wartime, policymaking authority for military advisors.

Over thirty pages of a forty-page Report, the Committee addressed a variety of issues from the impossibility of defending cities against atomic warfare to suggesting that the military receive “title” to atomic weapons. The sorts of issues addressed, and the frequency with which those issues appeared within the report, helps to show the importance of the Report for military officers set, as Forrestal had been, on peacetime expansion. Discussion and recommendations for increasing military preparedness was, at thirty-three instances, the most common issue addressed in the Report. Recommendations for changes in atomic and national policies—including a suggestion that elected officials

²⁸Signed [illegible] handwritten note to General Gruenther, dated 12/27/48, JCS 16[illegible]1/10. United States National Archives, RG 218, CCS 471.6, Sec. 13, folder “Control of Atomic Weapons and Tests” (8-15-45).

²⁹ Final Report, 8.

abandon the traditional prohibition against pre-emptive warfare—came in second, appearing no less than twenty-five times. There were twenty-three comments about the material effects of atom bomb detonations and at least fourteen mentions of the impossibility of defending cities or populations against atomic bombardment. Diplomacy, as a theoretical ideal and a future possibility, received five mentions. Finally, there were two discussions of the necessity for continued experimentation and “full scale” weapons tests. In the Report as a whole, and despite the point-by-point itemization of issues, a bewildering number of recommendations contradict one another in subtle and not-so-subtle ways. They might be imagined to be the unavoidable result of a committee-generated document where each player insisted on presenting his own version, or, perhaps, as the inevitable result of repetition and an effort to avoid exact rephrasing of a point already made. But, that is to view the report as it appears now—a declassified version of a Report that was, at the time, expected to be divided for all but the highest level officials into public and classified portions. A mark-up version of the Report included in the JCS files that identifies the portions of the Report that military officials expected to extract and classify. These materials help to explain the contradictions and presents an opportunity to assess the Report’s value to military officers who, at the time, seem to have regarded it as the means to assert control over the atomic program and to achieve policymaking authority.

In segmenting the Report for restricted and unrestricted access, military officers sought to make the most of the horrendous consequences of atomic warfare while shielding the extent of their ambitions from the public and from most elected officials. What can be gleaned from handwritten bracketing on the JCS file copy is that conflicting

recommendations were not contradictions per se, but rather elements of a dual-purpose document that included purposeful phrasing that military officers expected would, with selective classification, provide a convincing argument for increasing military authority and autonomy without running the risk of (a) appearing overambitious and alienating the public, and (b) insulting congressional benefactors through criticism of existing legislation. For example, the unclassified conclusion—the one intended for public consumption—asserted that the Atomic Energy Act’s provisions, “however justified at the moment of the Act’s passage, should be reviewed from time to time.” In contrast, the classified version—for officials with sufficient security clearances—was more direct, and while the authors “offer[ed] no criticism” of the original legislation, recommended that “proper authorities” reconsider the Act and give the military sole authority over atomic weapons and material. Along with suggesting that military personnel be included on the Atomic Energy Commission, the Committee made recommendations that would have stripped authority from the AEC, rendering it as little more than a managerial apparatus for the production of weapons. In this scenario, the authors recommended that the military be allowed to “own, have title to, and be charged with the control of atomic weapons after fabrication, ... design and test atomic weapons,” and “to control all information relating to military utilization of the weapons.”³⁰ While it cannot be known what difference the military believed existed between “owning” atomic weapons and having “title” to them, it seems beyond question that the military expected full custody and authority over the stockpile. Moreover, it is also evident that military officers wanted to shield the public and many elected officials from viewing the extent of their ambitions, leaving the impression in the declassified and widely-circulated document that it wanted

³⁰ Report, 40.

nothing more than routine reviews of the Act's provisions to ensure that they kept pace with technology and circumstances, while asserting in the Report's classified portions that it expected to receive full custody of all atomic weapons and to suffer no interference whatsoever in their production, their storage, or their use. To accomplish this goal, military officers needed to persuade the public that a strong peacetime military was the only thing standing between it and an uninhabitable America, where—without adequate defense—it was only a matter of time before American cities were reduced to a collection of shadowy, radiated, ruins.

The declassified version became a way to frighten the public with a devastating portrayal of an atomic attack and impress upon it the importance of a vigilant, and large, peacetime military force with sufficient authority to prevent one from occurring. It might seem that this amounted to overkill, especially after the reports of Hiroshima and Nagasaki, Hersey's *Hiroshima*, the release by scientists of the vivid consequences of atomic war in *One World or None*, and the publicity that surrounded *Operation Crossroads*. But a public reminder of atomic devastation was especially necessary after *Crossroads* because the Navy's promotional campaign had tipped the balance of public sentiment in a way that was detrimental to the military's goals. Publicity had, in fact, raised expectations for the drama so high and the Navy had so effectively suppressed the crisis that radioactive fallout had produced at Bikini that, when it was over, 58 percent of those polled remarked that the bombs had done less damage that they had expected, while only 16 percent found the tests more damaging, and 11 percent reported that the tests had met their expectations.³¹ It is likely that neither the civilian members of the committee

³¹ Gallup poll 375, July 25, 1946.

who expected the Report to persuade the American public to throw more support into diplomatic solutions to atomic warfare, nor the military members who sought to use the possibility of atomic warfare as a means of generating support for an expanded military, welcomed the news that a large number of people had become more comfortable with atomic bombardment in the aftermath of *Crossroads*. The Report's authors used straightforward language to summarize the practical information gained from *Crossroads*, "Submarines, both surface and submerged, proved less vulnerable than other types of vessels"—some of which had already been provided in preliminary reports and much of it validating earlier studies and literature about atomic effects gathered from Trinity, Hiroshima, and Nagasaki, and to explain that other data was either classified, restricted, or had yet to be analyzed.³² In contrast, they employed strong and imaginative language to paint devastating portraits of atomic warfare. So, along with the information that atom bombs could depopulate the earth, the authors wrote that atom bombs could make counterattack impossible. Atomic attack could "nullify any nation's military effort ... demolish its social and economic structures," and "an aggressor, striking suddenly and unexpectedly ... might ... insure the ultimate defeat of an initially stronger adversary."³³ Statements such as these, in the opinion of one officer writing to General Gruenther, would have sufficed "to give comfort to our friends and some sleepless nights to enemies."³⁴ When combined with those portions of the Report that the military wanted classified, it seems likely that officers preparing the report planned to use it and atomic

³² Final Report, 17, 18, 19

³³ Final Report, 11.

³⁴ Signed [illegible] handwritten note to General Gruenther, dated 12/27/48, JCS 16[illegible]1/10. United States National Archives, RG 218, CCS 471.6, Sec. 13, folder "Control of Atomic Weapons and Tests" (8-15-45).

energy to justify the creation of what would amount to a command economy, where officers would exert policymaking—and war-making—authority. Given this scenario, it might be assumed that it was not only enemies, but also Truman administration insiders, who lost sleep after receiving the Report.

The Report's authors minimized the role of civilians in preserving national security. The portrayal of military officers as competently self-assured in all matters having to do with atomic energy contrasted with the portrayals of civilians—whether scientists or elected officials—as, at best, ideologically ill-suited for the problems of an atomic age, uncertain, or perplexed. One way the Report's authors did this was to invoke historical arguments. They used *Operation Crossroads* as an exemplar of military evenhandedness, ignoring the JCS's role in discarding civilian input into the Report itself while noting that the *Operation* demonstrated that military personnel had proved themselves capable of cooperating with civilians and members of other branches, able to “work in efficient harmony.”³⁵ The assertion was possible because the Report's authors made no reference to the near-disaster of radioactive contamination that resulted from the “Baker” test that prompted the cancellation of test “Charlie,” to the disregard of safety procedures by officers with little or no understanding of radioactive exposure hazards and minimal respect for the expertise (and rank) of Stafford Warren and his radiological safety teams, or that Stafford Warren had a difficult time persuading Admiral Blandy that because of contamination he should dismantle the *Operation*. Instead, the Report included language asserting that military officers had proven that they had the expertise to plan and conduct experiments safely: “As a result of carefully planned operating

³⁵ Report, 17.

procedures and radiological safety measures, no casualties resulted from explosion or radiation during, or after, either test.”³⁶ Invocations of Pearl Harbor reinforced the importance of military readiness and supported an argument that in matters atomic, offense was the only defense.³⁷ To further emphasize the need for urgency and the insignificance of civilian input or decision making, the authors reminded their readers that “it is the lesson of history that new inventions may at any time vastly accelerate” allowing an enemy to “outstrip U.S. quickly” and, while mentioning that experts outside military circles agreed, noted that those experts “expressed little faith in the accuracy of their predictions.”³⁸ To further demean the efforts of civilians to secure national security, the Report established impossible objectives for diplomacy and used the failure to achieve those objectives to argue for a vast enhancement of military presence and authority.

Instead of the initiative for the development of an international agency to control atomic materiel and research through the U.N. that was underway at the time, the Report’s content set diplomatic aims impossibly high as a means of guaranteeing the militaristic alternative.³⁹ So, for example, “Only the outlawing of all war” and “absolute guarantees of abiding peace” could preclude following the military’s recommendations and its own objectives supplied in the Report. These were as exaggerated as the

³⁶ Report, 18.

³⁷ Report, 29.

³⁸ Report, 29.

³⁹ For one of many instances where the President discussed “international control” as the aim of diplomacy, see the “Statement” he delivered July 24, 1948, as the AEC filed its Fourth Semi Annual Report and the second anniversary of the Atomic Energy Act neared.
<http://trumanlibrary.org/publicpapers/viewpapers.php?pid=1709> (9-21-08)

diplomatic scenario. One of the most important recommendations was also the most revolutionary:

There must be national recognition of the probability of surprise attack and a consequential revision of our traditional attitudes toward what constitute acts of aggression so that our armed forces may plan and operate in accordance with the realities of atomic warfare. ... Offensive measures will be the only generally effective means of defense, and the United States must be prepared to employ them before a potential enemy can inflict significant damage upon us.

To soften the blow of this assault on “traditional attitudes,” the Report’s authors then suggested that their proposal was, really, nothing new: “National defense requirements of the future are only those of the past; any aggressor must be overcome with superior force.” What was new was a recommended change in what constituted aggression and the definition of an aggressor. They asked that Congress decide, in advance, the criteria for such factors as “an ‘aggressive act’ or imminent’ or ‘incipient’ attack’ [and] draft suitable standing orders” so that the president, as commander in chief, could authorize a pre-emptive attack at will.⁴⁰ The JCS’s logical formulation of the problem left no room for compromise. Absent a “guaranty of absolute peace,” preventing the “possible annihilation of civilization” required the “manufacture and stockpiling” of enough atomic weapons to “overwhelm swiftly any *potential* enemy” and new legislation “establishing new definitions of acts of aggression and incipient attack, including the readying of atomic weapons against us.” The legislation proposed would make it incumbent upon the president to decide, “after consultation with the Cabinet,” to launch pre-emptive atomic bombardment.⁴¹ Though the Report’s authors used the horrors of

⁴⁰ Report, 10-11. Additional recommendations for pre-emptive attack authority can be found on 13, 28, 29.

⁴¹ Emphasis added. Report, 14-15.

atomic warfare to relay the need for such a drastic change in traditional ideology, it was not preconditioned on an enemy's possession of atomic weapons or expertise. Indeed, whatever one could imagine amounted to grounds for the legislative changes that the military requested:

Situations can be envisioned in which an aggressor, with or without atomic weapons, relying on various factors of war favorable to him and, making difficult our successful delivery of atomic bombs to targets vital to his military effort, might undertake an attack upon us.⁴²

Along with changes allowing for pre-emptive assault, the potential for enemy attack justified, according to the Report, the revision of the Atomic Energy Act and an unprecedented demand for military intelligence.

The recommendation for a pre-emptive attack as envisioned by the JCS would, presumably, come to the president's attention through the Secretary of Defense—a cabinet member with official, “civilian,” status—and be supported by information supplied by “an intelligence service with a far greater effectiveness than any such service this country has had heretofore in peace or war.”⁴³ It may seem farfetched that had Truman not ordered the Report secured and classified its content, the JCS could have successfully secured legislative sanction for its plan and been in a position to argue for a pre-emptive attack on the U.S.S.R. Yet, after Hiroshima, the military's appeals to national security had been sufficient to whither objections to other military proposals. Despite widespread opposition to *Operation Crossroads*, for example, there were few elected officials who did not relinquish their objections—many of them based in sound reasoning and with the assurances of scientists that the experiments could be conducted

⁴² Report, 28.

⁴³ Report, 15

with more safety and at much less cost in laboratory settings—in the face of the military’s appeals to national security and military urgency. Anticipating similar objections in the future, the authors of the Report tried to avert them by conflating scientific need for experimental tests with military maneuvers and readiness. They argued that “periodic tests” were essential to weapons development and skill in weapons use.

The phenomenon of nuclear fission precludes the explosion of an atomic weapon of less than critical mass, and hence all tests must be ‘full scale.’⁴⁴

The authors also disputed the notion that atomic weapons might serve as an economic alternative to massive conventional forces, reminding potential readers of material requirements, the importance of atomic preparedness across all branches, the JCS principle that atomic weapons were no substitute for troops:

The advent of the atomic bomb has not eliminated our need for ground, naval and air forces [nor] lessened the need for overseas bases.⁴⁵

One particular itemization brings to mind the requests made by small committees to General Groves in September and October 1945 and provides yet another illustration of the significance of the Manhattan Project as well as the continuities between wartime and the immediate postwar era to the plans of military officers for the development and deployment of tactical atomic weapons.

hence the necessity for coordinated development of atomic weapons and weapon-carriers and their integration into a series of devices, each with a tactical or strategic purpose. In the category of weapon-carrier may be included any means of ultimate delivery such as aircraft, guided missiles, rockets, torpedoes and mines of all types. ... Inseparable from the development of bombs and bomb carriers, should be the planning of naval

⁴⁴ Report, 28.

⁴⁵ Report, 28.

surface and submarine vessels from which atomic bomb-carriers may be launched or discharged, as well as of land launching devices, stationary or mobile, and the acquisition and maintenance of land and air bases.⁴⁶

The Evaluation Report's authors included language that would have allowed for pre-emptive atomic bombardment of an enemy who might be found to be "readying atomic weapons" or who posed a potential threat against U.S. defenses, a finding that would be based primarily on the military's own analysis of the danger. Given the JCS's cabinet-level authority, the publication and amplification of the dangers of atomic warfare through a public relations campaign and release of selected portions of the Evaluation Report, it seems plausible to imagine that the JCS was confident that it had a greater than even chance of securing the legislation it desired and anticipated that it would not be long before military intelligence found that the U.S.S.R., or another nation, was "readying atomic weapons" and the president, as commander in chief, was faced with a decision to authorize a pre-emptive atomic attack. The Report's authors credited the military with the insight to gauge intelligence and threat, and left the impression that the military was unique in its ability to decide whether and under what circumstances pre-emptive attacks should be commenced.

The Report's Concluding Observations asserted that only the military was capable of protecting America in the atomic age. The authors conceded that the "implications of atomic energy" were all but unimaginable, "taxing the apperceptive powers of the most unfettered minds in every field of thought." And yet, while "the most unfettered minds" were profoundly challenged, the Report's authors self-assuredly insisted that "military

⁴⁶ Report, 11. As with the earlier discussion of the memorandums to Groves requesting the development of tactical weapons, the content of the Evaluation Report provides evidence to revises the conventional assessment offered by official historians, and others dependent on their analysis, that military planning at this stage was limited to atom bombs. See Samuel F. Wells, Jr., "The Origins of Massive Retaliation," *Political Science Quarterly* 96 (1981): 48.

planners” should confront the “complex problems” of atomic energy as an “implement of war.” In this way, they would be able to rise above the “inertia of conservatism,” to bring about a “revolutionary change in military mental attitudes.”⁴⁷ Clearly, however, the JCS did not have a problem with “military” mental attitudes. Instead, the text of the Report reveals that was with civilian approaches to the atomic age that insisted, even after the creation of the atom bomb, on obedience to tradition and constitutional principles. With the Report, officers hoped for a suspension of what they considered “conservatism” that hamstrung military planners and prevented the revolution in military authority and autonomy that Forrestal and other military officers sought as a preventative against a Soviet surprise attack.

The Final Report of the Crossroads Evaluation Committee establishes the significance of *Operation Crossroads* as a conduit between wartime and peacetime as well as an integral first step in the militarization of the peacetime atomic program and in the creation of the national security state. First, the maneuver allowed military officers to test the boundaries of what was possible during peacetime and to evaluate the potential of atomic weapons and experimentation as instruments of political persuasion. Second, the evaluative process provided a mechanism that officers and their supporters used to coordinate their atomic ambitions and goals. Third, the itemization of findings and recommendations in the Evaluation Report represented a crystallization of military goals, one that used atomic weapons as a reason for a constitutional overhaul. When viewed from this perspective, the Report retains its long-held significance as a document that laid bare the effects of atom bombs and atomic warfare while simultaneously establishing the centrality of atomic science to the military’s postwar goals. Truman’s rapid classification

⁴⁷ Final Report, 38.

of the Report may have meant that the military could not use the Report as it had anticipated, but even that helped military officers achieve their goals. It prevented the public from learning more about *Operation Crossroads* and the hazards of experimentation, thus giving a majority of the public little reason to change the conclusions they reached after *Crossroads* that experiments could be conducted safely and with no offsite hazards. Restricting the entire Report also allowed the military to keep the general public and most elected officials in the dark about their plans to re-assume control over the atomic program and for the mobilization of America. The Report represents an important piece of the history of the national security state: an articulation of the armed forces' postwar ambitions and an argument to achieve them based on *Operation Crossroads*, the first postwar experiment with atomic weapons. For the military, the Report was an important step in its bid for increased influence and policymaking authority.

Los Alamos's civilian director Bradbury and armed forces officers contributed to compressing atomic science into weaponry, psychically anchoring the bomb to military reorganization and American mobilization. The military's coordinated approach gave it the ability to suppress unwanted information after *Crossroads*, and the support it received from extra-government entities, such as Los Alamos, made it difficult for the AEC, Lilienthal, and others who supported the development of peacetime applications to block the military's monopolization of atomic resources for weapons development. The military lobbied for more than materiel and innovative weapons. It was also working to assert control over experimentation by minimizing the hazards of radioactive fallout while simultaneously issuing reminders about the lethal prospects of atomic warfare. As a

result, it became easier for the military and its supporters to dismiss as ideological, and non functional, the varied proposals of intellectuals, scientists, and diplomats who understood atomic science in broader terms and who held out the hope that development of peacetime applications would prevent resources from being monopolized for weaponry and state-making, and that atomic science would become a public, and not just a national security, asset. As will be discussed in more detail in a later chapter, the scientists, whose authority became compromised by their politicization after the war, but who perhaps had the most to contribute to any discussion about atomic weapons, found themselves on the sidelines of some of the most consequential conversations of the twentieth century.⁴⁸

Stafford Warren became one of those sidelined scientists.

Operation Sandstone

Bradbury's 1945 plan to pursue military weapons work as a means of saving Los Alamos increased the Laboratory's value to the military and helped secure its future. Support came from a variety of groups with their own interests in expansion, including military officers seeking to control atomic development and anxious for weapons production at any cost, congressmen who used the atomic program and complaints about its administration to ratchet up their influence at the cost of Truman's popularity, and from other elected officials who genuinely believed that developing an H-bomb was the only way to protect national security against Soviet designs. Most of those who were not affiliated with the program had no choice but to rely on the advice provided by Manhattan veterans such as Groves and Nichols, the AEC's Lewis Strauss, and

⁴⁸ Patrick J. McGrath points out the prescience of Vannevar Bush who prophesized that no good end would come of scientists who thought themselves competent to dabble in politics. "If they do not look out...they will end up becoming discredited." Bush to F. Alexander Magoun, December 15, 1945, cited in *Scientists, Business, & The State 1890-1960* (Chapel Hill and London: The University of North Carolina Press, 2002), 92.

entrepreneurs such as E.O. Lawrence who, along with Teller who had been working on the idea of a Super from his days in the Manhattan Project, and who competed with Los Alamos for government funding and resources.

Bradbury's plan grew into 1948s *Operation Sandstone*, a three-experiment test of atomic weapons in the Pacific. The history of that testing series reveals the interaction and cooperation between military contractors and officers who promoted experimentation and minimized the dangers of atmospheric testing to achieve their own institutional goals. Planning for the *Operation* itself began in Spring 1947 when Norris Bradbury put in a request to proof test a newer model of atom bomb to establish its viability and to verify theoretical calculations. Following the plan Bradbury described in 1945 to secure peacetime funding for Los Alamos, the request was a second step toward that goal. Thus it was that the H-bomb, something Bradbury prophesied would not be perfected except in the far distant future but that in the short term would guarantee Los Alamos's short-term future, became—officially—a national security imperative.

Bradbury's second step toward achieving the Laboratory's financial future came took place when he approached the General Advisory Committee (GAC) with a request to test new atomic weapons. On April 3, 1947, the GAC took Bradbury's requests for experiments to the AEC. On April 16, Lilienthal discussed the tests with President Truman. On April 21, AEC General Manager Carroll Wilson summarized Los Alamos's request for the Commission. On April 25, Lilienthal gave the MLC a heads-up on the

proposal and asked for an armed forces input on logistics and location. By the end of April, planning for *Operation Sandstone* was underway.⁴⁹

An extracted version of the *Operation Sandstone* Report illustrates the contradictions between what the AEC and the military each hoped to gain from the *Operation*. In his summary for the Commission, Wilson recommended bringing the military on board with a formal letter, establishing the Commission's need for logistical support and reinforcing the importance of the tests for the military. With *Crossroads* a recent memory, Wilson "cautioned"—in the words of the *Sandstone* Report, against "too much fanfare," and, as planning progressed and with negotiations with the Soviets for international control of atomic energy ongoing, the State Department agreed. In a twist on the emphasis that Groves and Manhattan personnel had placed on security and secrecy and a continuation of the self-serving use of secrecy that officers employed during *Crossroads*, armed forces officers complained that at Sandston the requirements had been too onerous. In one instance, authors of the *Sandstone* Report noted that security had come close to jeopardizing the scientific value of the *Sandstone* experiments. According to the *Sandstone* Report's chapter on organization, "test security" had made arranging for personnel from the Naval Research Laboratory and recruitment difficult because it was only possible to inform them that "tests would occur sometime next year (1948) in the Pacific and would require a two to three months absence."⁵⁰ It seems more likely that instead of burdensome "security" regulations, which would seem to have been immaterial

⁴⁹ *Report to the U.S. Atomic Energy Commission on Operation Sandstone Atomic Weapon Proof Tests, Part I. Volume I. Extracted version.* Original Report written 1948, extracted version prepared for Director, Defense Nuclear Agency, January 1, 1981.

⁵⁰ "Organization of Atomic Energy Commission, Proving Ground Group," Section 1.7.4, Participation by Outside Agencies, *Report, Operation Sandstone*, 1-25.

when dealing with scientists at the Naval Research Laboratory who possessed high level security clearances, the difficulty came about because the plans were in such a preliminary phase that the dates for the tests had not yet been established. For the AEC, secrecy and security were not incompatible with the holding of experiments for scientific purposes and were both essential issues of national security. For military officers, less interested in diplomacy as a national security imperative than in military readiness to preserve it, security regulations for *Sandstone* were unnecessarily strict.

As explained in the Report's Summary, while *Sandstone* was in its planning stages, the radioactive hazards caused by Trinity was the reason why the test was planned for the Pacific:

It was already clear that the proof-testing would have to be conducted outside the continental United States. Experience at Trinity with the hazards caused by the fallout of radioactive particles over many hundreds of square miles in the southwestern United States indicated that an isolated site, such as might be found in the Pacific Islands, would be mandatory.⁵¹

At the conclusion of *Sandstone*, the Test Director and Commander of Task Group 7.1, James S. Russell, made recommendations that placed fallout as one of the most important factors to consider for future planning purposes. To protect servicemen from fallout, and apparently with the expectation that Eniwetok would be the site for atomic weapons testing, he recommended not using Eniwetok during the winter, when high and multi-directional winds could be expected that might result in unpredictable fallout patterns, or during the summer, when "stagnant" air would cause local dispersal of fallout and serious contamination. According to Russell, the most satisfactory time for testing was between March 15 and June 1, when the prevailing winds would carry radioactivity

⁵¹ "Section 2, Early Planning, 1.2.4," *Report to the U.S. Atomic Energy Commission on Operation Sandstone Atomic Weapon Proof Tests, Part I, Vol. I, Extracted Version.*

away from troop positions. Russell also noted that radioactive contamination from the three-shot test should not prevent future erection of towers and equipment installation, but its effect on instrumentation and soil sampling should be considered.⁵² In Russell's account, radioactive fallout was the primary reason that experiments were conducted in the Pacific and preventing inadvertent exposure was something that he considered a priority for the *Sandstone* series as well as for future experiments at Eniwetok. And yet, in sections of the same summary Russell lobbied for the creation of a continental site for experimentation.

The contradiction is perhaps best explained with reference to Russell's second in command during *Sandstone*, General John E. Hull, the officers who opposed publicity about the bomb's destructiveness and hazards because such reports were counterproductive to the establishment of a continental site for routine atomic testing. Hull was among those providing input for the report. Portions of Russell's summary align so closely with Hull's goals that his contribution to its content is all but certain. Those segments, coming toward the end of the summary, emphasize the inconvenience and expense of the *Sandstone* tests, complain that secrecy imposed by the AEC and the State Department was too burdensome, raising the expense and difficulty of the operation and, additionally, preventing the tests from being used as a step in Hull's plan to re-educate the public so that atmospheric atomic testing could be taken in stride. Other complaints dealt with the remoteness of the site, which had consumed "considerable costs in funds, ships, aircraft, and personnel." Following that, the author advocated the selection of a continental testing site and reminded the *Report's* readers that he was not alone in

⁵² James S. Russell, "Summary by the Test Director," *Report to the U.S. Atomic Energy Commission on Operation Sandstone Atomic Weapon Proof Tests*, Part 1, Vol. 1, Extracted version, 5.

believing atomic weapons testing should be made more convenient. Perhaps fearing that he had made too strong a case for the difficulties and cost of experimenting with weapons at a site as remote as Eniwetok, he qualified his request for a continental site with language to make sure that Eniwetok *could* be used—and atomic experimentation should continue—despite the fallout hazard that would result and whether a continental site was approved:

Many official and unofficial recommendations have been made by individuals involved in *Operation Sandstone* to secure a proving ground in the continental United States. The Commission staff should participate with the National Military Establishment in investigation directed towards securing a continental test site, but plan on using the Eniwetok location which has been proven a satisfactory location for atomic weapons tests.⁵³

Commentaries in the Sandstone Report by commanders at the *Operation* contain contradictions between the importance of safety and economy. Prior to the test, precautions to prevent radioactive exposure from fallout or local test debris were the reasons the Eniwetok site was used for *Sandstone* and were taken into consideration used to establish guidelines for experiments held there in the future. The health and safety of troops and the hazards of experimentation, so important for the selection of the Pacific site and for experimentation there, were not factored in to the commentary, which immediately follows the discussion about the inconveniences and expense of holding *Sandstone* at the Eniwetok site, aimed at selection of a continental test site. There is no evidence in the *Report* that the *Sandstone* experiments had produced data that showed the hazards of experimentation had been overemphasized previously, or that the experiments there had produced data that had so improved the predictability of radioactive hazards that future experiments with atomic weapons could be performed in such a way that they

⁵³ Russell, "Notes for Guidance in Future Tests," *Report to the U.S. Atomic Energy Commission*, 4-5.

would pose very little, or no, threat because of radioactive fallout. Instead, from the standpoint of Hull and others who lobbied for the selection of a continental test site, those factors were irrelevant when compared with the logistical difficulties of Pacific experimentation. From their perspective, convenience and economy trumped safety. The military's ability to massage away the hazards of atomic weapons experimentation and atmospheric testing, illustrated by the conclusions of the *Sandstone* report and the Final Report of Operation Crossroads, made it easier for Truman to view the atomic program as little more than a political bargaining chip and continental testing of atmospheric weapons as something that could be conducted with a greater measure of safety than had been imagined in the aftermath of Hiroshima.

The important difference between Truman's initial refusal to approve the military's requests for a continental site and his acquiescence in late 1950 was not the threat posed by the Soviets' atom bomb, H-bomb production requirements, or the Korean War, but that Truman's political standing vis-à-vis his congressional opponents had gone into freefall and Truman was anxious to prevent its further deterioration. Truman had already attempted to deal with anticommunist fears and the cries of his critics by issuing three Executive Orders: E.O. 9806 in 1946, to establish a commission to study employee loyalty; E. O. 9835 in 1947 to require loyalty oaths, and 10038 in early 1949 to require oaths of public health personnel.⁵⁴ Whether intended to establish policy or "to send strategic signals to other actors" as one analyst put it; or, whether they were what Richard

⁵⁴ For an analysis of anti-communism during Truman's administration, see Cauter, *The Great Fear*. See also Latham who neglects to assess the implications of the Soviet's first weapon in the U.S. but who covers well the domestic political territory, *The Communist Controversy in Washington*.

E. Neustadt called a “painful last resort,” they had not benefitted Truman politically.⁵⁵ He had also reached out to the JCAE, appointing Gordon Dean after an early 1949 McMahon recommendation, to fill a vacancy on the AEC.⁵⁶ Dean’s appointment was one of the first signs that Truman was willing to compromise Lilienthal and the atomic program to solve his political problems. Lilienthal complained of the political nature of the appointment and of Dean’s relative lack of experience:

the basis of selection for this Commission should be ... the very best qualified man in the United States, regardless of who his friends may be. ... I don’t think anyone would suggest that Gordon Dean, however fine a person and young lawyer he may be, would quite fill that bill.

For Lilienthal, the appointment was “the beginning of a downgrading of the importance of the Commission.”⁵⁷ In May 1949 Lilienthal again came under JCAE attack for his refusal to require AEC fellowship recipients to undergo security clearances. In a closed chamber of the Senate, Lilienthal was accused of giving away scholarship money to Communists or those who “had leanings.” Refusing to back down, Lilienthal wrote that “an important principle was at stake.”⁵⁸ With news of the Soviet’s atomic success, Lilienthal himself had become expendable.

⁵⁵ Kenneth R. Mayer, Kevin Price, “Unilateral Presidential Powers: Significant Executive Orders, 1949-1999” expand on Neustadt’s thesis in *Presidential Power and the Modern Presidents: The politics of leadership from Roosevelt to Reagan* (New York: Free Press, 1990) that Executive Orders are evidence of a president’s weakness and inability to administer as political and administrative tools, to discuss how presidents have used them as administrative organizational tools and as formal policy statements—signifiers of a president’s position and intentions. *Presidential Studies Quarterly* 32 (2002):367-386, esp. 370-373.

⁵⁶ McMahon sponsored Dean for his appointment in early 1949. For the relationship between the two men and the collegial relationship between the JCAE and the AEC after Dean’s ascension to AEC Chairman, see Brian Balogh, *Chain Reaction*, 73-75.

⁵⁷ Lilienthal, *The Atomic Energy Years*, 459-461.

⁵⁸ Lilienthal believed acquiescence would reinforce the “awful dossier system, beyond any necessity or security justification.” *The Atomic Energy Years*, 529.

The news that the Soviets had detonated an atom bomb was not a national security emergency; but, it did provide Truman's opponents with ammunition to use against him. More importantly, it provided Truman with an excuse to abandon Lilienthal who, in championing civilian authority had also been one of the only voices in Truman's circle of advisors who insisted that atomic science be taken on its own terms. Lilienthal had not only stood on principle—that control of the atomic program belonged in civilian hands—but also on the realities of atomic exploitation: that whether for weapons or for peacetime applications, atomic science was a phenomenally hazardous endeavor. The national security imperative to maintain the lead against the Soviets was no more important than it had been since the end of the war. Experiments at *Crossroads* and *Sandstone* provided additional evidence that experimentation posed long term and unavoidable and irremediable dangers because of the resilience and unpredictability of radioactive fallout. The hazardous nature of atmospheric atomic experimentation was something that Truman could not ignore as long as Lilienthal was among those who had influence within the administration.

By 1949 Truman had marginalized Lilienthal to suit his domestic political agenda and open the door to the wholesale militarization of the program and, with it, the downplaying of the risks of experimentation. To understand why military officers and their supporters who sought to control and monopolize the program were able to exploit Lilienthal's fall from grace to such an extent, it is necessary to back up and review how careful they were after *Crossroads* to portray experimentation as a manageable enterprise. One of the ways they did this was by refusing to allow the circulation of information that would have been detrimental to their efforts to experiment with atomic

weapons at will. This involved creating the impression that atomic warfare and the radioactive fallout from an enemy's weapon was such a fearsome possibility that the military should be granted extraordinary and possibly unconstitutional authority while promulgating the contradictory notion that the radioactive fallout produced by experimental detonations was without risk.

Operation Crossroads had provided the military officers with experience in the use of wartime strategies of control during peacetime—something that had not been tried before. In the aftermath of the spectacle, the military took the experience gained in media and inter-governmental relations and used it to enlarge its authority over atomic science from the inside-out. With an assist from the institutional capacity for inter-branch cooperation built into the AEA and the NSA—especially the Joint Chiefs of Staff organization and the Military Liaison Committee—the military controlled the flow of information outside military circles and walked (at least in public) more carefully than the Navy had during *Crossroads* that fine line between generating fear about the bomb and demonstrating mastery over it in public. Behind the scenes, it used that control over information about atomic weapons to generate political support from congressmen for increased military authority in such a way as not to alienate altogether the Truman administration. One aspect of this new strategy was the care the military took within government to present a united front in the interest of benefiting all branches through the militarization of atomic science. Another was the rapid disengagement from the media in the aftermath of *Crossroads*. Examining each of those in turn will illustrate how these strategies worked in practice.

National Security Imperatives

During Integration, military officers held fast to the claim that national security required the nation's atomic resources be devoted to bomb production and that bombs, once made, be turned over to the military. Just as Navy officers had claimed that *Crossroads* was urgently necessary, the JCS self assuredly claimed that it had an urgent need for atom bombs. But, as Bernard Brodie discovered to his horror in 1947 when he interviewed members of the War and Navy Departments about their plans for atom bombs, "virtually nobody in a position of responsibility" had given it much thought. One report from the War Department said that the armed forces needed "a significant number of bombs." In that same report, the "number" was defined as an amount that "would provide an important military capability."⁵⁹ Besides demonstrating how little hard strategic data the military had drawn from *Operation Crossroads*, one of the claimed purposes of the test, Brodie's contemporaneous finding also substantiates the sense that emerges from the from the declassified documentary record: that in the absence of a plan for using atom bombs, the military made what might be called a "guestimate" and then extrapolated up from that to cover unanticipated contingencies. What the JCS did, then, was not only to exaggerate the urgency of their need for weapons, but also the number. On October 29, 1947, for example, Fleet Admiral Leahy supplied the JCS's requirement to Lilienthal. "If a decision is made by competent authority to use atomic bombs, the Joint Chiefs of Staff have determined that for war a military requirement exists for approximately 400 [number handwritten] atomic bombs of destructive power equivalent

⁵⁹ Bernard Brodie, cited in Fred Kaplan, *The Wizards of Armageddon* (Stanford University Press, Stanford, 1991), 34.

to the Nagasaki type bomb.”⁶⁰ In the absence of any authority to make such demands, they stood on “principle.” On November 12, 1947, the MLC sent a letter to the AEC, demanding that weapons be turned over to the military: “As a matter of principle, all atomic weapons now in stockpile and completed weapons and parts thereof, when ready for stockpiling, be delivered to the Armed Forces at the earliest practicable date satisfactory to the Armed forces and the Atomic Energy Commission.”⁶¹ While the requested delivery of weapons was an issue that Lilienthal took up with Truman, who supported Lilienthal in refusing to cede custody of weapons to the military, it was the JCAE that Lilienthal alerted because the military’s extravagant claims would have overstretched the AEC’s budget. The military’s claims were enough to alarm even the conservative JCAE Chairman Bourke Hickenlooper, who, after becoming aware of the situation, went to the Secretary of Defense for clarification of what the military had in mind because the request for 400 bombs represented a “preponderant part of the Commission’s activities and expenditures.”⁶² Although the exact number of bombs that were in the production phase or in the stockpile was one of the most closely guarded secrets during the Cold War, there were far too few in either stage of completion to fulfill the military’s request. Lilienthal, himself, was surprised to learn how few had been

⁶⁰ Leahy, “29 October 1947 Memorandum for Chairman, Atomic Energy Commission: Thru: The Military Liaison Committee from Leahy” RG 218 Records of the U.S. Joint Chiefs of Staff, Central Decimal File 1948-1950, 471.6 (8-15-45) Sec. 7-10; Box No. 223, HM1994.

⁶¹ L.H. Brereton, “Chairman War and Navy Departments Military Liaison Committee to the Atomic Energy Commission to David E. Lilienthal, Chairman Atomic Energy Commission” RG 218, Records of the U.S. Joint Chiefs of Staff, Central Decimal File 1948-1950, 471.6 (8-15-45) Sec. 7-10, Box No. 223, HM1994. For summaries of the Army’s official requests to David E. Lilienthal and lobbying of conservative members of Congress, see Lilienthal, *The Atomic Energy Years*, 121-123, 217-219, 233-234, 348-351, 373-377.

⁶² “1-15-48 B.B. Hickenlooper, Chairman, Joint Committee on Atomic Energy to The Honorable James V. Forrestal, Secretary of Defense” RG 218 Records of the U.S. Joint Chiefs of Staff, Central Decimal File 1948-1950, 471.6 (8-15-45) Sec. 8; Box No. 223

produced and, with Truman's approval, began an immediate program to ramp up production. Still, as one historian has argued, Truman's foreign policy during the early Cold War years was something of a gamble, based as it was on an exaggerated notion of how many bombs were in reserve and how quickly they could be produced.⁶³

The JCS, MLC, and AFSWAP, however, seem to have been less concerned with how many weapons were available, or could be made available, as they were with ensuring that the armed forces would receive all that existed and all that could be made. As time went on, and given Truman's resistance to the military's claimed authority over custody of atomic weapons, and because the JCAE had demonstrated that it was unwilling to completely acquiesce to all the military's requests, cooperation among the branches and the departments created under the AEA and the NSA was essential. That cooperative relationship achieved even greater significance as a mechanism where wartime-like strategies of control, including the use of a national security imperative and deception, were reinforced. In one incident, Nichols, in his capacity as Chief of AFSWAP, wanted clarification from the JCS's General Alfred Gruenther, about the scope of his duties. Gruenther, who had been Eisenhower's Chief of Staff and who would become first Supreme Commander of NATO in Europe, and a man *Time* would praise in 1956 as a "soldier-statesman" who understood "that no alliance is stronger than the will to support it,"⁶⁴ had mentioned within earshot of Nichols that no plans should be made for the use of atomic weapons. When Nichols met with him to tell him that was what he had been doing and to ask if he should stop, Gruenther said "No, it just means that I'm

⁶³ Herken, *The Winning Weapon*, 199-200.

⁶⁴ "The Shield," *Time*, February 6, 1956.

warning you that you are violating a presidential decree.”⁶⁵ Because of his intimacy with the Manhattan Project, the nature of the AEA, and his role in the newly-created Military Establishment, Nichols was undoubtedly aware that what he had been doing went against Truman’s order. Whether Truman was aware of how irrelevant his order had become is impossible to say. It is interesting to consider, however, that while Truman was so keen to prevent communists from subverting the U.S. government, he failed to look over his shoulder at those military officers whose loyalty he took for granted. For Gruenther and Nichols, fealty did not extend beyond the Military Establishment, certainly not up to the Commander-in-Chief. In 1948, it was the alliance among officers seeking control of atomic weapons and resources that mattered.

Officers who remained unwilling to concede that they could not have all the atom bombs that they wanted unrelentingly pressed for expanded production. As head of AFSWAP, Nichols actively promoted dependence on atomic weapons to the JCS and other upper echelon officers. Nichols owed his appointment to his experiences as Groves’s chief assistant on the Manhattan Project, and those experiences seem to have given him a measure of respect among upper echelon officers that he might not have received otherwise. And, in the eyes of the JCS and other upper echelon officers who had, for the most part, little familiarity with anything to do with the Manhattan Project except for its bombs, Nichols’s advice about atom bombs seems to have been taken at face value and little scrutinized. During the first few months of 1949, while officers from all branches testified at House and Senate committee hearings—at least sixty-six appearances in the first half of 1949 alone—Nichols was lobbying the JCS, and General

⁶⁵ Kenneth D. Nichols, Interview, October 5, 1967. Oral History Research Office. Columbia University, 8.

Gruenther in particular, to place more emphasis on atomic weapons.⁶⁶ Nichols recalled that he met with Gruenther to explain that the atomic program needed to be expanded to provide for more weapons. To do so, he “marshal[led] all the arguments for such an expansion” and told him that despite the public impression, “atomic weapons were the cheapest form of defense which you could think of.”⁶⁷ By all accounts, Nichols had no experience with the costs of other forms of defense or, given the no-holds-barred expense policy that governed the Manhattan Project, did he have much information about the costs of atomic weapons. It is impossible to know whether Nichols’s advice carried the weight with Gruenther and other members of the upper echelon that he thought it did, or whether Nichols gave the sort of advice that they wanted to hear. In either case, Groves’s go-to guy became the one that the JCS went to. In March 1949 Nichols reported to the JCS that the AEC and the MLC had reached a compromise on the numbers of weapons to be produced. After Nichols had delivered the agreement for JCS approval, General Gruenther summoned him to appear at a meeting of the JCS. In his telling:

that was the first Joint Chiefs of Staff meeting I ever was present at, and General Eisenhower more or less took me apart, because he said “Here is a paper in which you ask me to sign that we’re satisfied with weapon production. You convinced me a short time ago that we shouldn’t be.”

I told him, “This has been in preparation for about a month, and is the result of negotiations, and is the best we could do.”

He said he would never be satisfied with anything going over his signature which indicated he was satisfied with the present rate of production. He said “Go back and change the letter and come back here in half an hour with a revised version of it,” which I did, and called the Navy representative and the Air Force, and there of course was no argument. So it was re-submitted and changed to where that was the first formal letter

⁶⁶ The number is drawn from House and Senate committee hearings on national defense and excludes testimony given by Service Secretaries or the Secretary of Defense. Richard Burt, Geoffrey Kemp, eds., *Congressional Hearings on American Defense Policy, 1947-1971* (University Press of Kansas for the National Security Education Program, National Security Studies Series: Lawrence KS, 1974), 25-40.

⁶⁷ Nichols Interview, 8-9.

that went from the Department of Defense to the AEC that the military were unhappy with the rate of production and asking for an expansion.⁶⁸

Through force of personality, in this instance Nichols's; through a concept of entitlement based in a national security imperative and the casual way that armed forces officers disregarded civilian leadership or priorities, the Manhattan Project's influence on the peacetime program and on the peacetime military is unmistakable.

Officers making demands for increased production of weapons and for custody of the stockpile did so forthrightly, asserting their needs with little nuance or, as is clear, with little need for establishing a set of strategic requirements, and with none of the deliberation and thoughtfulness that they employed in propagating, as Navy officers did at *Crossroads*, a contradictory set of notions about the dangers of atomic detonations and the safety of experimenting with atomic weapons. Military officers used wartime strategies of control to ensure that elected officials and the American public learned just enough about atom bombs to support increasing defense expenditures but not enough to prevent experimentation that could be used to generate support for the militarization of the program and, through publicity, generate additional political support for military expansion.

Media Manipulation

The last thing that the Joint Chiefs of Staff wanted publicized was that *Operation Crossroads* had backfired—that the radioactivity unleashed by the “Able” and “Baker” bombs in Bikini lagoon proved too much for even the U.S. military to master. Though control of information and reporters' movements had been the norm throughout the planning and implementation of *Operation Crossroads*, the need for managing

⁶⁸ Nichols Interview, 10-12. Nichols was unsure of the exact date, but a memo in Forrestal's *Diary* indicates that Secretary of Defense Forrestal advised the AEC on March 14, 1949.

information became even more important after the maneuver, when military officers realized that the civilian authority of the AEC stood between them and atomic resources and expertise. To overcome that hurdle and to amass and experiment with atom bombs, they needed to find a way to negotiate through or around the AEC and the elected officials that supported its peacetime mission. During this time, the military erected, as Groves had during the war, barriers to the public flow of information about atomic weapons. This change in the way the military used the media occurred as military officers were revising their strategies for gaining control over atomic resources in light of their growing support among Truman's congressional critics and international events. A brief re-visiting of the end of *Crossroads* will provide orientation for what followed. Evidence in the last section showed that the military learned lessons from *Crossroads* about the value of weapons testing to generate favorable publicity that proved useful once continental testing was approved in the early 1950s. After *Crossroads* and the passage of the AEA, the JCS became more involved in the process of coordinating publicity about atomic weapons in a deliberate move to prevent the inadvertent release of information within or without government circles that might have jeopardized the military's ability to manage the atomic weapons testing program in the future.

One way this was accomplished was through a review process whereby the JCS followed up on the AEC's clearance for publication process. Where the AEC passed judgment on what and what could not be published about atomic weapons based, in part, upon what had already been released through the Smyth Report and other sources, as well as on those technical matters that could be militarily useful, the JCS took an umbrella approach to its review, evaluating what it considered to be the national security

implications of a proposed article or manuscript. In an outgrowth of the Manhattan Project's policies for publication, and before passage of the NSA, authors submitted articles and manuscripts to the AEC for review prior to publication to prevent the release of classified information. After passage of the NSA, the AEC forwarded material that it had already cleared to the JCS for its impressions and as a safeguard against the possibility that AEC personnel might unintentionally approve the release of information that could have jeopardized national security. In theory, this practice made perfect sense from a national security standpoint. In practice, however, it gave the JCS an opportunity to defend not only national security, but its own interests in (a) presenting a uniform position on behalf of the armed forces and atomic weapons, and (b) preventing material that operated against that uniform position from appearing in print. An example of the way that the JCS used its authority to restrict publication as a means of subduing and reconciling competition and animosity between the branches occurred in mid-December 1948. Rear Admiral Parsons, who served under Admiral King, the former leader of the ordnance division at Manhattan who had overseen the fabrication of the Hiroshima and Nagasaki bombs as well as the modifications and arrangements for delivery, wrote an article about the atom bomb and its effects for the *Saturday Evening Post*. In it, Parsons sought to dispel fears about atom bombs and their effects, to explain that the weapon was not altogether different from other weapons of war, and that should war break out, it would be only one of many resources put forward to win battles. Parsons received clearance to publish his article from the Secretary of Defense's Office of Public Information as well as the AEC and completed his final version on December 12. Something in the article, however, drew the attention of Forrestal, then Secretary of

Defense, and on December 14, he directed that a memo be attached to the Parson's article and had the package delivered to Major General Gruenther, then Chief of the JCS, asking it to be re-reviewed "for clearance on policy" prior to that week's *Post* deadline. The JCS blocked Parson's article until well after the deadline, declassifying it only in 1976.⁶⁹

The history of military control of atomic information in the months following *Crossroads* establishes that, for military officers, the primary obstacle to routine military experimentation was not the hazards of experimentation, but the psychological mindset of those who opposed it. It was not hazards, but "hysteria," that was the problem. The term gained currency among the upper echelon during Consolidation, some of whom proposed, as had General J.E. Hull, that the public needed to be re-educated if the military were to be allowed to test weapons routinely. One way to begin doing this was to withdraw from the limelight and to downplay the dangers of atomic experimentation. In 1948, while plans were underway for *Sandstone*, another round of atomic testing in the Pacific, Hull agreed with the AEC that the tests should be held secretly, but did so for a different reason than national security. Hull argued that it was best to abstain from media coverage because Americans' fear of atom bombs had been inflamed to such an extent that they were counterproductive to the military's goal of achieving approval for routine experimentation at a convenient, continental, testing site. The serialization and publication of John Hersey's *Hiroshima* had given Americans a better picture of the tragedy of atomic warfare and memories of the media coverage of *Crossroads* and David Bradley's recently-published *No Place to Hide* had given Americans a better sense of what the consequences of peacetime military experimentation might be. Hull thought it

⁶⁹ Office of the Secretary of Defense to Maj. Gen. Gruenther, 12-14-1947. RG 218, Records of the U.S. Joint Chiefs of Staff, CCS 471.6 (8-15-45) Sec. 13.

best to let those memories to fade in the interests of achieving a larger goal. He said that the policy of citing radiation hazards to justify the enormous expense of Pacific testing had been counterproductive: it had engendered what he called a “hysterical ... alarmist complex” that effectively prohibited the creation of a continental testing site. De-emphasizing the health risks, however, would accustom the public to “the possibility of an atomic explosion within ... a hundred or so miles of their homes” and the Army could then, with less expense and inconvenience, test weapons in the United States.⁷⁰ Hull carried the same line of argument into the summary that he wrote as Commander of Joint Task Force Seven following the *Sandstone* tests. There, he skirted the hazards of experimentation, reinforced the sense of armed forces’ officers that the AEC’s purpose was to produce weapons, and blamed the AEC’s demands for absolute secrecy for the expense and inconvenience incurred with Pacific testing.

One of the most serious responsibilities and one which posed some of the more difficult problems was the requirement for secrecy and security. It is hoped that full scale experiments with atomic weapons may become routine and commonplace. Much of the difficulty in the 1948 program lay in the exacting requirement for secrecy which was posed by fear of international reaction, which might be caused by focusing attention upon the fact that the United States was embarked on a program to develop (sic) and produce atomic weapons. Quite patently in the Atomic Energy Act of 1946 the Commission is directed to do just that. Yet, within the Commission itself, to a greater extent in the State Department, and to some extent in the National Military Establishment, there was considerable reluctance to conduct proof-testing under any but the most secret conditions.⁷¹

⁷⁰ Lieutenant General L.E. Hull, 1948; cited in International Physicians for the Prevention of Nuclear War and the Institute for Energy and Environmental Research, *Radioactive Heaven and Earth* (New York: Apex Press, 1991), 52.

⁷¹ *Report to the U.S. Atomic Energy Commission on Operation Sandstone Atomic Weapon Proof Tests, Part I. Volume I. Extracted version.* Report written 1948, extracted version prepared for Director, Defense Nuclear Agency, January 1, 1981.

The pull back from publicity during that time also made domestic political sense for military officers who were already benefiting from the work their congressional supporters were doing to whittle away at Truman by attacking the civilian administration of the AEC, fueling anti-communism and ruthlessly attacking the loyalty of military nemesis Lilienthal. Changes in public opinion reflected in polls taken in 1946 and in 1949 suggest that fear of communism was increasing and that the public becoming more willing to combat communism, through the use of force, if necessary. Additionally, 70 percent of Americans had come to disapprove of the “no first strike” policy about atom bombs. It is impossible to re-capture all of the forces that went into that change of heart, but the military’s “re-education” campaign was certainly among them.⁷²

But the military had been engaged in “re-educating” the public long before Hull articulated his plan, and at least since Forrestal had begun promulgating anti-Soviet treatises and submitting them to media contacts, and since Groves’s hand-picked *New York Times* reporter began publishing the official Manhattan history. Controlling reporters’ movements during *Crossroads* was one way that that the military officers, particularly the Navy brass, had contrived to shape the public’s thinking about atom bombs and experimentation. After it was over, Army and Navy officers continued to mold what the public learned about it, downplaying the extent of radioactive contamination that had caused the cancellation of a third detonation and the evacuation of Bikini. And, after the passage of the NSA, the JCS and the MLC blocked the release of any information that might have jeopardized the military’s chances of securing all the authority it wanted over atomic weapons and experimentation.

⁷² Stephen J. Whitfield, *The Culture of the Cold War*, 2nd ed. (Baltimore, London: The Johns Hopkins University Press, 1996), 5.

The following discussion demonstrates that the knowledge about radioactive hazards was well developed as a result of investigation after the bombings in Japan and at Bikini, that the military suppressed and sometimes molded that information to suit its own interests and ambitions for atomic science, and suggests that by actively manipulating the media and selectively restricting the flow of information about radioactive hazards, the military was at least partly responsible for the philosophical shift in the approach to warfare that prompted 70 percent of Americans polled to approve of a first strike policy. More importantly, however, it helps to explain why Truman ultimately bargained away his refusal to permit continental testing and approved the creation of the Nevada Proving Ground and why there was no public or political outcry against that decision.

In at least one instance, the dis/mis-information campaign was so effective that some officers may themselves have come to believe that atom bombs, at least those that would be detonated by the U.S., were relatively insignificant. During a 1949 budget fight, Navy officers demanded to appear before the House Armed Services Committee to argue for more resources and to combat the notion embedded in Secretary of Defense Louis Johnson's budgetary requests that bombers and atom bombs provided an economic solution to escalating military budgets. In an appeal aimed at diminishing the Air Force's importance by discrediting strategic air initiatives and indiscriminate bombing, Navy Commander Eugene Tatum claimed that, "contrary to popular opinion," the atom bomb was not very efficient at wholesale destruction. In fact, he continued,

You could stand in the open end of the north-south runway at Washington National Airport, with no more protection than the clothes you now have

on, and have an atom bomb explode at the other end of the runway without serious injury to you.⁷³

Tatum's primary goal was to discount the effectiveness of the Air Force and its bombers while lobbying for additional resources for the Navy's carriers and air wing, and thus it seems reasonable to believe those present and those who read about his testimony in the newspapers took that goal into account when deciding about the credibility of his hyperbole. Nevertheless, it is more reasonable to expect that the committee and the public took his statements about the effects of atom bomb detonations seriously than it is to assume that they discounted them entirely. Tatum was, after all, a high ranking Navy officer whose testimony carried the weight of his rank and was given under the authority of Admiral Radford, Commander of the Pacific Fleet. Moreover, with so much money having been spent on the *Crossroads* and *Sandstone* experiments, it is likely that committee members and that segment of the public who read or heard about his testimony considered that his claims were based, at least in part, on information gleaned from those atomic experiments carried out in the Pacific.

As with other information that bore on the consequences of atom bomb detonations, the press, and thus the public, had no way of knowing that within the administration, Tatum's understanding about atom bomb effects was being called "laughable." In a letter to Clark Clifford, the Secretary of the Air Force, W. Stuart Symington, passed on a statement from a source he called an "intelligent man" that portrayed Radford as a "brilliant" but dangerous renegade. According to the source, Radford possessed a "pigheaded insistence upon the rightness of his own intuition," a trait that caused him to reject "professional help" in preparation for the hearings and, as a

⁷³ William S. White, "Threats to Security in Defense Inquiry Feared by Johnson," *New York Times*, October 11, 1949. 1, 29. Quote from 29.

result, had culminated in the “laughable and devastating episode” about the “A-bomb on the National Airport runway.” The letter made its way to Clark Clifford and to Secretary of Defense Johnson, who indicated (according to Symington) that he would be forwarding it to President Truman.⁷⁴ There is no indication that the administration took more than passing note of Tatum’s misinformed opinion about the atom bomb. And, although there was information about the bomb that the public would have been able to access that would have providing something of a corrective to Tatum’s deceptive statement, no direct refutation of it emerged from an equally authoritative source. Instead, within the administration and among the other branches, the testimony became subsumed as a peripheral aspect of the defense budget debate and Tatum’s misguided testimony stood. For officers and their supporters, the passive response to Tatum’s testimony complemented an ongoing and active campaign to shape perceptions about atomic weapons and experimentation.

The notion that atom bombs might not be as dangerous as the public had once believed was one that the military had cultivated since the immediate postwar period. One way the military did this was through the official history of *Operation Crossroads*. It reinforced the distorted image that emerged from the carefully controlled press coverage of *Crossroads*, containing primarily information that had already been revealed through press reports and media coverage of the event. What was new was *Bombs at Bikini*, the official history of the *Operation* and its aftermath.⁷⁵ But, in relating the effects of radioactive contamination, the author did no more than meet the military’s objective to

⁷⁴ November 2, 1949, Symington to Clifford, Folder AE-Lilienthal, Box No. 1, Papers of Clark M. Clifford, HST Library.

⁷⁵ W. A. Shurcliff, *Bombs at Bikini*.

walk the same fine line between generating fear and building confidence in military ingenuity. He emphasized those things that the military had correctly anticipated and minimally or vaguely addressed aspects of the *Operation* that had caught the military by surprise, fostering the notion that as far as the maneuvers and atomic weapons, the military had matters well in hand. For instance, the Navy had anticipated dangerous levels of radioactivity would be present in the lagoon after the shots, and so supplied test animals with abundant food and water. Such conscientious attention to detail meant that supplies had not been depleted by the time the vessels were safe enough to be re-boarded. And, as anticipated, signaled by the author with an “of course,” the animals had “suffered very little from shock ... and none from heat or light.” Also, as had been expected, “radioactivity took a heavy toll. Some ... animals died ... even before the ships were reboarded. Many others died later.” Among the symptoms of radiation sickness were “general apathy, weakness, and tendency to develop secondary infections. But lest that information be too disturbing, the author provided reassuring upside: “it should be remembered that radiation sickness is essentially painless.” To soothe the 41 percent of Americans who had opposed the use of animals at *Crossroads*, he reminded readers that animals do not suffer from “mental anguish” and so they suffered minimally: it was “a painless death.” These animals, he said to readers who would likely extrapolate information because of their own concerns about radioactive warfare, had provided “knowledge as to what dangers might confront men and what steps would minimize the injury.” The confession that the extent of radiation damage had been greater than expected was something that had already become general knowledge, and may have been

received as less important than the knowledge that, well, if atomic warfare did break out, one could at least be certain that they would not face a painful death.⁷⁶

The military's interest in telling its own story about *Crossroads* went hand-in-hand with its concern to suppress information that might have jeopardized future weapons experiments. A year after his experiences at *Crossroads*, Stafford Warren wrote home to his wife Viola while on a trip to Washington, D.C. In a self-professed "tizzy" he explained that he had been denied permission to publish the studies he had prepared from *Crossroads* data that evaluated the unpredictability of downwind radioactive contamination. They were, "too scary to publish now and they agreed to a panel of psychologists, psychiatrists, and social scientists with war experience to study this problem so that the info could be put out without causing mass hysteria." Warren continued: "There is a great deal more interest in the east now than ever before and it has the Navy and Army worried that the 'hysteria' will go in the wrong direction."⁷⁷ The explanation that Warren received was disingenuous at best. At that time, the AEC had been seated for several months and was already in the process of educating the public about the peaceful uses of atomic energy. Moreover, opinion polls offer nothing to suggest that Americans were so anxious about atomic warfare that Warren's article about fallout would have provoked anything even remotely close to "mass hysteria" in the public sphere. Given the record, it seems that if "hysteria" was a problem at all, it was confined to those circles of the defense establishment that feared they would be restricted

⁷⁶ W. A. Shurcliff, *Bombs at Bikini*, 167-171. At least part of the cost of Operation Crossroads would not come to light until the 1980s, when the military admitted that servicemen may have suffered injuries during the maneuvers. Radiation Exposed Veterans Compensation Act of 1988, 38 USC. 101. According to a Gallup poll conducted March 27, 1946, forty-one percent of those polled objected to experimenting on animals at Bikini. Forty-four percent approved. Gallup poll No.368.

⁷⁷ Stafford Warren to Viola Warren, June 14, 1947, Box 1, Viola Warren MSS, UCLA.

from future weapons experiments and thus prevented from using atomic science as an instrument for political gain. As David Bradley recounted in *No Place to Hide*, a combination of secrecy and apathy had made the atom bomb an easy problem to ignore. In his words, the “Bomb had failed to impress more than a few congenital pessimists with the full scope of its lethal potential.”⁷⁸ Warren’s article might have disturbed the apparent ambivalence of the public, an ambivalence that played into the ambitions of the military who selectively restricted information flows to foster the sense that atom bombs were little different than other types of weapons. More important from the military’s standpoint at that time, however, would have been the effect that Warren’s article would have had on elected officials, and especially Truman, who had the final say over the use of atomic material for experimentation and who had refused the military’s demands for a continental proving ground. This scenario is even more likely given that the JCS was aware of Truman’s visceral response to the contents of the Evaluation Report. As important as the reasons why the military refused to allow Warren to publish his article was the effect that that decision had on the future of atomic experimentation.

Warren’s article included data demonstrating that radioactive fallout was a fickle phenomenon, unpredictable enough to render extrapolations based on notions of uniform dispersal meaningless. Predictions of what might constitute a safe experiment from a hazardous one was thus not something that Warren believed scientists, let alone military officers, could predict with any degree of accuracy. If published, Warren’s findings would have made it more difficult for military officers and their supporters to secure authority for future testing and for control of atomic resources. It would, a little bit like

⁷⁸ Bradley, *No Place to Hide*, 164-165.

the radioactive fallout that Warren wrote about, “go the wrong way” – into Congress and the White House.

Prevented from publishing his article, Warren took a grass roots approach not unlike Lilienthal’s and used public speaking engagements as educational forums. Prior to assuming his position as Dean of UCLA’s medical school, Warren spoke to a variety of clubs and civic organizations. By his own estimate, he had delivered over fifty talks by the end of May 1947.⁷⁹ Warren, like Lilienthal, kept whatever misgivings he might have had about the military and its goals for atomic science to himself. But, unlike some members of the newly-seated AEC who were interested in fostering support for peaceful development and educated public engagement, Warren was able to draw on personal experience in an effort to educate his listeners not only about the potential peaceful uses of atomic energy, but also with informed knowledge about what the use of atomic weapons—whether as instruments of war or in experimental circumstances—could do to people, animals, and the environment. In a draft of one such talk, Warren made explicit in a paragraph that he later crossed out that at least one of his goals was to prevent future weapons experimentation. Referring to Trinity and *Crossroads*, Warren said

I am thoroughly convinced ... perfectly satisfied ... that there are not any land masses, certainly not on the North American continent, large enough to run a test safely. Well, we got by the Alamogordo test all right. We were shot with luck and if we had to do another one we might not be so fortunate. We might injure a large group of people.⁸⁰

⁷⁹ “Address given before Optimus Club at Biltmore Hotel” May 29, 1947, 26. Stafford Warren mss, box 285, folder 2.

⁸⁰ Stafford L. Warren, “Seventy-ninth Charter Anniversary Address, The Atom Bomb,” San Francisco Campus, March 1947, 13. Stafford Warren mss. Box 285, folder 2.

Warren provided his audiences with precisely the sort of vivid explanation of the effects of atom bombings and the consequences of radioactive contamination that was missing from the alarming, but nonetheless measured and depersonalized critique contained in the Final Report and in the *Operation*'s official history. That said, Warren was no maverick. He remained mindful of security restrictions and edited drafts of his writing and comments made about the work of others reveals that he remained interested in preventing negative publicity about Manhattan or *Crossroads*.⁸¹ By applying what he had learned at Crossroads about the need for practical examples to educate non-specialists, Warren illustrated his talks with slides and footage of *Crossroads* that the Navy had discarded; demonstrated the inconsistencies of detonations and radioactive fallout by breaking the ubiquitous biscuits or crackers served with meals during meetings and pointing out the variety in the size and dispersal of the crumbs; and delivered poignant stories of his experiences in Japan, all in an effort to convince his audiences that atomic experimentation was a hazardous business under even ideal situations and that atomic warfare must be avoided at all costs.⁸² Warren remained hopeful that knowledge would mobilize the electorate to press for peaceful applications for atomic energy: "Can we not apply the lessons taught us ... [to] ... know more fully what disease is and ... alleviate, if not eventually eliminate it," and encouraged his audiences to support

⁸¹ For an example, see an article produced by the Eastman Kodak Company, "Photographic Aspects of the Bikini Tests" where Warren struck out the mention of removing "the surface layer of a man's hands because he had neglected to wear gloves." and wrote "bad pub. rel." in the margin and, in the same article, crossed out "At Bikini it will not be safe to eat the coconuts or shellfish for perhaps two or three hundred years" and remarked alongside "rather poor public relations." Text and draft copy of "Photographic Aspects of the Bikini Tests" attached to February 4, 1947 letter to Mr. Hubert Scheffy, Sales Service Division, Eastman Kodak Company, Stafford Warren mss, box 285, folder 2.

⁸² Warren's discussion of crumbs in a talk delivered in April 1947, to the American Legion was typical: "Now I happened to drop a lot of crumbs, most of them you couldn't see—they were too fine, and those could represent the radiation that is given off when this split occurs. It's the extra energy that's left over." 6. Stafford Warren mss, box 285, folder w.

diplomatic solutions or United Nations control over atomic energy to lessen the chances of atomic warfare.⁸³ “Instead of pouring so much money into inventing more efficient ways to kill people. ... Let us have peace and get about our peaceful affairs.”⁸⁴ After painting a disturbing scenario of an atomic Armageddon for one audience, Warren concluded hopefully that “if we can settle this matter of war ... then we’ve got a wonderful opportunity to advance knowledge particularly in the medical field.”⁸⁵ Though the optimism that Warren repeatedly expressed through 1947-1948 about the possibilities of regulating atomic weapons and the creation of an international organization to control atomic material might seem in hindsight to have been overly hopeful given the conventional portrayal of this period as one of rapidly mounting antagonisms, he was not engaging in groundless wishful thinking. As one historian pointed out, those enmeshed in diplomatic circles at the time remained hopeful that negotiations between the U.S. and the U.S.S.R. would be successful.⁸⁶ Warren’s talks also provide a means of evaluating the differences between the official version of *Operation Crossroads*—information approved by military officers for release—and some of the facts as told later by Warren, the Operation’s Chief Radiological Safety Officer.

⁸³ Stafford Warren, “What Will Developments in Atomic Energy Mean to Medicine,” 9. Stafford Warren mss, box 285, folder 2, 9.

⁸⁴ See “Advance Text of an address” delivered October 29, 1946, 6. Stafford Warren mss, box 285, folder 2.

⁸⁵ Stafford Warren, “The Atom Bomb” Seventy-Ninth Anniversary Address, San Francisco Campus, March 1947, 24.

⁸⁶ As Carrington Rhydderch Ward points out, “In a more jaundiced age ... and a jaundiced view of American or Soviet diplomatic rhetoric, it is striking to recover evidence of the hopes and significance attributed to the security council and its debates.” “The Scholar-Diplomats: American Foreign Policy Scholars in Power, 1948-1970,” Vol. 1, (Ph.D. Dissertation, University of Chicago, 2007), 126.

At Bikini, as Warren later explained, recognition of the hazards of radioactivity varied depending on education and expertise but it took material evidence to impress anyone other than scientists or technicians. Geiger counters provided the technicians and scientists with information about radioactivity's insidiousness; admirals gained a sense of the consequences of that insidiousness when shown a fish photographically reproduce itself or upon learning that a pair of under shorts, worn three weeks after the "Baker" blast by a man who boarded a ship anchored a mile and a half from the location of the detonation that had been, as Warren said, "beautifully laundered," were condemned because they still contained enough radioactive material to cause skin damage.⁸⁷ For ordinary sailors, evidence of radioactive hazard appeared in the form of exposed and dying fish. They watched as little reef fishes began turning up on the surface of the ocean looking "weak and wobbly" two weeks after the bomb blast, a fate that befell the larger predators, barracuda and basses, in another two weeks.⁸⁸ In comparison, the official account emphasized that fish had been killed because of the blast, but few had died because of radioactivity. "A large number of fish were killed in the corner of the lagoon where the explosion occurred. Elsewhere in the lagoon the fish survived, and outside the atoll the fish were practically unaffected by either the explosion or the subsequent radiological effects." More might have been learned, the author admitted, but

⁸⁷ Stafford Warren, "The Lesson of Bikini" Text of address delivered at the third session of the Annual New York Herald Tribune Forum on Current Problems and broadcast over American Broadcasting Company station W J Z, October 29, 1946, 4. Stafford Warren mss, 285, folder 2.

⁸⁸ Stafford Warren, "The Atom Bomb", Seventy-ninth Charter Anniversary Address, San Francisco Campus, delivered March, 1947, 17. Stafford Warren mss., 285, folder 2.

“unfortunately” that knowledge was lost when the ship carrying 40,000 fish from the atoll were nearly all lost when it “went aground” south of San Francisco on its return voyage.⁸⁹

Unlike the shallow, sometimes optimistic, tone of the official history of *Crossroads* and the conclusions of the Evaluation Report, which lost some of their potency in the incomprehensibility of the magnitude of the portended disasters and became sterile on the written page, Warren brought the hazards of atomic weapons to life. He drew his examples from personal experience and presented them in a way that made them meaningful for his audiences. Speaking to scientific professionals, Warren compared the detonation of an atom bomb to Krakatoa, a 1883 volcanic eruption that they likely would have learned about in science class, reminding them that volcanic residue fell as far away as Norway and the Cape of Good Hope and explaining that the Trinity cloud’s height was similar. This comparison allowed his audience to imagine that under similar atmospheric circumstances, the dispersal of Trinity’s radioactive residue might have traveled as far as ash from Krakatoa. Warren explained that Trinity did not darken skies and color sunsets because fallout was not as widely dispersed. Yet, that “small bomb” was enough to cause cattle “50 to 100 miles away in Alamogordo” to lose their hair. The fallout proved to be as unpredictable in its dispersal as it was hazardous: “they happened to be in a place just right for the fallout. It was an accident that they didn’t have more; it was an accident that it happened to hit right there. It could have hit anywhere, but that is the kind of thing I’m talking about.”⁹⁰ Warren helped that audience understand the effects of experimentally produced radioactivity across space and time,

⁸⁹ Shurcliff, *Bombs at Bikini*, 163.

⁹⁰ Stafford Warren, “The Atom Bomb” March 1947, 23-24. Stafford Warren mss.

and used an example from Nagasaki to engender a sense within his audience of the helplessness felt by medical professionals left to deal with the aftermath of an atomic attack. At the medical school in Nagasaki, a building that was designed to be earthquake proof by American architects and that Warren said “wasn’t too different from this or any other medical school,” only five survived out of the faculty of fifty, and three died soon thereafter. The survivors had “no memory of what actually went on; they just remember that something happened. There was a flash, and several hours later they came to themselves working on patients in front of the [destroyed] hospital.” Warren wanted the people in his audience to gain a sense of what an atom bomb meant on the personal level. On his first visit to the ruined medical school, Warren said, at the top of the stairs lie

the charred remains of what looked like either a Japanese girl technician or a nurse or a woman medical student. ... I passed her body for the next three days, and on the fourth day it was replaced by a little pile of plaster with some Japanese writing on it, a little gravestick with her name and Japanese characters indicating her family origin and some other things (the interpreter wouldn’t completely translate them for me), and then a little potted plant with two narcissus flowers.⁹¹

What becomes clear from this period in the nation’s atomic history is that military officers prevented the dissemination of information that Truman and members of the JCAE could have used to inform themselves more thoroughly of the more dangerous aspects of atmospheric atomic weapons experiments. It cannot be known whether or to what extent Truman or congressional leaders would have taken note of the types of vivid explanations Warren provided to attendees at his talks, or whether they would have been influenced by that same information. What we do know is that the military, and for reasons that they admitted were anchored in their effort to prevent a “hysterical” reaction and that had nothing to do with national security, refused to allow Warren to publish his

⁹¹ Stafford Warren, “The Atom Bomb,” 7-8.

article about fallout. What is also known is that military officers made repeated requests to the president to approve a continental testing site, a location that would allow the military to test weapons at far less expense and inconvenience than the Pacific Proving Ground that they employed for the 1948 *Sandstone* atmospheric tests. For his part, Truman—routinely reminded of the hazards of experimentation by Lilienthal—refused throughout the 1940s to grant the military’s request. All of this supports the assumption that it was not the general public, but Truman and other elected officials, that the military was thinking of when it rejected Warren’s request to publish his article. And, although the timing of Truman’s decisions to embark upon a program for H-bomb development and his subsequent approval for the establishment of the Nevada Proving Ground, coming as they did on the heels of the Soviet’s first atomic detonation and with Communism gaining ground abroad, has left the impression that they were national security imperatives, those decisions were politically motivated ones and were easier to reach because military officers and their supporters had been so successful in preventing Warren, and others, from explaining the hazards of atomic weapons and atomic experimentation.

PART TWO
ATOMIC GOVERNANCE

CHAPTER SEVEN

POLITICAL CALCULATIONS

By early 1949, the military and its supporters had nearly extinguished meaningful civilian control over the atomic program. Officers had parlayed their partnership with influential members of Congress into increased appropriations and influence in the public sphere while increasing their power base behind the scenes. While exploiting international crises such as the Berlin Blockade, military officers had benefited from the organizational acumen of Manhattan's old guard and the friendship and support of Forrestal's acolyte and AEC Commissioner, Lewis Strauss. At every stage in this process, wartime expertise and strategies of control gave military officers an edge against those who sought to limit the military's influence, but especially against Lilienthal and others who believed that the atomic program required meaningful civilian control and who worked to restrain military influence. Officers and their supporters had used national security arguments to commandeer the bulk of atomic resources for weapons development and employed atomic secrecy to control what elected officials and the public learned about radioactive hazards and the dangers of experimentation. Thus, they had not only ensured that they would receive an enlarging stockpile of weapons for experimental—and demonstration—purposes, but had also reduced the chances that safety would be used as a reason to prohibit or limit future experiments. The militarization of the program was an incremental process of increasing authority and autonomy. The military and its supporters steadily increased their influence over the administration as Truman acquiesced to the upper echelon and their congressional supporters. This steadily winnowed the administration's options to those that the military favored. Militarization operated both up

and down the chain of command: even as it affected executive-level decision- and policy-making, it influenced the operational conduct of atmospheric weapons testing. One sign that militarization of the program had affected the Truman administration's ability to govern was Truman's decision to develop an H-bomb—a choice that in hindsight seems to have been unavoidable. At the time, however, some people, including members of the upper echelon, advisors with the State Department, and AEC scientists, believed it made little diplomatic, strategic, or economic sense.

The Soviets' first successful atom bomb detonation in August 1949, "Joe One," provided military officers and their supporters with an additional reason to discredit the Truman administration and to argue for additional increases in military budgets, the atomic arsenal, and authority. Truman's response to the Soviets accomplishment came in January 1950 with a decision that the U.S. would embark on developing The Super—a hydrogen bomb. From a Cold War perspective, and to participants as well, the event appears to have been a transformative moment in post-war history and domestic security policy, one that led to an escalation of atomic weapons development and locked the U.S. and U.S.S.R. into a costly and drawn out arms race.¹ Truman had no choice except to respond; but he could have chosen options other than an H-bomb. Two precipitating factors help to explain why he discarded more moderate responses to the Soviets'

¹ Rosenberg, "Atomic Strategy and the Hydrogen Bomb Decision," 63. Herbert York, an eminent scientist and first Director of the Lawrence Livermore Laboratory, explains that the decision to develop an H-bomb combined with Truman's policy re-evaluation, the business of atomic science was "in the hands of the generals and the technologists, *Race to Oblivion: A Participant's View of the Arms Race* (New York: Simon & Schuster, 1970), 38. For the military's perspective, see Rosenberg, "The Origins of Overkill," 3-71. At least one analyst argued that because the decision dealt solely with the issue of embarking on a program to determine whether the H-bomb *could* be made, it was of little consequence. Warner R. Schilling's non-critical approach to the bureaucratic positions of the AEC, the GAC, the State Department, the NSC and Truman administration advisors leading up to the decision and the decision itself and found that it was designed to do little more than satisfy those pushing for development while preventing the wholesale alienation of those opposed to it. It was, he wrote, of "minimal character." (37) "The H-Bomb Decision: How to Decide without Actually Choosing," *Political Science Quarterly* 76 (1961): 24-46, esp. 32-38,

success: (a) Truman's desire to recover lost political influence; and, (b) the power military officers and Manhattan veterans had amassed to steer executive policymaking.

The decision was, in fact, yet another in the string of concessions that Truman made to the military and its congressional supporters in efforts to revive his political standing. The circumstances surrounding the H-bomb decision demonstrate that Truman had already ceded so much authority to the upper echelon that they were able to set the conditions under which it could be made. Months before he issued his announcement and, before the Soviets detonated Joe One, Manhattan veterans and their supporters inside the administration and in the private sector were actively organizing support for an H-bomb program. And more generally, by the Spring of 1949, the military and its supporters were leveraging their substantial political clout in Congress and among administration advisors to shape national security policy. In this analysis, the H-bomb decision was not indicative of a move toward militarization, but evidence that it had already occurred. By the time Truman made his decision, Atomic Governance—a shift in constitutional prerogatives brought about by the militarization of the nation's atomic program and an expansion of military influence that limited the ability of elected officials to exercise their constitutional prerogatives—had already taken root. Truman's decision to proceed with H-bomb development allowed it to branch out.

The H-bomb decision was part of the trajectory of increasing militarization and instrumental use of the program for a range of domestic political and institutional purposes that began in the aftermath of World War II. Institutionally, the decision can be traced back to Norris Bradbury who viewed H-bomb development as a lifeline to continued military support for the Los Alamos Lab, through the encouragement that the

Los Alamos initiative gave to officers such as General Hull who sought to use routine experimentation as a vehicle for increased military appropriations and authority, and to the *Sandstone* series of atmospheric tests. As a manifestation of the upper echelon's organizational capacity, it can also be traced back to the integration of Manhattan veterans into the defense establishment and into the AEC, where they wielded influence over JCS decision-making and helped AEC Commissioner Strauss promote Forrestal's vision for a mobilized America.² Truman's H-bomb announcement did not provoke mobilization. Instead, it lent authorizational force to the pattern of expansion and militarization of the atomic program that began at war's end and that gathered steam in early 1949, when Truman began bargaining away executive authority to placate the military and its congressional supporters in an effort to preserve and perhaps to generate political capital for a future that still included a possible bid for re-election in 1952.³ From this perspective, the announcement amounted to a ceremonial transfer of power over the atomic program and its resources to the military and its supporters, making official (and public) a transfer that had for all practical purposes occurred well before the detonation of "Joe One."

It was, nonetheless, critical. The announcement gave the military and their supporters the green light to: (a) wield publicly the authority over atomic science that they had administratively achieved after passage of the AEA and the NSA; (b) justify the

² For a summary of Strauss's undermining of Lilienthal and that way that the military point of view came to undermine democratic principles, see Patrick J. McGrath, *Scientists, Business, & The State, 1890-1960* (Chapel Hill and London: The University of North Carolina Press, 2002), 119-125.

³ As of January 1952, Truman was reportedly still undecided about whether he would make a bid for the presidency. For a discussion of Truman's subsequent decision not to run and his support for the candidacy of Governor Adlai Stevenson, see the Oral History Interview of Stevenson's Administrative Assistant, William McCormick Blair, Jr., conducted June 22, 1970 (opened January 1972), 3. Oral History Interviews, Harry S. Truman Presidential Library. For the timing of Truman's decision, see also George Ball's article, "Flaming Arrows to the Sky," *Atlantic Monthly*, March 1966, referenced in the Blair Interview.

routine exploitation of the atomic program for domestic political purposes, and (c) use their policymaking influence to increase military authority and autonomy to even higher levels. Another consequence of the decision was Lilienthal's resignation and the solidification of a partnership between the Chairman Gordon Dean's AEC and the military. The primacy of military-specific goals to the AEC meant that it abandoned its duty as a civilian guardian of atomic science, becoming wholly supportive and protective of the military's interests against the suppression of military autonomy over atomic science and against any limitation on appropriations or experimentation. During the Truman administration, the AEC/military partnership promoted the creation of a continental weapons testing facility in Nevada and fostered excessively hazardous testing practices in Nevada and in the Pacific. During the Eisenhower administration, the partnership grew stronger as Lewis Strauss, appointed by Eisenhower to serve as Chairman of the AEC on June 24, 1953, used his cabinet level position to promote military experimentation against diplomatic forces that might have limited it. Strauss undermined diplomacy by interfering with negotiators working to end, or slow, the nuclear arms race; purposefully prolonging atmospheric weapons experimentation and increasing its economic and environmental costs.

The centrality of atmospheric nuclear testing to this process and the conflation of military strategy with national policy that began in 1949 and continued until the 1958 moratorium—the era of Atomic Governance—is the subject of this chapter. The first section examines the relationship between military consolidation and Truman's political dilemmas and shows how both gave rise to Atomic Governance and the H-bomb initiative. The second section discusses the affect of Atomic Governance over AEC

leadership and priorities. It focuses on Lilienthal's successor, Gordon Dean, and his use of wartime strategies of control to secure Truman's approval for the creation of the Nevada Test Site for the purpose of conducting atmospheric weapons tests.

Decision-making and the H-bomb

Understanding Truman's January 1950 H-bomb decision becomes clearer when studied in light of the domestic context from which it emerged, particularly the political challenges the administration faced in 1949 and the relationship between Truman's political dilemmas and the militarization of the atomic program. This study points to three interrelated factors that contributed to creating the conditions for the H-bomb decision: the ascendance of Dean Acheson to Secretary of State; the power of Manhattan veterans within the administration; and Lilienthal's diminishing influence. It examines the domestic motivations that drove the decision by putting some flesh on Acheson's admission that politics factored into the H-bomb decision. In his words, he could not "see how any president could survive a policy of not making the H-bomb."⁴ It also re-evaluates Acheson's role in the decision-making process, suggesting that he took the lead in that decision and shaped the terms of the deliberations to ensure that Truman would choose the one path that he believed held the most political bang for the buck.

⁴ The quote is included in James Chace's discussion of the problems between Acheson and anti-communists in Congress. Chace did not make the connection between anti-communism, Truman's political dilemmas, and the H-bomb decision. See Chace, *Acheson, The Secretary of State Who Created the American World* (New York: Simon & Schuster, 1998) 229-236.

Acheson's most recent biographer, Robert Beisner, anchors Acheson's point of view at the time of the H-bomb decision in foreign, and not domestic, policy. For the development of Acheson's approach to the Soviet Union from the immediate postwar period when Acheson believed that conciliation was possible to the realpolitik stance he took as Secretary of State, see Beisner, "Patterns of Peril: Dean Acheson Joins the Cold Warriors," *Diplomatic History* 20 (1996): 321; and for Acheson's opinion that the U.S.S.R. would pursue development of an H-bomb irrelevant of any U.S. decision on the issue, see Beisner, *Dean Acheson, a Life in the Cold War*, 228-233.

The decision was to a large extent the product of the influence Manhattan veterans wielded within the Truman administration; the status Groves and Nichols enjoyed among influential affiliates of the atomic program and Truman's congressional detractors; and, their ability to serve as an organizational nexus for H-bomb supporters. Groves and Nichols, with the backing of Strauss and his friend E.O. Lawrence, creator of the cyclotron and Director of the Lawrence Livermore Laboratory, promoted The Super as a means of expanding the atomic program and reinforcing the military's authority over it. Discussions about the project made allies of the competing laboratories. As with Bradbury's 1945 suggestion that Los Alamos scientists pursue H-bomb development, Lawrence had professional and institutional reasons for supporting the program. The significant difference between the two men, however, was that while Bradbury believed The Super was probably a practical impossibility, Lawrence agreed with his scientific superstar, Edward Teller, that the only thing standing between theoretical and actual development was a commitment of resources and manpower. For Strauss's part, (and perhaps also for Groves, Nichols, and Lawrence as well) the issue seems to have been so intimately tied to a military course of action—to the strengthening the military's authority over the program and its resources—that he failed to notice H-bomb proponents had gained an important civilian ally. Strauss stridently lobbied congressmen and among his supporters in the private sector apparently unaware that Acheson, in a bow to the political influence Manhattan veterans wielded and the interest in the project they had generated among Truman's congressional opponents, was in their corner. As Gordon Arneson, one of Truman's long-time atomic energy advisors and then State Department assistant recalled, Strauss was "running around town and around the country drumming up

support” for the H-bomb. “It was very strange. ... He was getting all the support he could find. It never occurred to him to talk to anybody at the State Department.” Arneson indicated that Acheson’s support for the H-bomb was such an open secret that he was surprised Strauss was not in on it. Arneson could only surmise that Strauss must have “figured Acheson might be against it.”⁵ By the winter of 1949, the sense that Acheson and Truman had come to the conclusion that pursuing an H-bomb project was the only way to avoid political suicide was due in large measure to Groves and Nichols, whose interest in militarizing the program and organizational talents contributed to turning a theoretical possibility—the H-bomb—into a political cause célèbre.

Their success at generating political support behind the concept of the world’s most powerful weapon created another obstacle. The JCS, long opposed to the program as one that had no military utility and that would drain resources away from what they viewed as the more important task of building bombs to stock the arsenal and for experimentation (demonstration) purposes, withheld their approval.⁶ Thus, before Truman could order the AEC to pursue development of an H-bomb (and reap whatever domestic political benefits he and Acheson expected to flow from that decision) and before Groves, Nichols, and Strauss could get an H-bomb program funded, they first had to overcome JCS opposition. Again, the expertise of Manhattan veterans was decisive. This task fell to Nichols. Using money as a bargaining chip, Nichols successfully persuaded the JCS that the H-bomb program would come at no expense to them. Once

⁵ “Interview with Gordon Arneson, July 11, 1984,” Atomic Energy Program and R. Gordon Arneson—Correspondence, 2 of 2, Papers of R. Gordon Arneson, Subject File, 1945-1994, HST Library.

⁶ Rosenberg, “The Hydrogen Bomb Decision,” 87.

reassured that H-bomb development would hinder neither military funding nor atom bomb and weapons production, the JCS dropped their opposition.⁷

The point is not only that the military and Manhattan veterans were able to influence an administrative decision, but that their consolidated influence and authority was sufficient (a) to force Truman into making a decision that became one of the most consequential in Cold War history; and, (b) to receive the sort of budgetary assurances in advance of that decision necessary to persuade the JCS to drop their opposition to a program that had no known military purpose. By Fall 1949, when Truman was considering how to respond to the Soviet bomb—and arriving at a response that he believed would be politically advantageous—the JCS had already amassed enough authority to hold his plan of action hostage. Moreover, Manhattan veterans had achieved enough influence within government and over the program to be in a position to ransom it by satisfying the JCS that their own goals and ambitions would not be compromised in the process. The H-bomb decision was anchored in the domestic imperatives of Manhattan veterans and the atomic program; the military and its supporters; and Truman, who expected that by making it he would gain some room to maneuver out of the political corner that he had been squeezed into by military officers and their congressional supporters. Atomic Governance had already narrowed the options to one for the Truman Administration.

⁷ The emphasis here on the importance of Manhattan veterans to shaping military decision-making and the H-bomb decision differs from that of Rosenberg, who drew on Hewlett and Duncan's official *History of the Atomic Energy Commission*, to hold E.O. Lawrence responsible for "pressuring" the MLC, and especially Nichols, to move forward with the Super. Rosenberg, "Atomic Strategy and the Hydrogen Bomb Decision, 62-87, 81-82. For the budgetary assurances, see Rosenberg, 83. For the speculation that the letter was written by the MLC, see Burkhardt, 156, n. 406. For the text of the letter, see "Memorandum by JCS to Johnson" January 13, 1959, FRUS, 1950 Vol. 1, 506.

On January 31, 1950, Truman announced that he had ordered an investigation to “determine the technical feasibility of a thermonuclear weapon.”⁸ The decision had, in fact, long since been made. During the Manhattan Project, members of the theoretical division at Los Alamos began studying the possibility of a hydrogen weapon; they recorded their wartime progress so as not to lose momentum pending legislative settlement of the atomic program; and, after the seating of the first AEC, the theoretical division at Los Alamos divided their time equally between perfecting the atom, or fission, bomb and studies on the thermo-nuclear, or hydrogen, bomb.⁹ As Oppenheimer, Chairman of the AEC’s General Advisory Committee (GAC) explained to Lilienthal, the GAC supported the program because the goal was not to make an H-bomb, but to study thermo-nuclear theoretic processes to improve atomic weapons.¹⁰ The JCS had also participated throughout this time, weighing the benefits of developing the H-bomb

⁸ The decision has received extensive attention. As one early analyst argued, it was a decision not to decide. It bore “all the aspects of a conscious search for that course of action which would close off the least number of future alternatives, one which would avoid the most choice.” See Warner R. Schilling, “The H-Bomb Decision,” *Political Science Quarterly* 76 (1961): 24-46, esp. 38. David Alan Rosenberg argued that the decision was politically motivated and that military strategy played a minor role, noting that from the JCS point of view, it was a “logical extension of existing weapons programs,” but overlooked the extent to which military officers had contributed to Truman’s political dilemma. “American Atomic Strategy and the Hydrogen Bomb Decision,” 86. For a summary of the decision from an insider scientist’s perspective, see Herbert York, *Race to Oblivion*, 37-38. The most recent commentary on the decision has the JCS playing the pivotal role in convincing Truman to announce that the Soviet’s had detonated their first atom bomb. Herman S. Wolk, “Making the H-Bomb,” *Air Force Magazine*, March, 2009, 67.

⁹ In an article written in 1954, but which was unable to be published until 1982 when material included in it was declassified, Hans A. Bethe wrote that “work on thermonuclear weapons at Los Alamos never stopped.” “Comments on the history of the H-Bomb,” *Los Alamos Science* (1982): 42-53, especially 46. Though he wrote the article in 1954 to correct misinterpretations that appeared in a book, he was prevented from publishing it because it contained classified information. Persistent misconceptions about H-bomb development in books and popular literature caused him to press, nearly thirty-two years later, for its publication. 43.

¹⁰ J. R. Oppenheimer to Lilienthal, Atomic Energy Commission, February 4, 1947. National Archives, Record Group, 326 “General Advisory Committee Minutes and Reports of Meetings. Meetings 2-13 1947-49,” Box 1, “Second GAC Mtg.”

against the reductions in A-bomb, or fission, weapons that development would entail.¹¹

Though initially unaware of the progress that had already been made on an H-bomb, Truman learned of that work sometime in October 1949 and thus knew that the decision he was making was primarily one to elevate H-bomb study to the level of a policy priority with the funding stream to achieve the task.¹²

Though strategically justifiable as a means of countering the Soviets' first atomic success, it was also, for Truman and Dean Acheson, his Secretary of State and perhaps closest advisor and confidant, a political necessity.¹³ The Soviet's success seemed to validate the complaints of Truman's critics that his administration had not worked hard enough to seek out communists in government service and that his support of AEC Chairman Lilienthal and his policies had put the nation's atomic program at risk and jeopardized national security. As Herken wrote, "Joe One" seemed to confirm the charges of Truman's critics, "proving duplicity and even treason at high levels in government."¹⁴

¹¹ See, for example, the partially classified reference made to the H-bomb by the JCS's Ad Hoc Committee formed to respond to the Military Liaison Committee's questions, where the Committee reported that "A limited number of targets justify employment of a bomb of about [classified] TNT blast equivalent. However, a development project of great magnitude should not be established for this weapon pending further examination of the effect of such a project on other AEC projects of military significance." "Conclusions" Memorandum from Brig. General R.C. Wilson, USAF, Steering Member Ad Hoc Committee, 20 December 1948. RG 218, Records of the U.S. Joint Chiefs of Staff, Central Decimal File, 1948-1950, 471.6 (8-15-45) Sec. 13A.

¹² Robert Beisner's autobiography of Dean Acheson suggests that Truman had likely made up his mind several weeks before he made it official. Beisner, 229. On Truman's ignorance of Los Alamos's work on the H-bomb, see Paul D. Burkhardt, "The Inevitable Choice: Harry S. Truman, Dean Acheson, The Advisors, and the Decision to Develop the Hydrogen Bomb", Master's Thesis, Central Missouri State University, 2002. Burkhardt's study, though understandably derivative, benefited from the inclusion of recently declassified material, some of which has been reclassified in the reviews undertaken following September 11, 2001. Analyses of the decision are plentiful; see for example, Herken, *Counsels of War*, 57 ff.

¹³ Gregg Herken also holds that Acheson wielded the most influence with Truman among the committee members. *Brotherhood of the Bomb: The Tangled Lives and Loyalties of Robert Oppenheimer, Ernest Lawrence, and Edward Teller* (New York, NY: Henry Holt and Company, 2002), 216.

¹⁴ Herken, "A Most Deadly Illusion," 52.

Though it was an event expected by people familiar with the program, scientists in government advisory positions and especially the GAC; by AEC Commissioner Strauss who had encouraged the development of a program for detecting atomic detonations and thus by the JCAE, the JCS and other military officials and advisors;¹⁵ and by members of the Truman administration itself, the Soviet bomb shattered the status quo. Anticipating the certain negative response, Acheson recommended to Truman that he be the first to announce that the Soviets were in possession of an atom bomb.¹⁶ Acheson also likely believed that the administration could readily diffuse the criticism by recommending increased military funding and pursuit of The Super.

Carrying out that object required Acheson to scuttle a number of possible alternatives. One would have been to wait. George Kennan, a respected analyst who had served under Secretary of State General George Marshall, wrote in 1948 that it might be possible to diffuse tensions between the U.S. and the U.S.S.R. once the Soviets had developed their own atom bomb. He believed the Soviets likely would be more tractable during negotiations once they were no longer disadvantaged by the imbalance between

¹⁵ See letter from Oppenheimer as Chairman of GAC to Lilienthal, October 10, 1947, subsection F, Test Detection. The GAC was apparently prevented from learning the status of the military's program so did not insist on being information about anything more than "that the progress be adequate and the work in competent hands." National Archives, Record Group 326, GAC Mtgs/Reports, "Sixth GAC Meeting, October 6, 1947, in Washington, D.C." Box 1. By November, the GAC had become increasingly concerned that detection efforts were not being appropriately pursued by the military. National Archives, Record Group 326, GAC Minutes/Reports, Meetings 2-13, "Seventh GAC Meeting (November 21-23, 1947, in Washington, D.C.)" Box 1. During the Truman administration, Mr. Arneson served as the secretary of the Secretary of War's Interim Committee on Atomic Energy, 1945; member of staff, U.S. delegation to the United Nations Atomic Energy Commission, 1946-48; Special Assistant to the Undersecretary of State, 1948-50; and Special Assistant to the Secretary of State, 1950-54. According to Arneson, Strauss had nothing to do with the initiation of the air sampling program that discovered evidence of the Soviet Bomb. In an interview conducted in 1984, he said that the Air Force initiated the program in 1947. "Interview with Gordon Arneson" July 11, 1984. File 2 of 2, Atomic Energy Program and R. Gordon Arneson—Correspondence; Papers of R. Gordon Arneson, Subject File, 1945-1994, HST Library.

¹⁶ Wolk found that it was at the "urging of the JCS" that Truman made the announcement. "Making the H-Bomb," *Air Force Magazine*, March 2009, 67.

U.S./Soviet capabilities.¹⁷ Another option emerged from deliberations after Joe One—a recommendation to use the possibility of H-bomb as a bargaining tool, presenting the Soviets with the U.S.’s plan to develop The Super on the chance that the Soviets would recognize the benefits of joining in a non-development agreement. But Acheson dismissed both of those options in the interests of political expediency. No alternative that involved diplomacy, however reasonable from a practical or foreign policy point of view, had the potential to give Truman the same punch that he needed to assert his authority and claim a decisive political victory as the H-bomb did. Officially, Truman based his decision on recommendations from Acheson, Secretary of Defense Johnson, and AEC Chairman Lilienthal, and an admission by all that it was possible that the Soviets were already developing the H-bomb and that, if they were, the U.S. was in danger of losing its nuclear edge.¹⁸

It was, and still is, portrayed as the only practical course of action to emerge out of a number of other options that Truman or Acheson, or both, dismissed as unrealistic, idealistic, or unworkable. Then and now, the decision appears to have been both diplomatically and domestically a suitable course of action. It temporarily satisfied congressmen who had been arguing that Truman should focus more of his energies on meeting the communist threat as well as satisfying McMahan’s insistent demands that The Super be made a priority,¹⁹ and conformed with the minority recommendations of

¹⁷ Kennan’s analysis, National Security Council 20/2.

¹⁸ “Development of Thermonuclear Weapon” U.S. DOE Archives RG 326 U.S. Atomic Energy Commission, Collection 1947-51, Secretariat Box 4942, Folder 471.6 (10-5-49). Some sections of the report remain classified following a conditional declassification in 1987.

¹⁹ McMahan was so upset after the GAC recommendation that the Super not be developed that he contacted Lilienthal to set up a meeting with the Commissioners. He later set up meetings with officers at the bomb

AEC commissioners Dean and Strauss. Of the AEC members, these were the two most closely aligned with Truman's congressional opponents, especially Senator McMahon. Along with the JCAE, McMahon was engaged almost daily from Truman's September 23, 1949, announcement about the Soviet bomb gathering support among congressmen and with AEC contractors throughout the United States while pressing Truman for a decision to pursue H-bomb development.²⁰ Additionally, the decision met with approval from the JCS once they had been assured that their funding would not be compromised by H-bomb expense, and it satisfied members of the National Security Council concerned with insuring that the U.S. retain its technological lead over the Soviet Union. And yet, a study of the mechanics, cost, and potential use of the H-bomb, including consideration of two possible sizes of bomb and an estimated cost of "one to two hundred million dollars" for bomb material alone, left little doubt that at its value as a weapon would be negligible:

The results are that production of the 65 square mile Super would give at best only relatively small increases [compared with an equivalent to fission bombs] in total or annual damage area, while production of the 300 square mile Super would as much as double the total or annual damage area. There is of course the question as to whether there are enough 300 square mile targets to justify the larger Super.

As an added complication, no studies had yet been conducted to determine how the bomb could be carried and delivered and thereby used as a weapon.²¹

works at Sandia and requested copies of the GAC's report. See Dean's diary entries for October 31, and November 10, 1949. *Forging the Atomic Shield*, 48-51.

²⁰ Brien McMahon, "The Scale and Scope of Atomic Production: A Chronology of Leading Events," attachment to May 30, 1952, McMahon to President Truman, Atomic Weapons-Thermonuclear, National Security Council-Atomic, PSF-Subject File, Papers of Harry S. Truman, HST Library.

²¹ December 8, 1949, "The Super" a staff report circulated for the information of the Commission. U.S. DOE Archives, 326 U.S. Atomic Energy Commission, Collection 1947-51, Secretariat, Box 4942, Folder

Atomic Governance offers a strategy for answering a fundamental question about Truman's H-bomb decision: Why was it that Truman and Acheson decided that the only "practical" solution to the possibility that the Soviets would, or were already, developing an H-bomb that everyone agreed at the time was so large and complex that it would likely never be capable of being used as a weapon was for the U.S. to undertake a program that would result in it being developed? The motives for the decision were not diplomatically but politically strategic. The small pro-H-bomb lobby only carried weight because their solution was politically advantageous, unlike the larger number of advisors including Lilienthal, the majority of the AEC, and the members of the administration's General Advisory Committee who proposed alternatives to the development of a bomb that had no military application.

Truman's decision to pursue H-bomb development was but one of a chain of reactive maneuvers he made to prevent falling deeper into the political pit that the military and its congressional supporters had dug for him. Each concession Truman made allowed the upper echelon to take another incremental step toward achieving the authority and autonomy that they had been seeking since the end of World War II. One of the most important factors that contributed to the dilemma Truman found himself in by 1949 appears to have been his willingness to address political criticism with quick fix solutions without taking into account the longer-range consequences of those solutions; or, for that matter, without taking the time to frame them in such a way that they could

471-6 (10-5-49) Sec. 1.; Defendant Exhibit DX 21981, *Prescott v. U.S.* A later "draft" report from the NSC to the President recommended that no more than ninety-five million be committed to development of the bomb. Though not dated, correspondence indicates that it was prepared in May or June 1949. "Report to the President by The Special Committee of the National Security Council on Development of Thermonuclear Weapons," PSF Subject File, Atomic Weapons Thermonuclear, National Security Council/Atomic, Box 176, Papers of Harry S. Truman. HST Library.

not be used against him. Truman's efforts to satisfy the military's budgetary demands illustrate this. As communists made gains overseas, Truman ratcheted up his budget requests and asked Congress for increased armed forces appropriations. He may have anticipated that the proposals he made would be considered insufficient, but it is just as likely that he expected this demonstrable attentiveness to national security threats to bring him some relief from criticism. Instead, Truman's opponents turned his recommendations for increasing defense budgets against him, as an acknowledgement that he had underestimated military needs and asked why he had failed to do more. In April 1948 Truman presented Congress with a supplemental request to increase defense funding by \$3 billion dollars, an amount that included \$775 million for aircraft, components, and aviation research funding. Upon receiving it, the House Armed Services Committee recommended unanimously that Truman present another that would allow them to increase the Air Force's fifty-five groups to seventy.²² By August, the defense budget of \$10.9 billion for 1949 that Truman proposed in January 1948 had grown to \$54.3 billion.²³ For its part, the Defense Department²³ announced that it would reduce unnecessary expenses. In October, Forrestal announced via a press release that he had ordered the armed forces to institute a pilot project to consolidate recruiting and public relations and to relocate some offices from rented to government-owned facilities.

²²For the request, see "Letter to the Speaker Regarding Additional Appropriations for the National Security Program" April 1, 1948. For the Armed Services Committee request for additional Air Force groups, see "The President's News Conference" April 8, 1948. *Public Papers of the Presidents, Harry S. Truman, 1945-1953*. See also "Letter to the Speaker Transmitting Supplemental Appropriation Estimates for the National Military Establishment" May 13, 1948. Online at www.trumanlibrary.org/publicpapers/index.

²³ For the overall estimates for the January budget and the ongoing expenses built into those figures, see Hanson W. Baldwin, "Huge Arms Costs Loom; Plans for Spending 15 to 25 Billions annually show a lack of coordination," *New York Times*, January 15, 1948, 3. For the supplemental, see "Statement by the President: The Midyear Review of the Budget" August 15, 1948. *Public Papers of the Presidents, Harry S. Truman, 1945-1953*, available online at www.trumanlibrary.org/publicpapers/index. The value of the 1948 military budget amounted to approximately \$395 billion in 2008 dollars. See comparison of values per GDP, <http://www.measuringworth.com/calculators/uscompare/result.php#>

According to Department spokesperson, the expected savings would amount to at least \$172,582 a year in rental costs and another \$125,000 saved in recruitment. With no reference to the combined armed forces budgets, these cost-saving measures may have appeared to be more impressive than the 0.000548 percent of military expenditure that they actually comprised. The release noted a final benefit: the news media would benefit from “prompter, more convenient and more efficient service.” Besides the monetary savings, then, the project fit in with the emphasis on media promotion that was Forrestal’s hallmark: It provided a means of streamlining—and a means for coordinating—the military’s public relations efforts while also providing Forrestal with the opportunity to present himself as sympathetic to the economic purposes behind Truman’s postwar plan for unification that Forrestal had opposed prior to passage of the NSA.

More counterproductive to Truman’s goals than his efforts to quell criticism through increases in military spending were his Loyalty Orders.²⁴ From a civil service standpoint, these may have prevented some subversives from working for the federal government, but they did little to stifle anti-communist criticism and placed a heavy burden on investigative agencies. In two years, for example, the program resulted in over two million investigations of employees working in non-sensitive areas.²⁵ As a means of quelling criticism about his anti-communist credentials, the program was a failure. As Jessica Wang has noted, his “anti-communist foreign policy contributed to the generation

²⁴ Executive Order 9806, 9835 (1947), and 10241 (1951). For a discussion of the effect of these orders on American society, see Cate, *The Great Fear*, and Latham, *The Communist Controversy in Washington*; Alan D. Harper, *The Politics of Loyalty* (Greenwich, Conn: Greenwood Press, 1969). For an overview of how the orders affected civil liberties, see James T. Patterson, *Grand Expectations*, 191.

²⁵ Jessica Wang, *American Science in an Age of Anxiety*, 101.

of a domestic anticommunist response.”²⁶ But they did more than fuel anti-communist rhetoric and nurture the seeds of McCarthyism.

Truman’s Loyalty Orders validated the attacks of his opponents and created the impression that communism in government service was endemic. In the end, the Orders contributed to undermining Lilienthal’s authority as Chairman of the Atomic Energy Commission. Truman may have believed that there was simply no other way to deal with the possibility that communist, and especially atom, spies were occupying key government positions and to demonstrate to his critics that he was responsive to their concerns. But, by issuing the Orders, Truman shifted the focus of suspicion from forces outside government to those inside it. Before the Orders, it could have been realistically imagined that a handful of communists had, or were seeking to, infiltrate government, and perhaps even the atomic program. After, it became easier to envision as widespread communist contamination of all government agencies and bureaus. The Orders indicated that Truman himself had come to believe that communism was not a problem *for* government, but *of* governance. By September 1948, 74 percent of those responding to a national poll thought that the “spy investigations” were productive and not “just politics.”²⁷ Consequently, it became more difficult, if not impossible, for Truman to dismiss even the most outlandish anti-communist attacks as incidences of political grandstanding or exaggeration. It also made it more difficult for him to support Lilienthal, who had suffered the brunt of anti-communist criticism, without risking certain political backlash. To make matters worse, criticism and concern about communists in the State Department escalated in the wake Whittaker Chambers’s

²⁶ Wang, *American Science in an Age of Anxiety*, 230.

²⁷ “The Quarter’s Polls,” AIPO, September 5, 1948, *The Public Opinion Quarterly* 12 (1948-49): 781.

“Pumpkin Papers” revelation on December 2, 1948,—a month to the day after Truman won the presidential election. His January 1949 appointment of Dean Acheson to Secretary of State attracted even more controversy and he threw his energies into defending Acheson, leaving Lilienthal to face his critics alone. Among the by-products, then, of Truman’s Loyalty Orders was the undermining of Lilienthal’s authority and, with it, the undermining of meaningful civilian custody of the atomic program.

Lilienthal, who had personified Truman’s atomic policy and the principle of civilian control of atomic energy and who had been an easy target from the moment he was nominated, began in 1949 to lose the influence he had wielded in the administration. Part of Lilienthal’s problem was that he had little with which he could defend himself. Meaningful and substantive responses would have required divulging atomic secrets, and Lilienthal’s commitment to national security imperatives made it impossible for him to share with the public details of what he and the Commission had done to preserve and improve the military’s atomic capability.²⁸ The resulting double-standard meant that military officers and their supporters were able to pummel Lilienthal with vague and innuendo-laden attacks in the public sphere while Lilienthal was unable to respond publicly and effectively with details about the advances in military production and development that the AEC had made during his Chairmanship. Nor could Lilienthal anticipate or guard against congressional critics such as Iowa’s Republican Senator Bourke B. Hickenlooper. Hickenlooper’s statements about Lilienthal and his management of the program swung wildly from day to day, by turns praising the program and its record for loyalty as one that he believed could not be “equaled among any other

²⁸ Lilienthal’s diaries are packed with attacks on his integrity and support for the military. For an example of the latter, see Lilienthal, *The Atomic Energy Years*, 494.

group or class of people” only to follow that statement ten days later with a complaint that the program was plagued with “incredible mismanagement.”²⁹

With little more than general, unspecific, and unsatisfying responses to the complaints of his critics, Lilienthal did what he could to focus attention on the gains he could discuss: the civil, non-military and non-secret, advances in medical and industrial applications for atomic science. But, as important as they were, such technological milestones could only be described and imagined; they did not lend themselves to the dramatic earth-shattering, types of display that had become atomic science’s stock in trade.³⁰ Lilienthal dealt with this problem in a way that demonstrates he knew his only option carried the potential for misinterpretation. In a speech delivered to a gathering of radio executives that was broadcast on radio and television throughout the Northeast, Lilienthal mentioned—“cryptically,” according to *New York Times* reporter William L. Laurence—that “we are improving [the atomic weapon] on top of a mesa in the mountains of New Mexico” and briefly mentioned tests planned for Eniwetok. Lilienthal adopted something of an apologetic tone about his inability to discuss that aspect of the program and sought to persuade his audience to pressure their elected officials for more information about atomic science. He stopped short of blaming the military and their congressional supporters for blocking the release of important facts about atomic science while encouraging them to insist on learning all that was known:

The principal and perhaps the only hope for preventing the use of atomic energy for destruction on a scale that has not yet been disclosed is for peoples everywhere to come to understand the

²⁹ The praiseworthy statement made on May 12, 1949; the criticism on May 22, 1949. “Statements by Senator Hickenlooper,” Papers of Clark Clifford, Box 2, Atomic Energy—Testimonies at Congressional Hearings, HST Library.

³⁰ Balogh, *Chain Reaction*, 78, 84-85.

atomic world; and to understand thereby the opportunities that lie before us to put this knowledge to uses beneficent and humane. ... [A] vacuum of knowledge about the atom will be filled somehow. As time goes on it may be filled by utter indifference ... by phantasy [sic], by illusions. Neither panic nor phantasy provides the basis for a world of peace and security.³¹

He lent encouragement to those who might have believed that most of the important facts were already known, or those who believed the effort to learn more might be fruitlessly blocked by atomic secrecy, telling them progress had already been made: that people were becoming more informed, and that the “nonsense” that atomic science was a military secret was “about exploded.” For those in Lilienthal’s immediate audience, and perhaps for many tuned in to the broadcast, this would have been interpreted as a strike across the bow to Forrestal, his congressional opponents, military officers, and others who advocated “voluntary” censorship to protect atomic secrets.³² And, in what was perhaps an optimistic stretch at how successful he had been about delivering the message of peaceful applications for atomic science, Lilienthal added that people were also beginning to abandon the “well cultivated fiction that atomic energy is a bomb and nothing else.”³³ Before 1949, however, Lilienthal’s one advantage against the critics had not been the content of his speeches but Truman’s support.

The president’s votes of confidence in his ability and management deflected at least some of the vile and vindictive criticism of him and, in the process, reinforced the principle of civilian authority that Lilienthal worked so hard to defend. By early 1949,

³¹ William Laurence, “Lilienthal Points to Atomic Safety: Warns Knowledge is Needed if We Are To Escape Some Desperate Finality,” *New York Times*, February 6, 1948, 26.

³² See, for example, Hanson Baldwin’s pictorial essay on Forrestal’s first year in office, “Big Boss of the Pentagon,” *New York Times*, August 29, 1948, SM9.

³³ Laurence, “Lilienthal Points to Atomic Safety: Warns Knowledge is Needed if We Are To Escape Some Desperate Finality,” *New York Times*, February 6, 1948, 26.

however, the campaign of criticism that military officers and their supporters launched in late 1946 was paying dividends: Truman's support of Lilienthal waned and the substantive sort of civilian authority over atomic energy that he had championed was slipping. Publicly, anti-communist rhetoric reached a crescendo and the fear of communist subversives had become pervasive enough to threaten not only civilian control of the atomic program, but the civil rights of American citizens and the principle of civilian leadership altogether. Between May 1948 and April 1949 the percentage of those polled favoring a law requiring members of the communist part to register with the Justice Department climbed from 77 percent to 83 percent; 87 percent reported that they believed that communists should be prevented from working in industries that would produce materials should war break out.³⁴ The political cartoonist Herbert Block ("Herblock") tried to capture what was at stake. In June 1949 he published a cartoon of a man scaling a ladder propped against the arm of the Statue of Liberty. With "hysteria" written on his thigh, the man carried a bucket of water to douse the flame, calling out a single word: "Fire!"³⁵ Inside the administration, Truman's failure to protect Lilienthal against his anti-communist critics helped them to douse the last flicker of meaningful civilian control over atomic energy that Lilienthal had tended since his appointment.

Lilienthal lost Truman's support at the very time that one of his most important civilian goals for the AEC—the education of industry professionals—was being put to the test. Lilienthal took a stand that the training of scientists should not be politicized, that AEC fellows should not be forced to undergo FBI background. He argued that the

³⁴ "The Quarter's Polls" AIPO April 1949, *Public Opinion Quarterly*, Fall 1949, 540.

³⁵ Herbert Block, "Fire!" *The Washington Post*, June 17, 1949.

investigations would erect an unnecessary bar on the ability of students to receive an education and would be counterproductive, driving good students into other fields and depriving the program and the nation of new talent. The hearings and the publicity surrounding background checks revealed how effective the military and congressional partnership had been in promoting acceptance of peacetime military authority. After the hearings, for example, a majority (38 percent) of people polled who had followed the hearings believed that the Army should assume control of the program compared to those (36 percent) who thought that the program should remain in civilian hands.³⁶ Called to defend his policies for the granting of AEC fellowships in May 1949 Lilienthal confided in his journal that his opponents were closing ground: “They feel they have me on the run, have tasted blood, and it will go on from here.”³⁷ Later, using a similarly grisly analogy, one of Truman’s advisors pointed to the discrediting of Lilienthal as a reason for considering a complete overhaul of the atomic program. “it is difficult to say publicly that Lilienthal has failed. However, the fact is that this thing behind walls of secrecy has ground up a good man ... like raw meat.”³⁸ But secrecy had been an ongoing condition of Lilienthal’s chairmanship, and thus was only part of the problem. Before 1949, Lilienthal had always come out whole in the grim battle of wills with Truman’s congressional opponents. By the time of the controversy over AEC fellowship policies, it was not

³⁶ “The Quarter’s Polls” AIPO August 7, 1949, *Public Opinion Quarterly* (1949-1950): 710.

³⁷ Lilienthal, *The Atomic Energy Years*, May 20, 1949, 531, 529-532. See also Balogh, *Chain Reaction*, 70-72.

³⁸ “Memorandum to the President. Subject: Notes on what might be done about atomic policy.” Unsigned and undated, the content of the memorandum suggests that it was written by an advisor with enough access to write knowingly of the problems of atomic secrecy and the broader political implications for the Truman administration and, additionally, that it likely emerged in September 1949, when Truman learned of the Soviet’s first atomic detonation. “A-bomb” folder; Box 96, President’s Secretary’s Files, Papers of Harry S. Truman, HST Library.

secrecy, nor the intensity of congressional attacks, that weakened Lilienthal's ability to defend the principle of civilian control over the atomic program. Instead, it was the fact that Lilienthal's principles and those of meaningful civilian authority no longer coincided with Truman's political goals.

In Spring 1949, Truman took advantage of the resignation of AEC Commissioner Bacher to mend political fences with his opponents in Congress. Ignoring Lilienthal's recommendations and over his objection, Truman appointed Gordon Dean. Dean had served as an assistant to Robert H. Jackson, the chief prosecutor for Nazi war criminals, had been among those who gathered evidence and negotiated the Allied charter, and had handled public relations for the Nuremberg trials.³⁹ For Truman, however, Dean's most significant qualification for the position was that he was the congressional favorite: a former law partner of Brien McMahon, the Chairman of the JCAE. Though the political maneuverings that led to Truman's appointment of Dean in May 1949 have long been recognized,⁴⁰ they amounted to more than political détente. Truman's appointment of Dean was also a direct concession to military control. From the perspective of the JCS and the military's congressional supporters, Dean's appointment was a tacit acknowledgement that Truman's commitment to civilian control had become so superficial that it could be sacrificed in the interests of political expediency. The appointment provided Strauss with an ally on the Commission and another congenial liaison between the AEC and the military's congressional supporters—an affiliation that fostered military expansion, continental testing, and provided reasons for Truman to approve H-bomb development against the majority opinions of the AEC and the General

³⁹ Anders, "Introduction," *Forging the Atomic Shield*, 6.

⁴⁰ Anders, "Introduction," *Forging the Atomic Shield*, 14.

Advisory Committee. Moreover, it contributed to Lilienthal's decision to resign his Chairmanship, putting an end to Lilienthal's vision of a program that paid due diligence to a notion of civilian control that balanced the national security needs of the military while investing resources into peacetime applications for atomic energy. Following Lilienthal's resignation, Truman again catered to his militarily-supportive congressional opponents, appointing Dean to succeed Lilienthal as AEC Chairman. That decision reverberated down to the operational level. After Truman appointed Dean to Chair the AEC, Carroll Wilson, Vannevar Bush's protégé and the man who had served as General Manager of the AEC from its inception, walked into Truman's office and resigned. Wilson objected to the politicization of the program, telling Truman that Dean had "neither the ability nor the inclination to resist political interference."⁴¹ This chain of events began in 1949 and appears directly related to the new approach to policy—foreign and domestic—that occurred when Truman named Dean Acheson to succeed George C. Marshall as Secretary of State. Acheson's appointment caused an intensification of anti-communist criticism. Publicly, Truman's support for Lilienthal declined as his defense of Acheson increased.

Like Lilienthal, Acheson faced stiff opposition from the very moment he was appointed. Named by FDR as Under Secretary of the Treasury in 1933, his New Deal credentials and his wartime experience as Assistant Secretary in the Department of State made him vulnerable on ideological grounds to the political attacks of congressional conservatives. His 1946 partnership with Lilienthal in a plan to create an international agency for the control of atomic energy—the Acheson-Lilienthal Report—contributed to

⁴¹ *Time*, "Obnoxious & Objectionable," August 21, 1950.

the notion that he was “soft” on communism. And, as Marshall’s Under Secretary of State, Acheson’s participation in the crafting of the Truman Doctrine and the European Recovery Program put him squarely at odds with Truman’s opponents. When he became Secretary of State in January 1949, the Berlin Airlift was in its seventh month, North Korea was threatening the new Republic of South Korea, and the NATO treaty was still being hammered out.⁴² By the time he had finished a year in office, the Soviets had detonated their first atom bomb and China had fallen to the communists. By then, Truman’s opponents had had enough of Dean Acheson. The same was true of many Americans. By the end of his first year, only 31 percent of those polled reported that he should stay on the job; and, by February 1951, that percentage had dropped to 25 percent.⁴³ In his memoirs, Acheson distanced himself from the problem, explaining that it had been his misfortune to find himself in the midst of an ongoing, and historically unprecedented, political battle. The partisan infighting of the period was, he wrote, “as bloody as any in our history.”⁴⁴ Despite the fact that political attacks had long plagued the Truman administration, Acheson was undoubtedly responsible for many of them. After he came out publicly in support of Alger Hiss in January 1950, Senator Hugh Butler of Nebraska had difficulty deciding whether it was his demeanor or his suspected communist connections that was the most repulsive:

I look at that fellow, I watch his smart-aleck manner and his British clothes and that New Dealism in everything he says and does, and I

⁴² For a summary of Acheson’s foreign policy considerations during the postwar years and after the Soviet’s atom bomb detonation, see Beisner, 223-228.

⁴³ “The Gallup Poll #468”(December 1, 1950) and “The Gallup Poll #471” (February 4-9, 1951) *The Gallup Brain*, <http://institution.gallup.com>

⁴⁴ Acheson, *Present at the Creation*, 344.

want to shout ‘You stand for everything that has been wrong in the United States for years!’⁴⁵

Though Acheson’s communist connections were the most serious of the charges against him, the factors that bothered a larger percentage of his detractors and that stuck in the public’s mind were that he was incapable and relied too much on guidance from the British. In September 1951, of those who felt that Acheson should be replaced, more than 9 percent complained that he was a communist “traitor” while slightly more than 22 percent claimed that he had a “poor record” and was “influenced by England.”⁴⁶ However unpopular, Acheson had an advantage that Lilienthal did not: he was a close personal friend of President Truman’s.

By all accounts, it was a friendship characterized by loyalty and mutual support, with Truman prizing Acheson’s advice and Acheson more than pleased to help Truman personally, politically, and administratively. Acheson seems to have approached the task as Secretary of State in much the same way as he had during his service with the Department during the war when he took pride in his domestic political acumen and ability to muster congressional support. His approach was shaped by his friendship with Truman and his habits as a lawyer. In 1957, for example, he admitted that his legal experience had been a double-edged sword during his service as Secretary of State; while logical reasoning had been essential to his legal successes and foreign policy accomplishments, the habits of advocacy narrowed his perception to that which served

⁴⁵ McCullough, *Truman*, 760-761. Cited also by David Halberstam, *The Coldest Winter: America and the Korean War* (New York, NY: Hyperion Books, 2007), 185.

⁴⁶ The Gallup Poll, #480, 9/19/1951, *Gallup Brain*, <http://institution.gallup.com>

his client's interest.⁴⁷ The ways he balanced his responsibility to foreign policy as Secretary of State and his interest in helping Truman recover politically and achieve his domestic goals bore directly on his friend Lilienthal's ability to preserve the civilian authority over atomic energy written into the Atomic Energy Act of 1946. Unlike Lilienthal, Acheson's decision-making reflected the military's point of view and appears to have been designed to mollify both the military and their congressional supporters. Acheson's desire to see Truman safely through treacherous political waters contributed even more to the narrowing of Truman's decision-making options and put in place the conditions for a nuclear Cold War arms race.⁴⁸

Acheson's own admission of the political importance of Truman's decision suggests that the tendency to separate Acheson's realist approach to foreign policy from the political problems he brought down on the Truman administration has limited critique of the interaction of the two on Acheson's decision-making as Secretary of State. Acheson's biographers have recognized the close relationship between domestic political influence and the ability to generate support for diplomatic aims, and, admittedly, without domestic political support it would have been impossible for the Truman administration to carry out such initiatives as the Marshall Plan and the Berlin Airlift. But, despite discussions of the anti-communist controversy that dogged his term, the most famous being Whittaker Chambers's denouement of Alger Hiss, a brother of Acheson's friend and protégé Donald Hiss, historians have been more willing to discuss the ways that

⁴⁷ Dean Acheson to Hans Morgenthau, January 3, 1957, cited in Harper, *American Visions*, 251.

⁴⁸ The emphasis here is on the way that Truman's acquiescence and Acheson's influence—both in the interest of domestic political appeasement—created conditions under which military planners established the president's agenda. This opposes Rosenberg's realist finding that it was, instead, the strategic circumstances of nuclear warfare that created the need for "rigid operational planning" that was primarily responsible for the narrowing of Truman's options. Rosenberg, "The Origins of Overkill," 14.

Acheson mobilized political support to achieve foreign policy goals without much attention to the ways that he pressed foreign policy into service as a means of achieving domestic goals.⁴⁹ Because he played such an important role in the H-bomb decision, however, Acheson's approach to his duties as Secretary of State and the motivations that guided him as one of Truman's most trusted advisors are important issues in the history of the atomic program.

It is impossible to recapture all of the factors that went into Acheson's and Truman's decision-making, but if their primary interest in recommending development of an H-bomb was rooted in domestic political imperatives and not in *Realpolitik*, then the decision, and the chain of events that it generated, cannot be explained entirely as Cold War imperatives. The H-bomb decision justified an expansion of the atomic program and production capabilities necessary not only to meet the requirements of H-bomb development but also to satisfy the military's atomic production demands. And, according to the record prepared by AEC officials, the H-bomb imperative and not the Korean War was the reason why the AEC recommended, and Truman approved, the creation of the Nevada Test Site for the continental testing of weapons and routine experimentation that dispersed radioactive fallout throughout the U.S. and the H-bomb experiments in the Pacific that contributed to global radioactive fallout. The background to that decision suggests that it was more likely than not that national security was the rationale, and not the reason, for the H-bomb decision. And, as the impetus for the

⁴⁹ For Acheson's comments about the duty of the State Department to pursue public (and thus political) support for programs, see *Present at the Creation*, 377. The FBI had Acheson in its sights long before the Hiss case became public. In 1946, Acheson, Alger Hiss, and Henry Wallace (Truman's Vice-President) all showed upon an FBI list of "high government officials operating an espionage network." Harper, *American Visions*, 266.

program's expansion, it rationalized the use of the atomic program for domestic political purposes and, in fact, authorized militarization.

Acheson became Secretary of State having achieved some fame within Washington circles as a brilliant lawyer and had already achieved a reputation for administrative and political competence. No less an authority than FDR considered him "without question the ablest lawyer in Washington."⁵⁰ Armed with a law degree from Harvard in 1918 and a recommendation from Felix Frankfurter, Acheson began his career as a clerk for Louis Brandeis. In private practice, he specialized in advocacy against the U.S. government, representing Norway and Sweden in their World War I claims and Arizona in its suit contesting Boulder Dam. His appointment as Under Secretary of the Treasury in the Roosevelt administration ended in 1933 when Roosevelt fired him because of his disagreement with FDR's gold purchase program. Both continued to hold one another in high regard, however, with Acheson an important behind-the-scenes "interventionist" in 1940-1941.⁵¹ He considered himself a pragmatist, one who was not inclined "to become the prisoner of *a priori* moralistic, deterministic, idealistic, or Manichean images and states of mind."⁵² And, despite his service in the State Department under Henry Stimson and George Marshall, his understanding of foreign affairs was limited by his dependence on second-hand information because he had not been in Europe since 1939. What first-hand knowledge he did possess came primarily from discussions with ambassadors from England and France, those most willing to dramatize

⁵⁰ FDR memo to William Knudsen, et al., February 8, 1941, cited in Harper, *American Visions*, 260.

⁵¹ Biographical information drawn from Harper, *American Visions*, 242-259.

⁵² David S. McLellan, *Dean Acheson: The State Department Years*, 20-23. James Chace agreed. *Dean Acheson*, 439.

Europe's situation to secure American aid.⁵³ All of these influenced his responses to the challenges that came his way as Truman's Secretary of State. So, too, did his administrative style as Secretary reflect a preference for consolidating authority within bureaus and agencies of the federal government. During 1947-1948, for example, Acheson argued as a member of the Commission on the Organization of the Executive Branch—the Hoover Commission—that upper echelon Foreign Service officers should be incorporated into the Department of State and favored strengthening the position of Secretary of Defense. Along with Acheson's views about governance and a history that gave him confidence in his own ability and stature among Washington's elite power brokers, one way to assess the significance of Acheson's appointment to Secretary of State is in comparison with his popular predecessor, General George C. Marshall.⁵⁴ Acheson was nearly the antithesis of Marshall. Both men were decisive, but Marshall's methods had been honed by many years of reliance on others. Acheson's had been shaped by a lifetime of success proving others wrong.

One of the first things Acheson did was to un-do some of the structural changes that Marshall had implemented within the State Department and, in doing so, limited the intellectual breadth of State Department's analytical and advisory capacity. Marshall had, for example, established for the first time a division within the State Department for planning. "You can't plan and operate at the same time" he recalled a decade later, "[T]hey are two states of mind. ... You just had a hit or miss affair going on around

⁵³ Harper, *American Visions*, 277.

⁵⁴ Nearly 70 percent of those polled in January 1947 approved of Marshall's selection for Secretary of State. The Gallup Poll, #389, *Gallup Brain*, <http://institution.gallup.com>.

there.”⁵⁵ By separating planning and operational components of the responsibilities of the office, Marshall tried to ensure that each received singular attention, that care would be taken to consider each in light of the other, and that the resulting multidimensional understanding would help prevent counterproductive decision-making. An example of the significance of this approach to management of atomic science emerges in a June 1947 diary entry where Truman recorded the outcome of an informal meeting he called to discuss the timing of the proposed *Sandstone* atomic weapons tests. As if to emphasize the importance of diplomacy over the needs of the military and the atomic program, Truman identified Marshall first in a group that included the Secretaries of War and Navy, General Eisenhower, Admirals Leahy and Nimitz, and Lilienthal, and recorded Marshall’s contribution first.

General Marshall agreed that they should be tested but at a date beyond the Foreign Ministers’ meeting in November—say from February to April.⁵⁶

In this instance, Marshall’s input on the foreign policy implications of the test were clearly the most important factor in Truman’s decision to allow the tests to be conducted. Only after receiving Marshall’s recommendations did Truman note his designation of “Patterson, Forrestal, and Lilienthal” as the group to work out the details, Eisenhower and Nimitz as advisors, and directed that Marshall and Leahy both “be consulted as developments proceed.” In a final comment on the meeting, Truman took a dig at those who had derided his management of the atomic secret while reinforcing the view that diplomacy, and not defense, was his priority: “We must make the tests without insulting

⁵⁵ Bland, *Marshall Interviews*, November 20, 1956, 562-563.

⁵⁶ HST Diary, Friday, June 27, 1947, “July 1947 Diary,” HST Library. Now available online at <http://www.trumanlibrary.org/diary/page17.htm>. The *Sandstone* tests were held in April-May, 1948.

the Bolskies or our own Red helpers—headed by Wallace.” The precautions Truman took to avoid a possibly provocative affront to the Soviet Union can be seen as a reflection of Marshall’s understanding of the nature of atomic experiments and the care he took as Secretary of State to avoid military confrontation.

Marshall’s re-structuring of the Department of State was not just an organizational accommodation to the complexities of post-war foreign relations, but a measure of the value he placed in the ability and expertise of his subordinates and, because of that, the confidence he had in delegating responsibility. Stimson, for example, praised Marshall’s ability to achieve cooperation and success through trust.

he was always willing to sacrifice his own prestige. ... His trust in his commanders is almost legendary ... he leaves the man free to accomplish his purpose unhampered.⁵⁷

It was this mindset that was responsible for the elevation of Soviet expert George Kennan, author of the legendary “Long Telegram,” to head the newly formed Policy Planning Staff. Kennan detested Stalin, but made careful distinctions between Stalinism, communism, and the Russian people and his recommendations were grounded in his belief that if conflict could be avoided and if Greece and Turkey could be stabilized until they could become independent, Stalinism would eventually fail under its own oppressive weight.⁵⁸ During his tenure under Marshall, Kennan drafted the plan for European recovery and established the prescription for containment that became policy under NSC 20/4. Where Marshall had investigated diplomatic alternatives to manage America’s postwar influence, Acheson’s tendency was to discount them.

⁵⁷ Henry L. Stimson with McGeorge Bundy, *On Active Service in Peace and War* (New York, NY: Harper and Brothers, 1947), 662-663.

⁵⁸ George Kennan, *Memoirs*, 290

One of Acheson's first acts as Secretary of State was to demonstrate that he had no use for Kennan or for the policy planning group that he and Marshall had established.⁵⁹ He sidelined the Planning Staff and relegated Kennan to the position of "counselor." Kennan's comment on the demotion helps to illustrate not only the different approaches of Marshall and Acheson as Secretaries of State, but also the extent to which the changes that Acheson made were motivated by a desire to avoid any circumstance that might delimit his range of authority or autonomy: "The thought of consulting the staff as an institution and conceding to it, as did General Marshall, a margin of confidence within which he was willing to respect its opinions even when that opinion did not fully coincide with his own. ... All of this would have been strange to him."⁶⁰ Acheson ensured that Kennan would not be in a position to exert policymaking influence over his Department of State. But Kennan had already made an enduring mark on postwar policy. The Long Telegram became a foundational touchstone of the Cold War because it easily accommodated, and could serve as an authoritative reference, for widely divergent views. Like poorly written law, it was full of loopholes.

Kennan himself described the eight-thousand word document he sent from Moscow in February 1946 as an effort to give Washington "the whole truth ... divided, like an eighteenth-century sermon, into five separate parts." According to Kennan, the organization was strategic: "if it went in five sections, each could pass as a separate

⁵⁹ Acheson wrote that Kennan's views "were of no help." *Present at the Creation*, 346.

⁶⁰ Kennan, *Memoirs*, 450. There are so many studies devoted to Acheson, Kennan, and the relationship between the two men and their relationship to the cold war, that it has nearly become a sub-field of its own. A representative sample includes John Lewis Gaddis, *Strategies of Containment* and his "NSC 68 and the Problems of Ends and Means," *International Security* 4 (1980); Walter Isaacson and Evan Thomas, *The Wise Men: Six Friends and the World They Made* (New York: Simon and Schuster, 1986); Wilson D. Miscamble, *George F. Kennan and the Making of American Foreign Policy, 1947-1950* (Princeton: Princeton University Press, 1992); John Lamberton Harper's *American Visions of Europe*.

telegram and it would not look so outrageously long.”⁶¹ But it was not the “whole truth” as Kennan saw it that accounts for the missive’s significance, but the elasticity of Kennan’s prose.⁶² Under one interpretation—the one that Kennan attributed to it—the Telegram was a recipe for containing the spread of communism with limited use of force while avoiding the alienation of the Soviet Union until the benefits of capitalism could be realized. Kennan argued that Stalinist totalitarianism was only a temporary condition, a “device of despair, arising from specific and particularly painful problems of adjustment” as societies developed.⁶³ Under another, it became a call to arms. Forrestal, for example, found it supportive of his view that America was on track for a cataclysmic conflict with the Soviet Union. He had it copied and distributed to thousands of high-level officers, declared that it was required reading, and used it as grounds to argue that the nation’s survival depended on permanent mobilization and granting policymaking authority to military officers. Forrestal’s reading, and similar subsequent ones, overlooked the fact that the thrust of Kennan’s argument was that with the Soviets, attempts at containment

⁶¹ George Kennan, *Memoirs*, 293

⁶² Historians, policymakers, as well as journalists continue to debate whether Kennan’s interpretation of “containment” was primarily a political, or military, proscription. For his part, Kennan spent decades complaining that military mobilization was not what he had intended. For his explanation, see his *Memoirs: 1925-1950* (Boston: Little, Brown, 1967), 354-367. The most thorough study of the recommendations as politically anchored is John Lewis Gaddis, *Strategies of Containment*, esp. Ch. 2; and, his “Containment: A Reassessment,” *Foreign Affairs*, July 1977, 873-887. For the oppositional viewpoint, see Eduard Mark, “The Question of Containment: A Reply to John Lewis Gaddis,” *Foreign Affairs*, January 1978, 430-440. A more nuanced interpretation of the issue is the distinction that John L. Harper makes between “passive” and “active” military components and his finding that Kennan’s containment strategy sought to establish an American passive military, one subservient to political control, that could be effective as a diplomatic tool. See Harper, *American Visions of Europe*, esp. Ch. 5.

For Kennan’s influence on postwar policy, see Ernest R. May, ed., *American Cold War Strategy, Interpreting NSC 68* (Boston, MA: Bedford Books of St. Martins Press, 1993), 5. For a distillation of Kennan’s ideology and influence, see Crabb & Mulcahy, *American National Security* (Evanston, IL: Row, Peterson, 1960), 67-72.

⁶³ Atkinson, “America’s Global Planner,” *New York Times Magazine*, July 13, 1947. See also Kennan’s anonymously published “The Sources of Soviet Conduct,” *Foreign Affairs* 25 (July 1947): 575-576, 581-582.

through military force would certainly validate Russia's traditional fear of invasion.⁶⁴ For Acheson, the Telegram and the NSC directives that delineated Kennan's version of containment became useful only insofar as they could be used as touchstones for a subsequent study that set the parameters for NSC 68, the document that set forth Acheson's preference for strengthening the conventional military and that made mobilization a national policy.⁶⁵ Though Acheson's revision of national security policy occurred after the H-bomb decision, the following discussion of the factors that conditioned that review help to illustrate the inter-relatedness between foreign and domestic policy during Acheson's tenure, as well as the contributions that Acheson's policies made to mobilization and Atomic Governance.

The State Department's policy review was the product of a collaborative effort between military strategists and Acheson's go-to guy on State's policy planning staff, Paul H. Nitze.⁶⁶ Nitze could not have been more different than Kennan. An anti-Soviet True Believer, Nitze personified the shift in hatred from Nazis to Soviets that Forrestal had fostered in the immediate postwar period: "Every bone in Nitze's body ached with suspicion of the Soviet Union."⁶⁷ In his own words, Acheson's H-bomb recommendation and his promotion of NSC 68 envisioned a no-holds barred approach to the Soviet Union that combined conventional and atomic capabilities to create a policy toward the Soviet

⁶⁴ G.F. Kennan, "Long Telegram" in *Origins of the Cold War*, Kenneth M. Jensen, ed., 20-21.

⁶⁵ Beisner, 228.

⁶⁶ Beisner, 229. For Nitze and Acheson, see also Hogan, *A Cross of Iron*, 291-310.

⁶⁷ Hogan, *A Cross of Iron*, 294.

Union based on “situations of strength.”⁶⁸ As with the H-bomb decision, the sense that Acheson’s effort to deal comprehensively with the Soviet threat and to signal America’s intent to use force to halt communist expansionism represented the development of a fresh foreign policy strategy does not preclude the consideration of those same decisions as politically-motivated strategic maneuvers.⁶⁹ Acheson conceded that the military and its congressional supporters had already limited the sort of response that Truman could make; and, his national security review depended almost entirely on the military’s own evaluation of national security requirements. It might be argued that Acheson’s analysis required information that only the military could provide. It is puzzling, however, that Acheson adopted the military’s perspective without critique or revision and made little or no effort to evaluate the situation from a diplomatic perspective.

Acheson forged closer ties between State and Defense by discounting diplomatic avenues for solutions to the Soviet threat in favor of military ones. He sidestepped the possibility that of intra-service rivalry had shaped the upper echelon’s claims for resources and, similarly, the possibility that military officers had for their own self-interested purposes exaggerated the minimum necessary resources. Instead, he concerned himself with what appeared to be a disjunction between the armed forces’ reliance on atomic weapons as contained in their strategic plans and the level of resources that officers claimed would be necessary to carry out those plans. Acheson’s review of defense has been tied to his mistrust of the Pentagon and the shallow regard he held for

⁶⁸ Acheson, “Peace Goals Demand Firm Resolve,” *Department of State Bulletin*, February 20, 1950, cited in Miscamble, “Rejected Architect and Master Builder: George Kennan, Dean Acheson and Postwar Europe,” *The Review of Politics* 58 (1996): 437-468, 452.

⁶⁹ For a summary of the factors that fed into Acheson’s decision to revise security policy, see Beisner, 228. Additionally, Beisner suggests that the buildup of conventional military force called for under NSC 68 reflected Acheson’s “reservations” about the H-bomb. *Dean Acheson*, 224.

Louis Johnson, Truman's budget conscious Secretary of Defense who took charge after Forrestal's May 1949 suicide.⁷⁰ But, the desire to do an end-run around Johnson and deal directly with the Pentagon while insisting on the need for a review because of mistrust of the Pentagon presents a contradiction that is difficult to resolve. If that was the case, why did Acheson depend almost entirely on the military's own estimates of what was necessary to craft NSC 68? Among the claims that Acheson took at face value were: (a) Curtis LeMay's complaint that SAC was too ill-equipped and trained to carry out the type of devastating attack on the Soviet Union envisioned in one of the military's own strategic plans, "Fleetwood;" (b) the Harmon Committee Report commissioned by the JCS that called for a buildup of conventional forces to supplement nuclear weapons; and (c) the expression of the Navy's dissatisfaction with its share of appropriations that culminated in the 1949 "Revolt of the Admirals."⁷¹ From this perspective, Acheson's concern with the likelihood that the military did not have sufficient resources to carry out their strategic plans was provoked apparently by a JCS request after the Soviet's first atomic detonation for more atom bombs⁷² and was nothing more than a restatement of the argument that the upper echelon had been making since the end of World War II.

Acheson's uncritical adoption of the armed forces' estimates contributed to closing the gap that typically existed between what the armed forces wanted and what elected officials considered sufficient. That he did so led, ultimately, to the unprecedented budgets justified under NSC 68.⁷³ Assuming that Acheson was in a

⁷⁰ Beisner, 227, 229.

⁷¹ Beisner, 226-228.

⁷² Beisner, 228.

⁷³ Hogan, *A Cross of Iron*, 304, 313.

position to recognize the military's tendency to make unsubstantiated appeals to national security—as was the case with the dressing down that Nichols received from Eisenhower over the issue of how many bombs the military needed for 1948—to ensure satisfactory appropriations, Acheson's acceptance of the military's own assessment of its requirements reinforces the argument that his decision-making was strongly influenced by the political clout of a consolidated military. And, while State's review of security policy and the H-bomb decision may have involved different processes, the review and the decision seem to have been motivated by Acheson's desire to salvage Truman's political standing by satisfying the military and its congressional supporters. The view that Acheson's adoption of this course reflects the calculations of a hardheaded foreign policy realist is discounted by Acheson's dependence on the military's own calculations of force and resource requirements. It becomes more suspect when considered in light of Acheson's domestic political dilemma and attacks by anti-communists that threatened not only Acheson's stature but Truman's as well. And, by taking into account Truman's willingness to meet political detractors with acquiescence to the demands of the upper echelon and their congressional supporters—a practice that became more acute after Acheson's appointment to State—it becomes even easier to see that Acheson's decisions were those of a realist with at least one eye, and at times perhaps both eyes, trained on the domestic political front to determine how his recommendations would be received by the military and their supporters in Congress.

There are additional reasons to suggest that Acheson's approach to the H-bomb decision and NSC 68 was shaped more by domestic political realities than foreign policy. Prizing practicality, one of his law partners is reported to have said that he “was not a

man to wander into the penumbra of thought.”⁷⁴ Additionally, however, and though his impatience with deliberation is well documented, it seems that not only was he disinclined by nature to suffer the recommendations of those with whom he did not agree; but in discussions about the H-bomb and the security review, he was also interested in shaping the terms of the deliberation. The appeals to reason that Acheson used in disputing alternative recommendations suggest that he was not genuinely interested in alternatives but, as has been suggested of Truman and his appointment of the H-bomb committee, primarily concerned with making it clear that he had gone through a deliberative process.⁷⁵ In 1949, for example, after Acheson asked both Kennan and Nitze for input on his strategic review, he apparently chose to discount Kennan’s because it “simply advocated new arms talks.”⁷⁶ And, during discussions about the H-bomb, Acheson supposedly listened “sympathetically” to proposals aimed at disarmament from Oppenheimer and others, but reported to longtime Truman advisor and Acheson assistant, Gordon Arneson, that he could not “understand” how it was possible to “persuade a paranoid adversary to disarm ‘by example.’”⁷⁷ Because the obverse—that one might persuade a paranoid adversary to disarm by out-arming him—is such a logical stretch, the statement seems not to reflect open mindedness as much as it does a comment of a man to a like-minded colleague who, with decision-making well behind him, was musing out loud about ways to discredit his opposition. The sense that Acheson was interested in

⁷⁴ Cited in Beisner, 100.

⁷⁵ See Beisner (229) and Miscamble (450-451), who conclude that prior to issuing his final recommendation to Truman, Acheson seemed genuinely interested in proposed alternatives.

⁷⁶ Cited by Beisner, “The Secretary, the Spy, and the Sage: Dean Acheson, Alger Hiss, and George Kennan,” SHAFR Presidential Address, *Diplomatic History* 27 (2003):1-14, 11.

⁷⁷ Miscamble, “Rejected Architect” 451, n. 35. Also quoted in Beisner, 232.

hearing only those arguments that would reinforce his own preferred course of action is strengthened by the fact that he seems not to have given much thought to the practical alternatives to the immediate ramp-up of H-bomb development before the decision was made and did not seem to have considered some of the recommendations about courses of action should the H-bomb become a national imperative. It stands to reason that had he been keen to gather the most sensible solutions to the problem of the Soviet's possession of an atom bomb, he would have been in a position to look beyond the moral repugnance expressed by the weapon's opponents and to the prospect of a nuclear arms race, an issue those opponents also discussed, and into the value of possibilities—including diplomacy—for preventing it.

However weighted by responsibility or repugnance, those brought into the decision-making process took their advisory roles seriously. Participating in the decision-making was something that Lilienthal, for one, had hoped to avoid. On November 1, 1949, Lilienthal told Acheson that he did not want to be involved, and that the decision whether to develop an H-bomb was “essentially a question of foreign policy for [Acheson] and the President.”⁷⁸ He had already spent a month pondering the problem at the prompting of Lewis Strauss, who proposed that the Commission “make an intensive effort to get ahead with the ‘Super’.”⁷⁹ Lilienthal then invited the General Advisory Committee (GAC) and its Chairman J. R. Oppenheimer, to present a military, technical, and operational, analysis of the issue to the Commission on the last weekend in

⁷⁸ Lilienthal, *The Atomic Energy Years*, 583.

⁷⁹ Lilienthal, *The Atomic Energy Years*, 580.

October.⁸⁰ Both committees, the AEC and the GAC, met during that weekend.

Lilienthal's journal reflects that military officers were the only ones who seemed ambivalent, and his puzzlement suggests that he was unaware of what was going on behind the scenes with the JCS's opposition to the program until it could be assured that it would not compromise armed forces' budgets. In yet another example of how atomic science served as a mechanism for the consolidation of authority and as an indicator of how nefarious militarization had been, Lilienthal drew the wrong conclusion from the reluctance of officers to engage in the discussions. They were, he wrote, either "too busy with the inter-service row, or just not too able to grasp it." Perhaps in an attempt to focus the military's attention on the actual consequences of atomic weapons, some members launched difficult questions toward General Bradley, Chairman of the JCS. As to whether the U.S. would attack Russia if London would likely suffer the reprisal, Bradley who was on record for his aversion to viewing atom bombs as weapons but who also seems to have been interested in keeping the military's options open, answered only that he believed the "Super" would offer a "psychological edge." Enrico Fermi commented that development should proceed, but he qualified his approval with a recommendation that the government consider later (and more carefully) whether to use it. The others shared opinions

⁸⁰ Among other requests, the GAC was asked whether: "the United States would use a 'super' if it had one available? What would be the military worth of such a weapon, if delivered? Would it be worth 2, 5, 50 existing weapons? What would such values be when modified by deliverability factors? What is the best informed guess as to the cost of the 'super' in terms of scientific effort, production facilities, dollars, and time?" U.S. DOE Archives, 326 Atomic Energy Commission; Collection 1947-51 Secretariat, Box 4942, Folder 471.6 (10-5-49) Sec. 1.

Three different versions exist of the discussions. The official summary minutes are available on the World Wide Web at http://www.nuclearfiles.org/menu/key-issues/nuclear-energy/history/aec_minutes_1949-10-28.htm# (last accessed 08/06/07). Lilienthal's version is included in *The Atomic Energy Years*. Gordon Dean and Lewis Strauss prepared another, entitled "Sequence of events leading to the decision on the 'super' bomb." U.S. DOE Archives, 326 Atomic Energy Commission; Collection 1947-51 Secretariat, Box 4942, Folder 471.6 (10-5-49), hereafter "Dean Summary." For background on the GAC meeting, see Herken, *Brotherhood of the Bomb*, 204-214.

obviously honed long before the meeting began. Some, including Harley Rowe, an electrical engineer and manager who had worked on the Manhattan Project, and James B. Conant, former president of Harvard University and friend of the Manhattan Project's Groves, were both opposed to proceeding with H-bomb development.

The content of the discussion ranged from a prescient conclusion that radioactive fallout would pose "grave contamination" problems to a comment reminiscent of the monstrous vision that Stimson conjured up when he addressed one of the first meetings of the wartime Interim Committee formed to consider postwar control of the bomb: "We built one Frankenstein."⁸¹ When the GAC submitted its written report, no member of the Committee recommended development. Among their reasons, reflects a measure of contrition, if not guilt, over the atom bomb. Other reasons varied. Members remarked that it promised too much devastation, would result in radioactive contamination, and that its cost could not accurately be determined. Significantly, however, the GAC would not approve the weapon because there was "no foreseeable non-military application."⁸² This statement suggests that the efforts made to find alternative, peacetime, applications for atomic energy by elected officials and scientists, however fruitful, had at least partially offset the remorse they felt over the tragedy of Hiroshima and Nagasaki; therefore, the possibility of some sort of peaceful application was a condition that they considered essential if they were to recommend H-bomb development. Fermi and Rabi both suggested that a diplomatic solution might yet be found. Specifically, they noted that if

⁸¹ Lilienthal, *The Atomic Energy Years*, 580-581, and for Conant, see 82. For the role he played in the Manhattan Project and his influence after the war, see Acheson, *Present at the Creation*, 152.

⁸² See Gordon Dean's summary, U.S. DOE Archives, 326 U.S. AEC, RG Commission, Collection 1947-51 Secretariat, Box 4942, Folder 471.6 (10-5-49) Sec. 1.

the Soviets were made aware that the U.S. was considering an H-bomb, they might be more willing to agree to joint non-development.⁸³

Acheson's approach to his responsibilities as Secretary of State beginning in 1949 reflected not only an interest in national security but also a recognition of and concession to the military's political influence. The centrality of the atomic program to the administration's political problem is unmistakable. Military officers and their supporters had used the atomic program to discredit Truman, his policies, and the principle of civilian oversight of atomic science. They had exploited every Soviet move as evidence that the mobilization they had been promoting since the end of World War II was necessary: that national security could only be preserved by expanding the military's footprint and by granting military planners the authority to set policy. Moreover, when it came to the H-bomb decision, they made sure that the administration was left with no delusions about the JCS's significance. They used their considerable influence to parlay Truman and Acheson's commitment to pursue development (at perhaps, all costs) into increased funding by way of guarantees that their projected needs for atomic resources would be not be compromised. They positioned themselves to benefit doubly—directly because of the promise that their projections would be satisfied and indirectly because their monopolization of AEC resources meant that increased AEC appropriations yielded military returns.

In January 1950 Manhattan veterans had achieved what Truman and Acheson could not: a JCS recommendation that Truman proceed with development of an H-bomb. The recommendation arrived in a letter from General Bradley on behalf of the JCS, who had been assured that the H-bomb would not come at the expense of armed forces

⁸³ See Dean's summary, (10-5-49) Sec. 1-3

budgets. Addressed to the AEC, there are indications that the letter was likely written by members of the MLC, including Manhattan veteran Kenneth Nichols. The letter pointedly disputed the moral objections that advisors had raised, arguing that no weapon was “more immoral than another.”⁸⁴ This language suited Truman who, besides needing the support of the military before he could announce the development of a new weapons system, was no doubt satisfied to read arguments from the JCS that supported his own view of atomic and nuclear weapons: that the H-bomb would not revolutionize warfare, did not hold the promise of providing any strategic advantage, and thus a decision to develop one was not likely to result in the beginning of the end of civilization.⁸⁵ Much has been made of the fact that Truman believed at the time that the JCS recommendation “made a lot of sense.” And that, in Truman, the JCS “found a sympathetic reader.”⁸⁶ The episode is significant for several reasons. First, it demonstrates that the military had achieved enough authority within Truman’s administration to hold the decision hostage pending satisfaction that their funding would not be compromised by the proposed H-bomb program. Second, and although it is not clear where they received authority to promise the JCS a secure funding stream, it reveals the centrality of Manhattan veterans to the process through their ability to affect decision-making at the highest levels of military and administrative responsibility. Third, by showing how important the

⁸⁴ Rosenberg, “Atomic Strategy,” 83. For the speculation that the letter was written by the MLC, see Burkhardt, 156, n. 406. For the text of the letter, see “Memorandum by JCS to Johnson, January 13, 1950, FRUS, 1950 Vol. 1, 506.

⁸⁵ Rosenberg, “Atomic Strategy,” 83. Secretary of Defense Johnson believed the letter would be so important to Truman that he withheld it from Acheson and Lilienthal, the other members of Truman’s special committee, and personally delivered it to the president. Acheson wrote in his memoirs that Johnson did so because he was jealous of Acheson’s special relationship with the president, 348 [ck]. Burkhardt follows Rosenberg (82) in speculating that Johnson was also interested in preventing Lilienthal from developing counterarguments to the JCS’s recommendation. 157.

⁸⁶ See, Rosenberg, “Atomic Strategy,” 83, Rhodes, 407; Burkhardt, 157,

military's assent to the program was for Truman and Acheson, it reinforces the argument that they were not primarily interested in developing a response to the Soviet's atomic success, but interested in putting forth the only solution that promised a domestic political benefit. Fourth, it illustrates the dynamic nature of the relationship between advisory groups and advisee, and the evolution of coherence of opinion between those counselors who seek to satisfy their superiors and officials who seek to have their pre-existing decisions ratified, bringing to the fore a risk inherent in an advisory process that is, consciously or unconsciously, disingenuous.⁸⁷

Truman's decision was likely anchored in assumptions about command and control that were limited to his term in office, but it had a long-lasting affect on the atomic program's administration. In light of Truman's persistent support of peaceable atomic development, his repeated refusals to authorize the military to possess stores of atomic weapons or components despite the claimed strategic advantage to doing so, it appears likely that one of the most important features of the JCS recommendation for Truman was not the fact that it added clarity to the moral objections, or whether the H-bomb would give the U.S. a psychological or strategic edge over the Soviets, but that it placed the moral responsibility in the hands of the initiating party. For Truman, who was committed to the belief that only the president could decide whether or not to use nuclear weapons and equally committed—at that time—to the belief that he would never order an atomic first strike, the decision to devote resources to the development of a nuclear weapon unimaginably more destructive than the atomic bombs that had been used against

⁸⁷ Rosenberg massages the outcome of this process: "By the time he announced his position on January 31, Truman had apparently convinced himself that he was merely confirming what had already been decided."
⁸⁶ In Schilling's analysis, it was an example of one of the "major necessities of the American political process: the need to avert conflict by avoiding choice." 40.

Japan and then in existence presented no moral dilemma. Truman was certain that he would not authorize its use, or the use of any other atomic weapon, in a first-strike scenario. Moreover, he anticipated that his successor would retain the same control over the use of weapons as he himself had. In accordance with NSC 30, finalized September 16, 1948, “The decision to use atomic weapons in the event of war is to be made by the Chief Executive when he considers such decision to be required.” That criterion remained unchanged through the remainder of Truman’s presidency, to be included in a set of policies put together for President Eisenhower. Under the heading “Use of Atomic Weapons” the decision remained with the president: “In the event of a positive decision, the President would authorize the Secretary of Defense to use atomic weapons under such conditions as the President may specify.”⁸⁸

Yet, Truman did not appreciate the long-term consequences of his decision and Acheson, who was the one person in a position to evaluate the potential alternatives to H-bomb development and who might have steered Truman into another course of action—or mediated the consequences of the one ultimately taken—did not. Given the history recounted here, or even in light of Acheson’s legendary self-assurance and confidence in his own ability, the reasons Acheson provided later, and that others have reiterated, are not persuasive. Acheson’s own explanation for his H-bomb recommendation was that

⁸⁸ Memorandum from James S. Lay, Jr., to Secretaries of State, Defense and the Chairman of the Atomic Energy Commission, “Atomic Energy Policies Approved by the President on Recommendation of the National Security Council or its Special Committee ... for the information of the President-elect.” December 1, 1952, National Archives, Secretariat collection, Box 1277, Folder O & M, National Security Council.

For an example of Truman’s reaffirmation of this principle, see the Press Release issued November 30, 1950, following a question and answer session during which Truman believed he might have been misunderstood about his retention of authority over the use of atom bombs. Official File, 692 A Misc (1946), 692 A Reaction to Russian A-Bomb, Use of Atomic Bomb in Korean Emergency, 692-A Use, Box No. 1528, HST Library.

although he was sympathetic to the objections raised by Lilienthal, Conant, and other members of the GAC, his role was limited by Truman's request that he, as a member of the committee, deliver a decision based on one issue, whether or not to develop the hydrogen bomb, and that the objections of other advisors could not factor into his decision. As Lilienthal recounted in a memorandum dictated for the file immediately after the meeting he, Johnson, and Acheson had about the decision, Lilienthal reported that after Acheson told him he agreed with his opinion but added:

[It] did not offer an alternative course that appealed to him, that he felt the pressure for a decision was so great, that the discussion and feeling in the Congress had reached such a point that to defer the decision to this purpose was an alternative that he could not recommend. Secretary Johnson apparently agreed. We must protect the President.⁸⁹

The almost apologetic emphasis behind Acheson's claims of obedience to Truman's directive as well as his comments on the limitation of a statesman in relation to a citizen or to his president, for example, appear manufactured out of his respect for Truman and to disguise the considerable influence that Acheson undoubtedly had over Truman's decision-making as his Secretary of State, confidant, and friend.⁹⁰

In bowing under the weight of political pressure, Acheson surrendered his high ground—and that of the Truman administration—to the military and its supporters. The Secretary not only signaled his acceptance of the military's point of view, but put in place strategies that allowed the armed forces to achieve the policymaking goals that Forrestal established before the end of World War II. By severing the tension that had existed

⁸⁹ Lilienthal, "Declassified Version of Mr. Lilienthal's Memorandum [to file] of January 31, 1950, 9. Attached to February 28, 1964, letter from Lilienthal to Acheson, Acheson Collection, Box 101, State Department and White House Advisor, 1964, Jan-Jun, HST Library.

⁹⁰ Acheson, *Present at the Creation*, 344-349.

between the diplomatic, civilian, aims of State and the military goals of the Pentagon, Acheson eliminated any balance between defense and diplomacy that might have tempered or perhaps prevented the nuclear arms race. Despite the effort Acheson put into justifying his decision-making and recommendations as those of a pragmatic diplomat, he used the atomic program for political purposes, consulting directly with the influential E.O. Lawrence, for example, and ceded foreign policy to military planners.⁹¹ Instead of promoting diplomacy while taking military needs into account, Acheson disregarded diplomacy in favor of militarism.

The engine driving all of this was militarization. The military's consolidation of their authority and the way officers and their supporters used it to undermine Truman's goals in favor of their own. They shaped future policymaking and contributed to the subordination of diplomatic responses to "Joe One" in favor of force-driven, military, solutions. Just as military officers and their supporters had used national security as a rationale to achieve domestic political goals, so too did Truman, on the advice of Acheson, use national security to rationalize a politically advantageous decision. Dean Acheson, the man who in 1947 had counseled Truman to exploit the domestic political climate to achieve a diplomatic goal, to boost anti-communism and secure U.S. support for Turkey and Greece, employed the same politically-based strategy in reverse in 1949. Acheson advised Truman to use a diplomatic crisis, the Soviets atomic detonation, to achieve a domestic political goal.

The changes in Truman's administration that took place beginning in January 1949 and the H-bomb decision had profound short and long term consequences. They contributed directly a drain of leadership and advisory capacity, the resignations of (1)

⁹¹ For 1950 letters from Acheson to Lawrence, see EOL, Carton 14, folder 26; Carton 16, folder 17.

George F. Kennan, whose intelligence and expertise in the field of foreign policy was, and remains, undisputed; (2) Oppenheimer, whose objection to the H-bomb appeared to validate his opponents' claims, particularly those of Lewis Strauss, that he was a communist sympathizer and became one of the reasons he was removed and tried as a communist; and, (3) Lilienthal, a man who had been the foremost public spokesperson for civilian control and for the peacetime development of atomic science. Their departures created a vacuum in the realm of national policy and a dramatic transformation of the intellectual and ideological base that had driven policy since the end of the war.

NSC 68 filled that vacuum. The protocol known as NSC 68 filled that vacuum and transformed the post-war policy from one of political containment of communism to one that emphasized military containment.⁹² Because the massive military build-up envisioned in NSC 68 required an equally massive budget, Truman and fiscally-conservative insiders initially resisted the adoption of that policy.⁹³ The “logjam” broke free with the onset of the Korean War in June 1950 and Truman approved NSC 68 in December 1950. As Hogan pointed out, it “subverted Truman’s attempt to recapture the [budget] initiative” and “national security became the common currency of most policy makers, the arbiter of most values, the key to America’s new identity.”⁹⁴ But NSC 68 can also, like the H-bomb decision, be understood as a manifestation of militarization that

⁹² For NSC 68, see Ernest R. May, ed. *American Cold War Strategy: Interpreting NSC 68* (Boston: St. Martin’s Press, 1993).

⁹³ For a critique of NSC and its detractors, see Robert P. Newman, “NSC (National Insecurity) 68: Nitze’s Second Hallucination,” *Critical Reflections on the Cold War: Linking Rhetoric and History*, Martin J. Medhurst and H.W. Brands, eds. (College Station TX: Texas A&M University Press, 2000), 55-94.

⁹⁴ Hogan, *A Cross of Iron*, 304, 313.

lent authorizational force to military policymaking. That authority became self-sustaining through an advisory ethic that did not replace outmoded strategies or initiatives, but continually built on existing models.⁹⁵ Along with a built-in administrative resilience, the directive's ideological underpinnings gave AEC Chairman Gordon Dean the opportunity to expand the significance of the AEC and to use that relationship to promote the military's use of the program and experimentation to generate fear.⁹⁶ This alignment of the two bulwarks of the Cold War American state—the NSC and the AEC—gave the AEC, the JCS, and upper echelon officers a nearly-limitless and unregulated ability to initiate weapons development, pursue testing schemes continentally and in the Pacific, and rationalize the expansion of classification systems, all in the name of national security. The result was a constitutionally debilitating ensemble of maneuvers whereby military officers and their supporters with the AEC evaded congressional, and even presidential, oversight.

The armed forces had come to view their entitlement and mission as so grandiose as to absolve them from responsibility for their peacetime, constitutional, duties to their commander-in-chief, and to the citizens they were to protect. The necessity to guard the

⁹⁵ Reviews of national security policy became little more than mechanisms to supplement and increase existing resource flows. See, for example, the March 10, 1953, memorandum from the Roger Keyes, Deputy Secretary of Defense to the Joint Chiefs of Staff regarding input on a review of policy procedures, NSC 730-c, to bear in mind “currently approved national security policies, objectives or commitments.” [page unnumbered] *Documents of the National Security Council*, Eighth Supplement, [DNSC]. Thus did reviews of national security policy become little more than mechanisms to supplement, and increase, existing levels.

⁹⁶ For Dean's relationship with the NSC and his desire to make sure that the expansion of the program for weapons production be promoted as an integral part of NSC 68, and not as a separate program, see his account of discussions with James S. Lay, Executive Director of the NSC, September 28, 1950. The president agreed to the plan worked out by the two men according to the October 11 entry. During an October 26 discussion with a reporter from *Time*, Dean emphasized that the program expansion was part of the president's overhaul of foreign policy strategy and not related only to the H-bomb project. *Forging the Atomic Shield*, 84-86.

nation from the real enemy, the U.S.S.R., led the military to view with suspicion and animosity anyone who might learn their secrets or, through public opinion, begin to thwart their ability to amass their self-determined necessities. Perhaps as much as they feared the U.S.S.R., the armed forces came to fear American citizens and the weight of democratic constraints.⁹⁷ During the era of atmospheric weapons testing, military officers and their supporters used wartime strategies of control to exploit the atomic program and to interrupt the operation of those constraints in other venues as well. Through appeals to national security and subterfuge, the JCS controlled the terms of NSC policy reviews, disabling the body of advisors whose responsibility it was to organize and manage national security itself, and interfered with the ability of the president to carry out his constitutional responsibilities. An incident from 1952 that is reminiscent of Groves's use of a national security argument to prevent a review of the Manhattan Project provides one example of how the military used its authority to thwart an NSC initiative and Truman's constitutional prerogatives.

In November 1952, the JCS blocked an effort to provide the president with the information he would need to respond effectively to a national security emergency. The following summary shows that Truman seems to have come to accept that his role as commander-in-chief was devoid of any but symbolic authority. Unlike his public refusal to countenance any affront by the military, as had been the case with his dismissal of MacArthur, Truman was careful behind closed doors not to press the JCS into a confrontation and apparently passively endured what by any measure amounted to open insubordination. At the 126th meeting of the NSC, the president ended up in the middle of

⁹⁷ In Hogan's words, "The most important constraints on the national security state were those built into the country's democratic institutions and political culture." Hogan, *A Cross of Iron*, 475.

a dispute between the NSC and the JCS. A memorandum detailing that meeting reflects that NSC had agreed to a recommendation put forth by CIA Director General Walter B. Smith and other NSC committees that the NSC gather and catalog a listing of the nation's national security resources as a first step in a planning review and compiling a list of resources—"Commander's Estimates"—for the president and NSC to draw on should emergency deployment become necessary. Though undefined, the context suggests that this information would have included a complete inventory of military resources. The JCS and service secretaries agreed to the review, but only if they alone were the ones to gather and compile the information. Smith objected, but gently, "with all deference to the Joint Chiefs of Staff," he noted that because the review included civilian and military information, the NSC was responsible for and in a position to collect the information from all agencies, including the armed forces. Truman conceded the issue was "controversial" and asked for input. In response most, including JCS Chief General Omar Bradley, agreed that the estimates required more than the military alone could provide. Nonetheless, the JCS refused to cooperate with the NSC because the evaluations "involved the war plans of the United States." Instead, they agreed to provide "oral presentations on the problem to whatever group of the National Security Council it was determined should receive such information." Because the sort of oral presentation or question and answer session envisioned could not have been comprehensive enough to allow for the type of compilation envisioned by the Council, Truman could have insisted that individual branches supply their own list of resources or that each provide at the minimum an eyes-only itemization. Instead, he avoided pressing the JCS for cooperation and, in fact, temporarily relieved them of dealing with the matter altogether by suggesting

that the NSC set up an ad hoc committee to address the problem of how the military information might be incorporated into a strategic summary.⁹⁸ One partial explanation for why the upper echelon had been able to usurp the president's authority in this instance was the expansion of political might that the armed forces derived from the authority they gained over the atomic program and the expanded political might that they derived from using the atomic program, and atomic experimentation, to generate fear and support for a expansion of military authority.

The advent of continental weapons testing in Nevada, and the AEC/military partnership that developed when Dean became Chairman of the AEC that led to the systematic and institutionalized deployment of wartime strategies of control such as appeals to national security and media manipulation, made it easier for military officers and the AEC to use atomic experiments as instruments for political gain. The appeals to national security made by military officers and their supporters within the NSC and the AEC allowed the military to achieve General Hull's 1948 goal for a continental testing facility. The AEC supported that imperative, institutionalizing and sanctioning media manipulation and deception. Its partnership with the military meant that routine atomic experimentation could take place under the cover of media manipulation and organized public relations campaigns that persistently downplayed radioactive hazards. In this climate, atmospheric detonations as political theatre flourished, and officers, the AEC, and their supporters among the program's network of institutional partners used atom bombs to reinforce fear of nuclear war and to generate support for continual expansion of the atomic program, a large peacetime military, and the means to fund both. Such exploitation meant that hazards were disregarded and diplomacy compromised.

⁹⁸ "Memorandum for the President" November 28, 1952, MNSC

The AEC/Military Partnership: Gordon Dean and Continental Weapons Testing

With the H-bomb decision in hand, military officers, their supporters within the National Security Council, managers at Los Alamos and at other laboratories in the program's network, had the national security justification they needed to realize the long-held goal of conducting atomic experiments within the continental United States. They opportunistically seized on Truman's December 16, 1950, declaration of a state of emergency over the Korean War and, via a National Security Council recommendation issued on December 18, asked Truman to approve a continental testing facility. For military officers, the relative economy of testing in the United States created more opportunities to use atmospheric weapons tests as instruments for political gain. Self-interested promotional strategies that catered to the press, public, and politicians with invitations to witness experiments created pressure on testing officers and managers to subordinate precautionary guidelines aimed at reducing the hazards of radioactive weapons testing in the interests of preventing inconvenience to invited dignitaries and members of the media. Demonstrations such as these kept the public's fear of enemy weapons alive and generated support for military expansion. The AEC's collaboration in the production of what might have appeared to be war games in the conventional sense—an opportunity for training and promotion—meant that its duty to protect civilian interests took a back seat to the military's public relations goals. Because of this, the AEC paid more attention to ensuring that no adverse publicity ensued, creating the appearance of safety for the short term while disregarding the offsite consequences of the radioactive fallout produced by military demonstrations. Taking a wait-and-see approach, the AEC and its managers subordinated the long-term health of participants, observers,

and downwinders to advance the military's domestic ambitions. By early 1949, military officers had used the atomic program and military strategies of control to realize the Manhattan-style autonomy that had been their goal since the end of the war. In 1951, the military began expressing their authority over continental atomic weapons experimentation at the Nevada Test Site.

Lilienthal's resignation resulted in the takeover of the AEC by officials devoted to the military's cause. The two commissioners who had disagreed with the majority AEC opinion against hydrogen development, Gordon Dean and Lewis Strauss, did so with the backing of conservative members of Congress who, preferring military trusteeship, had not only battled Lilienthal throughout his tenure, but had been highly critical of Truman and his policies.⁹⁹ Dean succeeded Lilienthal as Chairman of the AEC and Strauss succeeded Dean.¹⁰⁰ Together, the two men retained control of the AEC throughout the period of atmospheric testing. Just as the change of leadership over the Department of State radically transformed the practice of diplomacy, the change of leadership over the AEC transformed the priorities of the Commission and the character of its operation. Most apparent was the AEC's support for the creation of a continental test site. Less apparent was the militarized AEC's neglect of its responsibility to the American public.

⁹⁹ Lilienthal opposed Dean's appointment to the commission. When Truman asked for his opinion, Lilienthal told him that he thought Gordon Dean's "chief qualification was that Brien McMahon had sponsored him two years ago and was pressing hard to get him appointed how." At that time, McMahon was one of Truman's harshest critics. Lilienthal, *The Atomic Energy Years*, 472.

¹⁰⁰ Although Roger M. Anders argued that Dean resisted the wholesale turnover of weapons to the JCS and was thus a champion of civilian control, his tacit cooperation with the military regarding continental weapons testing, Pacific hydrogen testing, and the diversion of resources intended for civilian appropriation of atomic science, tells a different story. "The Atomic Bomb and the Korean War: Gordon Dean and the Issue of Civilian Control," *Military Affairs* 52 (1988): 1-6.

The most fundamental and significant difference between Lilienthal's management of the program and Dean's was in their respective approaches to the hazards of experimentation—approaches that provide yet another example of the superficiality of the civilian/military dichotomy and its insufficiency as a guarantor of civilian authority over atomic science. Though both qualified as civilians in the conventional meaning of the term, only Lilienthal placed the interests of civilians first. Dean, on the other hand, protected the military's unfettered right to experiment and neglected his civilian responsibility. In hindsight, he appears to have exemplified a propensity that J. R. Lucas found indicative of government generally, where “unpalatable facts are screened out and mistaken decisions consequently go unreviewed.”¹⁰¹ Lilienthal's conception of his responsibility as Chairman included dealing with “unpalatable facts” that emerged in the course of reviewing prospective projects. He had a healthy respect for radioactive hazards and was likely aware of studies that had demonstrated definitive links between radiation and anemia, lung cancer, diseases of the blood and lymphatic systems, bone disorders, malignant changes over long periods of time, leukemia, and stomach cancer.¹⁰² And, as Chairman of the AEC, he was familiar with the reports from *Crossroads* and *Sandstone* that detailed the precautions taken there to prevent injuries from radioactive fallout. As the stockpile increased and the program seemed poised for more frequent experimentation, he took a special interest in learning about the hazards that would be posed from increased levels of radioactive fallout that experimentation would entail.

In response to a military request for the expansion of weapon facilities in July 1949—and a “whopper” at that—Lilienthal sought information regarding the

¹⁰¹ J.R. Lucas, *Democracy and Participation* (Baltimore, MD: Harmondsworth; Penguin, 1976), 155.

¹⁰² Allan Favish, “Radiation Injury and the Atomic Veteran,” *Hastings Law Journal* 32 (1981): 939.

consequences of fallout from atomic bombs. “How many bombs might it take to “contaminate the atmosphere? ... Stafford Warren and others put [the number] very low [while] E.O. Lawrence and his people think this is rot.”¹⁰³ Both men Lilienthal consulted had potential biases. Stafford Warren was by then Dean of UCLA medical school. As one of the recipients of AEC funding for studies interested in the medical use of radioactive isotopes, Warren and his staff at UCLA maintained a close professional relationship with the AEC. During the early years of testing at the Nevada Test Site, when fallout sometimes settled in the Los Angeles basin after testing in Nevada, Warren unofficially monitored levels of radioactivity and relayed the results, and his concern, to his colleague Shields Warren, who at that time served the AEC’s Director of the Division of Biology and Medicine.¹⁰⁴ Lawrence, on the other hand, had every reason to minimize the danger. Any decision to increase the nation’s stockpile could only help his bottom line, and he was an accomplished opportunist. Commissioner Henry Smyth noted that Lawrence was a brilliant scientist but had been known to have “overstepped the line in pushing projects which add to his own ‘Empire.’”¹⁰⁵ Lawrence and Stafford Warren depended on the AEC for project funding. Unlike Warren, however, Lawrence sought to shape the program by engaging with members of the Commission. Lawrence, for example, cultivated a professional and personal friendship with Lilienthal at the same time he was nurturing his

¹⁰³ Lilienthal, *The Atomic Energy Years*, 553. The issue that attracted his attention may have been an underground blast proposed by General Bradley on behalf of the JCS to obtain “information on the phenomenology and military effectiveness of an underground atomic explosion.” An unshielded underground blast would have excavated a large area and produced more fallout than any detonation to date. See memoranda and correspondence for this proposal, Atomic Energy: Underground Data file, PSF Subject File, National Security Council Atomic, Papers of Harry S. Truman, HST Library.

¹⁰⁴ See Shields Warren’s diaries. Papers of Dr. Shields Warren, Mugar Memorial Library Special Collections, Boston University.

¹⁰⁵ Cited in Herken, *Brotherhood of the Bomb*, 204.

already close ties with Strauss. He was also personally involved with those scientists who served on the GAC and operated as counselors to the AEC and routinely made recommendations about projects and initiatives, especially those expected to involve large capital investments.¹⁰⁶ After the H-bomb decision, he met with Acheson and members of Nitze's working group. Lilienthal, having received polarized opinions from two respected scientists, requested an additional, independent, report. It sounded the same precautionary notes as Warren's and was not in agreement with Lawrence's. Even then, Lilienthal remained wary: "We must try to get a reasonable answer" he wrote.¹⁰⁷

Dean's approach to the problems of fallout was a dramatic departure from Lilienthal's. Dean viewed fallout as primarily a psychological problem that could be managed, as General Hull had argued, with public education. Because of this, he failed to heed the recommendations of expert advisors that radioactive fallout should be strictly limited and made decisions that, in the view of many experts at the time, increased the likelihood for radioactive injury. During an AEC meeting held in May 1952, after the second year of weapons testing in Nevada, Shields Warren warned that dangerous levels of fallout would be produced by even moderate yield devices detonated from towers in a desert location. Warren, a graduate of Harvard Medical School, was among the foremost experts on the health effects of radiation, had been a colleague of Stafford Warren in the

¹⁰⁶ For Lawrence's relationship with Strauss, see the collection of letters and other correspondence in the Dr. Ernest Lawrence collection, especially Reel 25 of the microfilmed collection. For his correspondence with Lilienthal, see Reel 17, EOL. For a sample of the interaction between Lawrence and the GAC, see the discussion of his request for an additional reactor in the "Eighth GAC Meeting (February 6-8, 1948) in Washington, D.C." especially the section headed "Bevatrons" on 18-21. National Archives, Record Group 326, GAC Minutes/Reports, Mtgs. 2-13, Box 1. See also Herken, *Brotherhood of the Bomb*.

¹⁰⁷ Lilienthal, *The Atomic Energy Years*, 553. As will be discussed, Lilienthal's difficulty in finding objective assessments of the dangers of radioactivity were only magnified by the insular culture of Cold War science.

Hiroshima and Nagasaki studies, produced the first systematic study of radioactive fallout, wrote the textbook on the biologic effects of ionizing radiation, and, as a pathologist, had revolutionized the therapeutic use of radioisotopes.¹⁰⁸ Warren combined service with the AEC, the UN Atomic Energy Agency, the National Academy of Sciences, Department of Defense, National Aeronautics and Space Administration, and the Veteran's administration, with his personal work, primarily at the New England Deaconess Hospital in Boston as Chief Pathologist for 36 years in the radiation laboratory that is named in his honor.

In 1952, however, Warren's expertise and authority did not lead Dean to reconsider the safety of tower shots or the risks posed by continued military weapons testing. The minutes reflect that Warren told the commission that it should be "careful in the future to avoid tests when the winds in the upper air reach high velocities. ... The Tower Shot ["Easy"- 12 kt] reinforced his conclusion that we cannot risk any [larger] continental shots." In response, Dean could have cancelled tests pending further study; gone on record as supporting the decisions of the military regardless of the risks; or approved such experiments provided they were conducted at the Pacific Proving Ground. Or, he could have recommended an approach that balanced military needs with off-site safety by supporting the development of a set of criteria for weapons testing at the Nevada Test Site, criteria that would have given the military a set of parameters to use in planning and would have provided test managers with expert advice to guide them in

¹⁰⁸ For a brief summary of Warren's accomplishments, see David A. Wood, "A Personal Tribute to Shields Warren, M.D. (1898-1980)" in American Cancer Society, *CA: A Cancer Journal for Clinicians* 30 (1980): 348-349.

making decisions to allow, postpone, or cancel, planned detonations.¹⁰⁹ Instead, Dean sidestepped the safety issue altogether by suggesting that the problem was not one of reducing hazards, but of reducing complaints. Dean's response to Warren's warning was to note that "a popular article on fall-out to reduce the possibility of public anxiety. . . might be helpful."¹¹⁰

Though only a rough beginning to the public relations campaigns that the AEC would develop to protect the military, and in a brief introduction to the content of the next chapter, Dean's comments came after a short but powerful burst of energy by the military that had already totally undermined the authority of the AEC and the Division of Biology and Medicine to regulate the terms of troop exposure.¹¹¹ In 1949, in preparation for the Army's anticipated indoctrination of troops to radioactive fallout, Warren had contacted Dr. Joseph G. Hamilton, a medical physicist and physician who during the war had pioneered studies on animals of the metabolic effects of radioactivity. When Warren contacted him, Hamilton was Director of UC, Berkeley's Crocker Radiation Laboratory.¹¹² Warren provided Hamilton with all available information to launch a thorough appraisal of the problem. In response, Hamilton determined that troops might

¹⁰⁹ "A tower shot is preferable ... because we can fix zero time with accuracy[to] time signals to open camera shutters ... and turn on electrical equipment." Alvin C. Graves, "AEC Information Plan and Materials for Shot 3, Tumbler-Snapper Test Series" April 15, 1952, 20. AEC 505/25 Defendant's Exhibit DX 21949, *Prescott v. U.S.*

¹¹⁰ Harold D. Anamosa, Acting Secretary, Atomic Energy Commission, meeting no. 694, "Minutes [with deletions] May 14, 1952."

By 1959, Warren had left the AEC to become the U.S. representative to the UN Radiation Committee.

¹¹¹ The most thorough summary and analysis of troop deployment amidst atomic weapons remains Allan Favish, "Radiation Injury and the Atomic Veteran" *Hastings Law Journal*, (1981).

¹¹² Hamilton died of leukemia in February, 1957, at the age of 49. For a summary of his accomplishments, see the August 16, 1957 obituary written by Ernest O. Lawrence and Warren M. Garrison, in *Science* 126 (1957): 294.

remain operational if not psychologically disturbed, but noted that the root issue was internal radioactive poisoning from inhalation. Recommending more experimentation to determine, with precision, the exact strata of safe to dangerous levels, Hamilton argued that no such maneuvers be attempted until lengthy experiments had been performed using “large monkeys such as chimpanzees.” He warned that without such preliminary studies, the AEC risked opening itself up to criticism that it had recklessly endangered human lives. The strength of his feeling about the ethical boundary this would cross was captured in the chilling connection he made between the types of maneuvers that the military proposed and Nazi experimentation, writing that without a prior understanding of the nature of the hazard derived from animal experimentation, the military’s proposal carried with it “a little of the Buchenwald touch.”¹¹³ Warren took Hamilton’s opinion into account when making his own recommendations about limits for military training exercises. But, like Stafford Warren before him, he was unable to instill in officers and their supporters a realistic concern for radioactive hazards. Army officers trumped Shields Warren, made only marginal concessions to his admonitions and insisted the realistic training exercises they proposed rose to the level of a national security imperative.

¹¹³ Joseph G. Hamilton, M.D. to Shields Warren, M.D., Director of Division of Biology and Medicine, November 28, 1950. A copy of this document is in the author’s possession. (Though the copy is stamped as one from an original at the Bancroft Library at Berkeley, the author was unable to locate in July 2000 a version within the records housed in either the Joseph G. Hamilton collection or the Dr. Ernest Lawrence collection housed there on microfilm.) The document was unearthed in 1982 by Dorothy Legarreta who had worked on the Manhattan Project and who later organized the National Association of Radiation Survivors. Legarreta located the memorandum while gathering research for a book about human experimentation. After locating it, University of California administrators removed Hamilton’s files from public access. To recover the document, and others connected with human experimentation, Legarreta filed a Freedom of Information Act Request with the Department of Energy. In response she received a carton of documents chronicling the intentional ingestion or injection of radioactive substances. See Geoffrey Sea, “The Radiation Story No One Would Touch,” *Columbia Journalism Review* 32 (1994): 37.

This assertion of military authority over the terms of experimentation was but a continuation of the military's peacetime takeover of the atomic program that began with planning for *Operation Crossroads*. In official and unofficial ways, President Truman had long since sanctioned the military's authority over atomic science; allowing military officers and their supporters to replicate, and reinforce, the use of Manhattan Project protocols to achieve authority over the program. The autonomy that military officers secured over the atomic weapons experiments—continental and otherwise—is traceable back to the Manhattan Project through the Military Liaison Committee. Staffed by Manhattan's managers, the MLC amassed enough authority after passage of the AEA and NSA to require that the JCS subordinate its decision-making process to the MLC. And, in 1949, it was the MLC and the Manhattan Project's Nichols who lobbied for H-bomb development and who arranged the terms necessary for the JCS to sign off on the project. After that decision, the MLC officially asserted its authority over the AEC by requiring the AEC to submit to routine and comprehensive MLC reviews of AEC programs. In 1951, the MLC advised the AEC that to avoid "misunderstandings," the AEC should report directly to the MLC on a monthly basis of "all the latest concepts and possibilities in the atomic weapons field plus the status and progress of all previously presented concepts." The MLC also required that the AEC submit all study plans, designs, specifications, and time estimates for delivery. On a quarterly basis, the MLC mandated that the AEC submit summaries and updates for all monthly reports, including similar material drawn from AEC contractors and laboratories. Moreover, the MLC required the AEC to supplement the monthly and quarterly reports with letters "when there arises any change or an actual or foreseeable delay [including] the reasons therefor, alternatives ...

and new times estimates.”¹¹⁴ In 1952, President Truman approved the MLC’s mandate to the AEC.¹¹⁵ The authority that the MLC wielded over the AEC in this incident derived from the authority the AEC, through Chairman Dean, granted it when the AEC and the MLC joined together to press for the creation of a continental weapons test site two years earlier.

Citing the needs of scientists for a convenient place to perform experiments in furtherance of the H-bomb initiative, the AEC asked the NSC in December 1950 to recommend a stateside testing site. The nature of that recommendation and the course experimentation took almost immediately thereafter provides another example of the influence of the wartime Manhattan Project on peacetime decision-making and illustrates the ease with which some of the president’s closest advisors used Manhattan-style strategies of control in furtherance of the military’s domestic goals for the atomic program. Dean’s diary entries illustrate how quickly the AEC worked to satisfy the military’s desire for a site. On November 1, Dean casually mentioned to the president that more testing would be necessary and would like to discuss it with him in the future. That same day, the NSC’s Executive Director James Lay told Dean that he wanted to consider it, get it on the agenda and discuss “energy releases, etc.” Dean told him that “a paper” was being prepared. Dean then contacted Colonel Richard Coiner, the Deputy Director of the Division of Military Applications, asking about the study for site selection and telling him that the Commission had discussed the matter with the president earlier, on October

¹¹⁴ “Memorandum for the Chairman, Atomic Energy Commission; Subject: Military Guidance in the Atomic Weapon Field; from Military Liaison Committee” July 18, 1951. RG 326 U.S. Atomic Energy Commission, Location ALOO, Folder MR & A 9 FY-52.

¹¹⁵ “Memorandum from the Executive Office of the President, National Security Council, December 1, 1952,” 3. U.S. DOE Archives, 326 U.S. Atomic Energy Commission, Collection Secretariat, Box 1277, Folder O & M 12, National Security Council.

25. Still later on November 1, Dean and Lay discussed the formation of a “working group committee” to evaluate the creation of a continental site. On November 2, Dean spoke with the Chairman of the Military Liaison Committee, Robert LeBaron, and told him that Lay had discussed the continental site that day in a conference with Truman and suggested that they “strike fast.” To do so, the men arranged to make it appear that the issue had been the topic of ongoing investigation. Dean told LeBaron that “enough paper work had been completed for the working group to get started.” Dean recorded that Lebaron then

said that he would have to create a piece of paper saying that they were studying the matter in order to get it started internally but that it would be very easy if Lay would set it up first and then they could just follow along. GD [Dean’s shorthand for himself] said he would call Lay and tell him that.¹¹⁶

In December 1950 the NSC recommended that Truman approve a continental testing facility. The fact that the recommendation came on December 18, two days after Truman’s December 16 declaration of a state of emergency over the Korean War, and because of the way the site was used once it was created, it has become customary to acknowledge in passing the military’s longstanding desire for a continental test site and Dean’s commitment to help it achieve that goal, while focusing more directly on link between the site’s creation with Korean War imperatives.¹¹⁷ But even with the “national emergency” that appears in hindsight to justify the site’s creation, a notion reinforced by the fact that the AEC made the recommendation before the Army Corps of Engineers had

¹¹⁶ Dean, *Forging the Atomic Shield*, 87-88.

¹¹⁷ Anders, *Forging the Atomic Shield*, 24; Titus, *Bombs*, 6.

completed studies on radiological factors, the record indicates that the recommendation was fundamentally an opportunistic exploitation of an international event.¹¹⁸

Dean and the AEC, the NSC, and officers with the MLC deceived President Truman and other cabinet level officials to receive permission for continental weapons testing. Truman approved the site based on a notion that it would be something entirely different from the continental site for weapons testing that the military had routinely requested and that he had just as routinely denied. The recommendation that Truman approved asked for a continental site as a convenient location where scientists could conduct a “few relatively low-order detonations on an emergency basis.”¹¹⁹ It gave Truman reason to believe that the use of the site would be extremely limited (“few”) and that there would be relatively little radiation release (“low-order detonations”) and skirted the fact that there were already plans for the military to use the site; that the detonations that occurred there would not be limited to those needed to prove up on a scientific principle on an “emergency” basis, but would be conducted at the outset by the military; and, at least after the first tests in January 1951, would be the product of advance planning by the military. Additionally, the January 10 press release announcing the beginning of continental testing—“Project Mercury”—implied that the program was temporary while reinforcing the AEC/NSC’s portrayal of the site in the recommendation that Truman approved. It announced that “experiments” would be performed by the Los Alamos Scientific Laboratory in a section of the Las Vegas Bombing and Gunnery

¹¹⁸ The argument here that a spirit of opportunism expressed by Dean, NSC officials, and military officers permeated the process of recommendation and approval for continental testing contrasts with Hacker’s sense that it amounted to a serendipitous turn of events with Washington officials somehow divorced from laboratory officials in Los Alamos. “This quick action proved a stroke of good luck” because Los Alamos had discovered “design flaws” in November and wanted to do preliminary tests in Nevada. *Elements*, 42.

¹¹⁹ Jeff Adler, “A-Bomb Testing Posed No Dangers,” *Las Vegas Sun*, December 18, 1978, 1, 4.

Range. The release left the impression that bombs would not be detonated by making a distinction between the experiments that would be conducted and atom bomb detonations:

Test activities at the new site will include experimental nuclear detonation for the development of atomic bombs – so-called “A-bombs” – carried out under controlled conditions.

Another indicator that the site would not be used for detonating bombs was the comment that the AEC would “continue to use the Eniwetok Proving Ground.” The release also reinforced the notion that the safety of the planned experiments had been carefully considered:

Radiological safety and security conditions incident to the type of test to be undertaken have been carefully reviewed by authorities in the fields involved. ... [T]he tests may be conducted with adequate assurance of safety. ... All necessary precautions, including radiation surveys and patrolling of the surrounding territory will be undertaken to insure that safety conditions are maintained.¹²⁰

The final form of the release emphasized more strongly the scientific nature of the experiments, noting in the second paragraph that “use of the Las Vegas Bombing and Gunnery Range will make available to the Los Alamos Scientific Laboratory a readily accessible site for period test work with a resultant speed up in the weapons development program.”¹²¹ Neither science nor national security, however, had much to do with the advent of atmospheric atomic weapons testing in Nevada.

¹²⁰ “Proposed Press Release Project Mercury,” attached to letter from Rodney L. Southwick, Assistant Chief AEC Public Information Service, to Joseph Short, White House Press Secretary, January 10, 1951; WHCF: Conf. File, Box 4, Atomic Bomb & Energy, June 50-52, HST Library.

¹²¹ USAEC, Release No. 335, “For Release 3:00 pm EST, January 11, 1951. Attached to Salisbury “Notification”, 1-12-51, WHCF: Conf File, Box 4, Atomic Bomb & Energy, June 50-52. HST Library.

Dean's gross mischaracterization of the proposed site's purpose makes it reasonable to conclude that Dean, and others involved in the recommendation, believed that Truman would not have approved it otherwise. Additionally, it operates against the notion that the Korean War, or national security, was the reason for the site's creation and the imperative driving weapons testing.¹²² Truman was, after all, not unaware of the hazards of atomic experimentation, having certainly developed some familiarity with the risks of experimentation from the Crossroads Evaluation Report and as a result of his relationship with Lilienthal. Moreover, he had routinely considered, and refused, the military's requests for a continental testing facility. Though perhaps incomplete, what little understanding Truman did have about radioactive hazard helps to explain why Dean felt it necessary to deceive the president about the nature of the planned experiments: it seems unlikely that even a "national security emergency" would have been enough for Truman to grant the military permission to conduct within the continental United States the types of experiments that had been conducted during *Crossroads*, at Bikini, and, with *Sandstone*, at Eniwetok; or, for that matter, the ones that Dean had planned.

Other factors may also have contributed to the rapidity with which Truman approved the site. One was related to the H-bomb: on December 9, ten days before Dean issued his request, an AEC study noted that Los Alamos scientists could work more quickly on The Super if they could perform some experiments stateside while larger detonations would be planned for the Eniwetok Proving Ground. There is, however, no

¹²² For this assertion, see Anders who concludes a brief mention of the claims of downwinders that fallout from the test site caused injury and death suggesting that, if so, they were casualties of war: "Inadvertently, the decision to establish a continental proving grounds may have brought home to a number of Americans some of the costs of waging the Korean War and the Cold War." "Introduction," *Forging the Atomic Shield*, 25.

indication that the report itself made it from the AEC to the president.¹²³ Another was political: Truman may have been reluctant to risk ruining the cordial relationship that had developed between the administration and the JCAE's Brien McMahon after Truman had taken McMahon's recommendation to appoint Dean to the Commission and later, in part to prevent the JCAE from moving to take control of atomic science altogether, made him Chairman.¹²⁴ Yet another was institutional: Truman had established within the National Security Council a Special Committee on Atomic Energy composed of the Secretaries of Defense and State and the AEC Chairman and advised that he would not consider any directive until the Committee as a whole had signed off on it. Along with unofficially formalizing an elevation of the AEC Chairman (Dean) to cabinet level status to ensure that these important advisors remained in the "loop" of all significant decisions, Truman may have expected that the traditional tensions between State and Defense would help to ensure balance between diplomatic and military interests.¹²⁵ And, his familiarity with Lilienthal's conscientiousness about civilian interests and military overreach gave Truman reason to expect that Dean, though coming to the job under different circumstances, would manage his responsibilities in much the same way as Lilienthal had. Relatedly, Truman's assumptions about the civilian/military divide may have caused him to approve the recommendation without giving much, or any, thought to the

¹²³ December 8, 1949, "The Super" a staff report circulated for the information of the Commission. U.S. DOE Archives, 326 U.S. Atomic Energy Commission, Collection 1947-51, Secretariat, Box 4942, Folder 471-6 (10-5-49) Sec. 1.; Defendant Exhibit DX 21981, *Prescott v. U.S.*

¹²⁴ For the details of Truman's concession to McMahon, see Anders, "Introduction," *Forging the Atomic Shield*, 19-20.

¹²⁵ Harry S. Truman to Gordon Dean, August 25, 1950, and George C. Marshall to Harry S. Truman, December 16, 1952; WHCF: Conf. File, Fox 4, Atomic Bomb & Energy, June 50-52, Papers of Harry S. Truman, HST Library.

possibility that the military, and particularly the MLC, would be able to operate through Dean to achieve their goals.

In any event, Truman approved the NSC recommendation, and did so without (apparently) becoming aware of the backroom controversy that ensued between his approval for the site's establishment and the approvals necessary to begin testing. The problems began when Dean and the MLC established a testing schedule that was grander in scope and in radiological hazard than had been proposed to Truman and to the other members of the NSC's Special Committee on Atomic Energy. Dean's irritation at being second-guessed, evident from notes made in his office diary, suggests that he, and perhaps others with the MLC and NSC, too, expected clear sailing once they had received the president's approval to conduct tests and had failed to take into account that all of the others who had been involved in some way in the original recommendation would also carefully review the rudiments of Dean's plan before signing off on it. That material consisted of a preliminary press release, a packet of information listing the officials that Dean and other AEC officials planned to contact immediately prior to the initiation of testing, and a request for expenditure of atomic resources that could only be approved by the president. Dean's release and his request for material were both so different from what Defense Secretary Marshall, Acheson, the JCS, and Los Alamos scientists expected that all of them launched objections.¹²⁶ All were concerned about the sizes of the shots Dean had planned and the risks they posed, especially the fifth, "Fox", which was the largest planned for the spring testing schedule. It is likely that the objections Marshall

¹²⁶ For the press release, see attachment to January 8, 1951, Memorandum, Gordon Dean, Chairman to M. Salisbury, Director, Division of Information Services, "Notification to Public Officials Concerned with New Site," WHCF:Conf File, Box 4, Atomic Bomb & Energy, June 50-52, HST Library. For details about the controversy and Dean's management of it, see *Forging the Atomic Shield*, 92-104.

and the Joint Chiefs raised were anchored in the understanding they had developed over the previous year about the health effects of radiation derived from a re-evaluation of new radiological and biological weapons undertaken by Marshall as part of the Defense Department's July-December 1949 semi-annual report to the president.¹²⁷ Aimed at coordinating military planning and recent scientific advances by developing a general understanding of the science and properties of new weapons, and with an introduction that illustrates that Marshall was also interested in reinforcing the line between military planning and civilian policymaking—"which the Congress has quite wisely placed ... in agencies other than the military establishment"¹²⁸—the study helps to explain the divergence between the MLC's promotion of atomic weapons and the JCS's reluctance to approve Dean's proposed testing schedule. The broad and long range perspective adopted by the JCS for the study led to a conclusion that although atomic weapons (and radiological substances that might be used in lieu of bombs) had some advantages that conventional weapons did not, those benefits were partially, if not wholly, offset by short-term and long-term disadvantages, including the "imperative" to provide shielding to prevent personnel exposure to "injurious radioactivity," and by the impossibility of assessing the long term health effects of radioactive exposure or overexposure:

The effects of radiation at intensities which might be practicable of attainment over any considerable area usually do not appear immediately. This fact would militate against its use for tactical purposes.¹²⁹

¹²⁷ "New Weapons," attachment to January 26, 1950, Memorandum from James S. Lay, Jr., Executive Secretary National Security Council to National Security Council, PSF: Subject File, National Security Council Atomic, Box 176, Atomic Weapons Stockpile, Papers of Harry S. Truman, HST Library.

¹²⁸ "New Weapons," 4.

¹²⁹ "New Weapons," 8.

Scientists at Los Alamos objected to the claims Dean made in his press release that the Laboratory's most prominent scientists—identified by Dean in the release—had comprehensively investigated the safety issue and determined the schedule of detonations to be safe. Individually or separately, experts at Los Alamos and the Joint Chiefs of Staff were in agreement that Dean had underestimated the dangers inherent in his proposed course of experimentation.

Dean's methods illustrate the importance of intermediate-level officials in creating the conditions for Atomic Governance. He purposefully used vague language when discussing the experiments with Truman. And, instead of using his position on the NSC Special Committee to consult Marshall and Acheson, he worked through lower-tier officers and officials. Among those Dean turned to were: Robert LeBaron, the Chairman of the MLC and who owed his position to Lewis Strauss;¹³⁰ James Lay, the Executive Director of the NSC who had partnered with Dean to gain approval for the site in the first place; military officers and subordinate officials such as Gordon Arneson, the assistant Acheson confided in during the H-bomb decision and the person one tasked by Dean's inner circle with "priming" the Secretary of State;¹³¹ Admiral Frederic Withington, a member of the MLC and an expert in naval ordinance; James McCormack, Director of Military Applications who had served under Groves, been involved with the Manhattan Project, and appointed Director with the passage of the Atomic Energy Act; and Edward Trapnell, Associate Director of the Division of Public and Technical Information, who went on to co-author an AEC history and a section of the DOE's history of the first

¹³⁰ Herken, *Brotherhood of the Bomb*, 205-206.

¹³¹ Dean diary entry, January 8, 1951, *Forging the Atomic Shield*, 96.

nuclear reactor. Dean called on all of them to help him override the objections of Marshall, the JCS, and Los Alamos managers, that the tests Dean planned were so large and risky that approving them would mean breaching the promises they had made to Truman that “no large tests” would be conducted.

Dean’s diary reveals that the claims about the safety study that he had made in the press release were a complete fabrication.¹³² Though extensive, the language of the release provides context for Dean’s attempt to deceive Cabinet and White House officials, and had it been approved, the public, too.

Full consideration has been given to the radiological safety requirements. The Commission’s Advisory Committee for Biology and Medicine has approved safe permissible levels of exposure to radiation applicable to this work. The AEC Division of Biology and Medicine has reviewed the types of tests proposed and found such tests could be conducted with adequate assurances of safety under the conditions prevailing at the bombing reservation. The detailed radiological problems and necessary precautions which they require were reviewed by a panel of specialists in the radiological field, including

Dr. Enrico Fermi – Institute of Nuclear Studies, Chicago
Col. Benjamin G. Holzman – Office Deputy Chief of Staff, Development, USAF
Dr. Joseph Kennedy – Washington University, St. Louis
Dr. Frederick Reines – Physicist, LASL
Dr. Roderick Spence – Radio-Chemist, LASL
Col. George Taylor – Meteorologist, USAF
Dr. Edward Teller – Physicist LASL
Dr. Thomas N. White – Health Physicist, LASL

All phases of the radiological safety plan have been reviewed by a special panel for the Commission headed by Dr. Shields Warren, Director of the AEC Division of Biology and Medicine.¹³³

¹³² Attachment to January 8, 1951, Memorandum, Gordon Dean, Chairman to M. Salisbury, Director, Division of Information Services, “Notification to Public Officials Concerned with New Site,” WHCF: Conf File, Box 4, Atomic Bomb & Energy, June 50-52. HST Library

¹³³ Release, as above.

Dean's response to the safety concerns lodged by Marshall and the JCS about the tests he had scheduled reveals that he had no documentation, or even verbal assurances, that the tests would be safe or that the studies he referred to had been performed. He contacted a staff member at the Division of Biology and Medicine and asked him whether a "radiation safety group" had submitted their report. The staffer directed him to Dr. Charles L. Dunham, chief of the medical branch of the Division of Biology and Medicine. Dunham was an M.D. who had been an instructor of medicine at the University of Chicago before the war and afterward became chief of its arthritis clinic. He downplayed his lack of training in nuclear physics, saying that "basic principles of radioisotopes in medicine are basic to basic principles, not to a mere disease."¹³⁴ When Dean contacted him, Dunham reported that he knew of no such report and, furthermore, had no knowledge that one had been proposed. Dunham told Dean that the Chief of the radiology branch of the Division of Military Application was just then in the process of arranging the "radiological setup" for the Nevada tests. Dean's follow up questions suggested that he was aware of at least some hazards from fallout, but was most interested in knowing that they could be managed. When he asked about fallout dispersal, Dunham assured him that Colorado River water would not be affected but that people in Alamo, fifty miles from the site, might.¹³⁵ A call Dean placed to Dunham the next day prior to a meeting with Marshall and Acheson indicated that either Dean did not record some of the information he received from during their first discussion, or that Dean and Dunham had had other conversations about flocks of sheep that were grazing and passing

¹³⁴ See the memorial tribute to Charles L. Dunham (1906-1975) written by Marshall Brucer, M.D., *Journal of Nuclear Medicine* 17 (1976): 1116; reprint at <http://jnm.snmjournals.org/cgi/reprint/17/12/1116.pdf>

¹³⁵ Dean diary entry, January 8, 1951, *Forging the Atomic Shield*, 94. Also cited by Makhijani, Schwartz, and Norris, "Dismantling the Bomb," Box 1-2, "Selecting a Continental Test Site" in *Atomic Audit*, 51.

through areas to the west and northwest of the site. Dean asked Dunham if he could anticipate any “other difficulties in radioactive hazards” that might occur, “other than sheep?” The two men discussed the possibility of a rain storm, and Dunham told Dean that if that happened, the Army Corps of Engineers had agreed to evacuate people within about 24 hours. As for the sheep, Dunham said any exposures could not be “controlled so the trouble would be with friends in Interior.” Dean asked about the possibility that people downwind would receive “minor skin burns” and Dunham responded that he thought that would be the “worst thing that could happen to people.”¹³⁶

These exchanges illustrate two characteristics that became routine in the management of continental weapons testing: First, despite claims to the contrary, AEC officials expected offsite exposures and, instead of working to prevent them, devised ways to manage them by minimizing their importance if and when they occurred. Second, rather than run the risk of receiving opinions from experienced or top-level experts that had the potential to disrupt AEC/military plans, AEC officials drew on those professionals who would provide the most congenial opinions. In this instance, Dean apparently did not consult Shields Warren, the Director of the Division of Biology and Medicine, or scientists from Los Alamos. For private counsel, he relied on Dunham, who predicted that radioactive injuries, if they occurred, would be minor. This practice had a history stretching back to *Crossroads*. Just as Naval officers had during *Crossroads*, Dean made a conscious decision to consult only those experts that he had reason to believe would provide him with the type of information that would be supportive of his larger mission and purposely avoided or disregarded those who openly opposed or who might be expected to object to the course of action he had already decided to take. Dean

¹³⁶ Dean diary entry, January 9, 1951, *Forging the Atomic Shield*, 97.

was, for example, aware that Warren disagreed with his position that all tests should be approved simultaneously, perhaps ensuring that nothing would interfere with the large “Fox” shot. Warren’s position was that the business of continental weapons testing was, itself, an experiment. As he explained to McCormack [Director of the Division of Military Application], each shot should be considered individually based on “completely satisfactory radiological effects of previous shots.”¹³⁷ Warren’s concept of a “completely satisfactory” result was a more exacting standard than the more general proposition held by the JCS and Los Alamos that the tests be considered in turn. It was certainly a more cautious approach than Dunham’s, which was to assume that (a) sheep might suffer radioactive injuries, but that problem could be shifted to the Department of the Interior; and (b) people could be evacuated if necessary, but if there were not sufficient time for the Corps of Engineers to get them out of harm’s way, their injuries would be limited to radioactive burns. Additionally, Dean did not contact any of the prominent scientists he had identified in his proposed press release because he knew, from McCormack, that the only two scientists listed who reportedly agreed with Dean’s version of the release—Fermi and Kennedy—had also refused to publicly acknowledge their views and had asked to have their names eliminated from the list before the release was issued.¹³⁸

Unlike Warren and the Los Alamos scientists, Dunham’s chief claim to fame in 1951 was that he expressed an interest in helping Dean achieve his goals. By 1955, Dunham had risen in the AEC hierarchy and was made the Director of the Division of Biology and Medicine. But, in 1951, Dean’s interest in him was in the fact that he saw no

¹³⁷ Dean diary entry, January 8, 1951, *Forging the Atomic Shield*, 95.

¹³⁸ Dean diary entry, January 8, 1951, *Forging the Atomic Shield*, 94.

significant reason to disagree with Dean and the MLCs position that the scheduled tests should go forward and, moreover, that radioactive fallout from the tests would not cause an immediately-evident tragedy.

Dean shielded himself from responsibility for deception through a purposefully vague and misleading approach. Because his conversations with the president had not been recorded, and because Dean had used general phrases to describe the shots instead of specifying anticipated yields, Dean claimed the high ground when the president's advisors complained that the planned detonations were too large. He confidently threw the burden of proof back on those who argued that the shots were larger than the sort he had originally proposed. Discussing the problem with LeBaron, Dean reasoned that since he (Dean) was under the impression that "only over bang 6 or 7 times"—presumably six or seven very large shots—would cause the president to become alarmed, and since no specific representations about size had been made, then Marshall and the others were wrong to "oppose on the ground that the President would not like it." Dean made other overtures to ensure that detonation size would not become a matter of record by telling LeBaron that the topic was not suitable for an NSC meeting—where questions might lead to a conversation about weapon yield and where minutes would memorialize the content of the discussion.¹³⁹

As a means of achieving his goal while avoiding responsibility, Dean distanced himself from the process. Dean avoided making any concessions, or creating a record of discussions about the planned tests other than his own office diary, by using his intermediaries to work through the problems of size and safety beneath the level of official, committee-level discussions. Dean learned through his intermediaries that the

¹³⁹ Dean, diary entry, January 9, 1951, *Forging the Atomic Shield*, 96.

principles were expressing a willingness to grant their approval to a modified schedule that did not include “Fox” within the initial request for material. If Dean were willing to conduct the first four tests as something of a trial run—as experiments, in fact—and if they were successful and safe, they would then grant approval for the “Fox” detonation. Dean refused that compromise with an appeal to national security. In the same way that Navy commanders had done in asserting that *Crossroads* should be approved as a national security imperative, Dean told LeBaron that those opposed to his plan “were missing the boat” and threatened that he would hold them all responsible if the progress that he and the MLC had deemed necessary was stymied, saying he would have “Jim McCormack [Director of Military Applications] document this as to what would happen if you left out the 5th [“Fox”].”¹⁴⁰ But neither the national security argument Dean made, nor the related scientific one, were valid given what he had already learned in a talk with McCormack.

McCormack, a former Rhodes Scholar who had also held an MA in civil engineering, tried to convince Dean to back away from the hard line he was taking on the large “Fox” shot. McCormack, for example, approved of Warren’s assessment that each test be dependent on the success and safety of the one preceding it, telling Dean that it was “a good one to think about.” He also explained to Dean that it was not necessary to perform the test in Nevada, or in conjunction with the other four, telling him that Bradbury—the Director of Los Alamos and at that time actively engaged in work on the H-bomb—had suggested that the fifth test be shot off elsewhere. Though this eliminated both of the arguments Dean was using to gain approval—that “Fox” was an urgent scientific and, because of its relationship to H-bomb progress, national security necessity,

¹⁴⁰ Dean diary entry, January 8, 1951, *Forging the Atomic Shield*, 95-96.

Dean would not reconsider his stand on “Fox”. Instead, he responded with a mischaracterization that ignored the obvious possibility of detonating it at Eniwetok, “Can you get a decent measurement on the 5th one if you took it out over the water, for example?” When McCormack tried to clarify that that was not what Bradbury had in mind about the shot, Dean cut him off: “the question is how hard to fight this.” But that was not even a question in the rhetorical sense: Dean had already indicated that he was committed, stubbornly so, to his original plan, despite the risks. Dean and McCormack were already in agreement that they would justify whatever catastrophe might result by claiming that it had been a national security imperative, citing the “state of emergency” that the president had declared before approving continental weapons testing:

The only worry about it would be if it goes sour and then the Commission had to do it because of the military emergency of the situation. GD said even if it goes sour, don't they want to try it?¹⁴¹

Dean proceeded with his original testing schedule knowing that it posed risks and knowing that the president himself would not have approved it had Dean been frank with him about the consequences. The perversion of authority that Dean perpetrated in the interests of satisfying the military's desire for a continental test site and routine weapons testing that he recorded in his office diary is difficult to reconcile with one historian's portrayal of Dean as a defender of the principle of civilian control over the atomic program.¹⁴²

¹⁴¹ The quote and preceding discussion are both drawn from Dean's diary entry for January 8, 1952, *Forging the Atomic Shield*, 94-95.

¹⁴² Roger M. Anders, “The Atomic Bomb and the Korean War: Gordon Dean and the Issue of Civilian Control,” *Military Affairs* 52 (1988): 1-6, 1. See also Anders, “Introduction,” ed., *Forging the Atomic Shield*, 6.

Manhattan style strategies of control employed by Dean and his intermediate-level supporters—civilian and military—opened the door to routine continental weapons testing. Backchannel legwork by the NSC’s Lay, who made it appear that Dean was willing to take the wait-and-see approach that he was, in fact, unwilling to take, and the MLC’s McCormack, who satisfied the JCS that Dean and the AEC had accepted full responsibility for all aspects of the tests, convinced Marshall and Acheson to allow Dean’s proposal to go forward as he had initially envisioned it, with the controversial “Fox” included. Dean’s only concession was to revise the press release. After Dean stripped out the safety claims he had made in the first version, all that remained was for Dean, Lay, and McCormack to get the president’s approval.¹⁴³ To limit the possibility that the president might develop some second thoughts if he were presented with both approvals at the same time, Lay proposed and Dean agreed that it would be best to separate the two documents, creating an interval between the two. The men worked through the president’s staff to ensure that they would present Truman with the press release first and then, hours after he had approved the release, provide him with the document approving the tests.¹⁴⁴

Dean then engaged in the sort of public relations that became a hallmark of the AEC’s management of continental testing. He contacted William Borden, the Executive Director of Congress’s Joint Committee, to sound him out on the congressional reaction to the project and to encourage him to get one of the members of the Committee to make a supportive public statement about the tests. After Dean responded negatively to

¹⁴³ Dean diary, January 8, 9, 10, 1951, *Forging the Atomic Shield*, 94-97.

¹⁴⁴ Dean diary, January 10, 1951, *Forging the Atomic Shield*, 97-98.

Borden's comment that no one had stepped up to endorse the tests, Borden agreed to work on rounding up an agreeable JCC member and offered Dean some preliminary "positive" language that he would use to draft the statement. Dean told Borden about the "pleasant" meeting he had had with Nevada's Senator Patrick McCarran, who always welcomed federal investment, and then learned that about eighteen members of the JCC planned to attend the tests. Others, according to Borden, were less enthusiastic, and some, Borden said, had mentioned that they were "glad it isn't where 'I live.'"¹⁴⁵ On the day after the press release went out, Dean responded to a United Press reporter's questions about safety. With the sort of analogy between atomic weapons experimentation and the risks people voluntarily take in their everyday lives that became routine in the AEC's repertoire for downplaying radioactive hazards, Dean told him that "every precaution was being taken ... there was less danger in it than taking an automobile from here to Richmond."¹⁴⁶

By the time Truman left office, the military had detonated twelve atom bombs in the Nevada desert, and three of those were equivalent to, or greater than, the 21 KT weapon dropped on Nagasaki. That those three were at least 9 KT larger than the upper limit for continental testing established by Shields Warren illustrates the importance of the AEC/military partnership that Dean fostered and the contribution that relationship made to creating conditions for needlessly hazardous weapons testing at the Nevada Test Site. Whatever controversy still remains over the health effects of radioactive fallout and the value of continental weapons testing for national security, the important historical facts are that Truman was misled about the types of experiments that would be conducted

¹⁴⁵ Dean diary, January 10, 1951, *Forging the Atomic Shield*, 100.

¹⁴⁶ Dean diary, January 12, 1951, *Forging the Atomic Shield*, 103.

and approved the continental weapons testing because of purposefully deceptive discussion he had with Dean and that experts within and without the government believed at the time that atomic weapons testing as endorsed by Dean posed considerable short term and long term risks. Finally, and as Bradbury's proposal to conduct "Fox" elsewhere illustrates, the H-bomb and other national security imperatives could have been served by performing hazardous experiments—such as "Fox"—remotely. Admittedly, this would have increased the expense of experimentation and involved some inconvenience. Nonetheless, given the demonstrated willingness of Congress and the president to support programs involving national security, it is easy to imagine that necessary costs of experiments in the Pacific would have been borne and the AEC and the military could have together discovered ways to minimize the inconvenience. Another possibility is that the cost and inconvenience would have prompted a re-evaluation of the atomic program and its national security value. But none of that came to pass.

The AEC, through Dean and in league with the military and his supporters among intermediate-level officials, deceived the president and purposefully subordinated the safety of participants and downwinders to satisfy their institutional and political ambitions. In a repeat of *Operation Crossroads*, atomic experimentation became an exercise in public relations. One historian captured the military's enthusiasm for the new facility: "The generals rushed to the chalkboards. There would be war games to end all war games. Troops. Tanks. Artillery. Paratroopers."¹⁴⁷ In the very best possible light, such exuberance over the chance to practice with real atom bombs can be interpreted in light of *habitus*, as a cavalier expression of business as usual by upper-echelon officers

¹⁴⁷ Richard Miller, *Under the Cloud*, 142. For Miller's discussion of *Buster-Jangle*, see 119-142.

hardened by their experiences during World War II. But that was only one aspect of militarization that led to the consolidation of military authority; it took a combination of military authority and civilian supporters to bring about the systematic manipulation of public information to delude the public and elected officials about the consequences of atomic experimentation. In 1949, David Bradley, the author of *No Place to Hide*, decried the popular misconceptions in an interview with the *New York Times*:

They're all still thinking in terms of Hiroshima and Nagasaki" he says, shaking his head. "Those explosions, of course, were in the air and the rising heat carried the radioactive particles up into the stratosphere, where they dispersed harmlessly. Nobody considers that tidal wave at Bikini. Those particles didn't disperse. They stayed right there. More than seventy ships, and we've only been able to decontaminate nine of them. The Navy referred to the others as 'survivors.' That's a cute way of putting it. For my money, that lagoon will always be deadly."¹⁴⁸

The AEC and its military partners used Manhattan style strategies of control to gain approval for a continental weapons test site, to conduct experimental detonations and war games; and, additionally, to preserve their ability to use experiments to garner public and political support for military programs and expansion. Their pursuit of individual and institutional goals in the name of the state undermined government itself, the constitutional rights of Americans, and the prerogatives of elected officials. The result was a program of needlessly hazardous continental atomic weapons testing and a pattern of deception that outlived Truman's presidency.

By the time President Eisenhower took office, atomic and nuclear weapons had taken center stage in national defense strategies and the AEC, and especially its Chairman, had assumed a more important role in the development of defense policy. When President Eisenhower appointed Lewis Strauss to serve as AEC Chairman in June

¹⁴⁸ Joe McCarthy, "An Interview with David Bradley, *New York Times*, February 27, 1949.

1953, Strauss assumed cabinet-level authority. He used his position to promote and accelerate atmospheric weapons testing and downplayed the dangers of experimentation at the Nevada Test Site and in the Pacific through the press and congressional testimony. He also used his influence to protect military experimentation by undermining diplomatic negotiations between the U.S. and the U.S.S.R.

During the era of Atomic Governance, intermediate-level officials used their political leverage to gain autonomous control over atomic resources, production, and experimentation; used that control to deceive their superiors and the American public alike; and used weapons testing as a public relations vehicle for the achievement of domestic goals. The atomic program was not unlike other government agencies and large bureaucracies where, as has been demonstrated elsewhere, mid-level administrators and officials with professional status or special expertise wield significant independent authority and serve not only well beyond the reach of the electorate but often their superiors as well. The way intermediate level officials and officers carried out their responsibilities was especially important with the atomic program where there was such a dramatic contrast between the phenomena observable—the detonation, fireball, mushroom cloud—and unobservable, radioactivity. National security and its significance to military goals, Atomic Secrecy, and the specialized knowledge and techniques embedded in the AEC's departments and divisions and throughout its network of institutional affiliates that supported them provided excellent conditions for the abuse of authority. Dean, other AEC officials, and their military partners wielded authority in the name of the state but operated independently, abusing their authority by exploiting administrative goals and distorting them to achieve their own.

CHAPTER EIGHT

DEAN AND DECEPTION

When Dean became Chairman of the AEC, he made the military's goals his own. It was the first time since the Atomic Energy Commission took charge of the resources of the wartime Manhattan Project that the program's leadership put military objectives ahead of all other responsibilities identified in the Atomic Energy Act.¹ After the hurried improvisational methods that Dean used to gain approval for the Nevada Test Site and the first testing series, Dean's AEC and its military partners used their consolidated power to manage the program and weapons testing in ways that suited their own institutional ambitions. Just as Los Alamos's Director Bradbury worked after the war to sustain his laboratory and scientists by encouraging the military's desire for weapons with the unrealistic (in his view) prospect of an H-bomb, Dean used Los Alamos's request for an experimental facility to satisfy the military's desire for a continental test site. His support for military projects was so thoroughgoing that his imaginative reach for the potential uses of atomic weapons outpaced those of the military officers in whom he confided. For all practical purposes, Dean's priorities were military ones.² This mutually beneficial

¹ Dean has generally escaped critical scrutiny, explained perhaps by his political agility, the contrast between the criticism leveled at Lilienthal and Strauss at the time and since, and perhaps because his accidental death in an airplane accident in 1958 kept him out of the controversies about the program that arose in the 1970s.

² Cf. Roger M. Anders: "Dean refused to abdicate his role as a spokesman for civilian interests about the bomb's use. Although agreeing to the transfer, he insisted that the administration establish a mechanism for incorporating civilian views into any decision to use the atomic bomb." "The Atomic Bomb and the Korean War: Gordon Dean and the Issue of Civilian Control," *Military Affairs* 52, 1. Tension between Dean and the military—or the DOD—often had to do with resource expenditures, and funding, and were quickly clarified, indicating that they were instances of turf protection instead of defenses of "civilian" authority. Discussions over uranium ore production and the AEC's ability to comply with military requests exemplify one such issue. See the NSC record of memoranda, "Uranium Ore Policy," February 8, 1952, through June 11, 1952, Papers of Harry S. Truman, President's Secretary's Files, HST Library. For an account as uncritical as Anders's, see Fradkin, *Fallout*, 95-96, 265 n.35, 266 n.46.

arrangement stimulated increased material goals to satisfy the demands for H-bomb development and more frequent weapons tests, stimulating AEC expansion. Simultaneously, atmospheric weapons tests themselves provided promotional opportunities to generate even more public and political support for continued expansion. Under Dean, the Site became the locus of AEC/military publicity, a place where AEC officials and military officers capitalized on the fearsomeness of nuclear detonations to promote the program and military projects to an extent that Forrestal, Strauss, and the Navy's postwar publicity machine could only dream about when they conducted *Operation Crossroads* in 1946. And, just as Naval officers scuttled safety in the interests of self-interested objectives at *Crossroads*, the AEC/DOD made decisions about testing to avoid acute injuries only and conducted tests that they knew at the time posed long-term health risks to achieve short-term domestic political goals.³ For AFSWP and Army

³ For the revolution in laboratory and occupational safety that took place during Manhattan, see Patricia C. Wallace Durbin-Heavey, Ph.D., Oral History Interview, "Research at Crocker Laboratory and the Lawrence Berkeley Laboratory," Interview conducted 1979-1980, by Sally Smith Hughes, Ph.D., 38. History of Science and Technology Program, Medical Physics Oral History Series, The Bancroft Library, University of California, Berkeley. A year before testing began, Stafford Warren and Russell Bail, an AEC Research Analyst at Berkeley, schooled West Coast mayors about the dangers of radioactive fallout. Lawrence E. Davies, "Coast Cities Map Atomic Defenses; San Francisco Mayor Warns of a Soviet Base Less Than Ten Hours Away by Air; Conferees Accuse Government of Secrecy on Subject, Say it has Key Responsibility," *New York Times*, June 13, 1950, 29.

By the time testing in Nevada began, officials had enough confidence in what they believed the short-term effects of radioactive exposure to be that they provided the military with values based on animal studies that officers could use as benchmarks to determine how much radioactivity a soldier could withstand. Letter from Marion W. Boyer, General Manager AEC To Robert LeBaron, Military Liaison Committee, January 10, 1951, ACHRE. The military subsequently decided to verify those values with their own series of animal studies. "Committee on Medical Sciences Research and Development Board, DOD, "Report of Meeting" Ad Hoc Working Group on Biomedical Participation on Future Atomic Weapons Test of the Joint Panel on Medical Aspects of Atomic Warfare, February 24, 1952, ACHRE Attachment 4, Briefing Book 6, Meeting 6, Tab F.

www.gwu.edu/~nsarchiv/radiation/dir/mstreet/commeet/meet6/breif6/tab_f/br6fld.txt. Officers subsequently doubled the permissible exposure level for soldiers from 3r to 6r. See Tab A, "Complete Discussion," attached to 20 February 1953 Memorandum from Carl Jark, Brigadier General, for the Assistant Chief of Staff, to [various]. ACHRE Briefing Book 8, at http://www.gwu.edu/~nsarchiv/radiation/dir/mstreet/commeet/meet8/breif8/tab_f/br8flf.txt. See also Allan Favish, "Radiation Injury and the Atomic Veteran; Shifting the Burden of Proof on Factual Causation," 32 *Hastings L.J.* 933, 938-939, n. 29.

officers, the opportunity to test in Nevada freed them from the expense of Pacific testing, which was at least double the cost of Nevada testing, and with it, some of the burden of justifying to the upper echelon or the DOD the expense or necessity for tests.⁴ Similarly, testing in Nevada freed Army and other military officers from the logistical problems and expense the Navy encountered in publicizing maneuvers in the far-away Pacific. Moreover, because the AEC put a “civilian” face on what was primarily a military project, officers involved in Nevada tests were immunized from the onus of self-promotion that plagued their Navy brethren before and during *Crossroads*. This was a significant factor at a time, not unlike the immediate postwar period, when Congress was closely scrutinizing armed forces’ spending. By 1951, budget conscious congressmen outnumbered the military’s most generous backers and stripped the upper echelon of some of its discretion by passing laws restricting how the DOD and branches could use appropriated funds. For Army officers especially, weapons tests and the maneuvers that they conducted with “live” shots were doubly significant: they provided opportunities for promotional demonstrations, convincing the public and elected officials that (a) nuclear arms were as critical to the role the Army would play in national defense as missiles and bombs were to the Navy and Air Force; and, (b) conventional, ground, forces had value on an atomic battlefield and would be essential in the event of nuclear war.⁵ For the AEC,

⁴ For the Navy’s estimate that projects in the Pacific were higher than those in the U.S. “by a factor of 2.2,” Atomic Energy Commission, “Report of Committee on Operational Future of Nevada Proving Ground,” May 11, 1953, [Meeting January 14, 1953], 4. U.S. Atomic Energy Commission, NVO 720368; RG 326 U.S. AEC, Collection DBM, Box 3362, Folder 3. For an example of the DOD’s requirement that each branch bear the cost of transportation to the Site, see P. C. Casperson, Major, AGC, Assistant Adjutant General to The Adjutant General, Department of the Army, 16 January 1953, correspondence and attached recommendation, “Directive for Exercise DESERT ROCK V,” DNA1.941205.008, NVO 767909.

⁵ Though the notion that the bomb could reduce, or eliminate, the need for conventional forces had been circulating since the bombings of Japan, the issue assumed critical proportions in 1951 for the armed forces when Congress ignored the pleas of Generals Marshall, Bradley, and Vandenberg for discretionary

this was a mutually beneficial arrangement that stimulated AEC expansion and increased the institution's political influence. Weapons-testing-for-scientific-development (as Dean pitched his cause to Truman) became, at times, weapons-testing-for-AEC/military-promotion.⁶ For the military as for the AEC, public relations was more than a developmental imperative that cleared a path for continued experimentation and technological progress; it was one of the reasons why tests were conducted in the first place.⁷

The combined organizational capacity of the AEC and the armed forces and continental experimentation increased the significance of strategies of control officers and officials employed to ensure their autonomy over the program and testing tests. Military urgency, media manipulation, and appeals to national security buttressed the Manhattan Project's superstructure from the end of the war, through *Operation Crossroads*, and drove militarization as Groves, Nichols, and other Manhattan veterans gained influence throughout the re-organized military establishment, the program, and

allocations and limited troop levels to four million. Harold B. Hinton, "4 Million Ceiling: Curb Passed 49-41 as Military Chiefs Fail in Opposition to Move," *New York Times*, March 8, 1951, 1.

⁶ The Army was not alone in exploiting the political value of demonstrations and visual presentations; nor was it alone in doing so despite the fact that the tendency might undermine national security. The Strategic Air Command dismissed a year's long study by RAND analyst Albert Wohlstetter that recommended protecting SAC aircraft in individual underground bunkers to protect them from attack while maintaining flight readiness in favor of leaving them out in the open. As reported by Bernard Brodie, the reason was that Air Force commanders believed that any attack would be preceded by a political signal that would give the time they needed to get their planes to safety. In light of the value of spectacle and demonstrations, however, it seems as likely that SAC commanders preferred having their equipment on full display. "The Development of Nuclear Strategy," *International Security* 4 (1978): 67.

⁷ Historians typically value AEC publicity as an adjunct to testing, primarily as a mechanism for diffusing controversy. A. Constandina Titus identifies a "four-pronged" public relations approach, "Selling the Bomb, Public Relations Efforts by the Atomic Energy Commission During the 1950s and Early 1960s," *Government Publications Review* 16 (1989): 15-29, esp. 18-21; and Titus, *Bombs in the Backyard*, 77-85. See also Hacker, *Elements of Controversy*, 43, 46. For publicity and especially photography as a mechanism for separating the bomb from the lethality of its byproducts, see Scott Kirsch, "Watching the Bombs Go Off," 255. For a study that draws from Dean's diary and AEC records, see, Schwartz, *Atomic Audit*, and online at http://www.brookings.edu/projects/archive/nucweapons/box1_2.aspx. For a post-Dean example, see Divine, *Blowing on the Wind*, 11, 13.

among the military's congressional supporters during Lilienthal's tenure. The same strategies of control gave Dean and his military partners the autonomy they needed to plan, conduct, and exploit, continental weapons testing to capitalize on the drama and spectacle of weapons tests and generating fear in a gambit to secure increased appropriations and influence. They made appeals to national security to conduct nuclear tests continentally, used deceptive language to mislead elected officials about the safety of weapons testing, and used and manipulated the media—all to guard against the possibility that health concerns would interfere with their autonomous control of the program, its resources, and experimentation.

Autonomy meant power. AEC officials and officers used the program and weapons testing to influence domestic and foreign policy, realizing Forrestal's military policymaking goal. As Forrestal had, Dean advocated for military officers and proposed that they receive official policy-making authority. In his *Report on the Atom*, Dean argued that limiting policy formation to civilians was one of the "fundamental faults" with government and explicitly called for a "basic rearrangement of the lines of command, the assignment of responsibility" so that military officers could participate in policymaking at the national level.⁸ To preserve their influence, Dean and his military partners created an alternative reality, portraying themselves as servants to national security and radioactive fallout from U.S. weapons tests as harmless.

National security implications, the use of weapons tests to generate emotions productive of appropriations, and the hazards of production and experimentation, all contributed to making the abuses of authority described here more significant than similar

⁸ Dean, *Report on the Atom* (New York: Alfred A. Knopf, 1953; 1957), 143.

exercises in autonomy that were characteristic of administrators in other postwar agencies.⁹ The nature of the AEC/DOD partnership meant that the institutional imperatives of both extended out from the program's center to their network of affiliates, magnifying both the significance of those objectives and created conditions for extraconstitutional abuses of authority. The collaborative relationship between influential members of the JCAE, Dean, and military officers, for example, compromised both congressional and presidential oversight and decision-making.¹⁰ It certainly eliminated any check on unwarranted expansion that Truman may have envisioned when he mandated that all military and nuclear requests be evaluated by special three-man committee of the Secretaries of State and Defense and the AEC that he created as an adjunct to the National Security Council. Instead of tempering military proposals, as Truman might have expected given the traditional civilian/military divide, the committee provided only an illusion of accountability and legitimacy while serving as a fast-track approval mechanism for AEC- and DOD-sponsored programs.¹¹ Operationally, Dean's

⁹ For the coordination of human and material resources by executives and personnel acting in an institution's collective interest and the priority of those functions to administrators in the postwar bureaucracy, see Bartholomew H. Sparrow, *From the Outside In: World War II and the American State* (Princeton: Princeton University Press, 1996), 18. In Sparrow's formulation of the resource dependence perspective, "responsibility for organizational action falls on the individual executive, with the result that any executive ... has a stake in the collective outcome of the organization to induce him or her to act in the organization's collective interest." 18-19.

¹⁰ For the tendency of bureaucrats to rationalize that it was not wrong to deceive congressmen because they "had the facts and knew what was right," see James Burnham, *Congress and the American Tradition* (Chicago, IL: Henry Regnery Company, 1959), 164.

¹¹ For Dean's self interested portrayal of the NSC's Atomic Energy Committee as an independent layer of authority charged with making sure that AEC programs corresponded with "broad national policy" and though mentioning the Committee's composition, distanced his own ability to influence Committee decision-making by describing the process in the third-person. "Once the Commission and the Department of Defense agree jointly on an expansion goal... the whole idea is reviewed by the Atomic Energy Committee of the National Security Council in order to determine whether it conforms with broad national policy. *Report on the Atom*, 70. For Dean's summary of the seven-step process for approval of AEC programs—a process he could manipulate at each step, see 69-83.

partnership with the military fostered a re-emergence of Manhattan's wartime culture among program managers and officials and the reinforcement and reproduction of wartime practices (*habitus*) that determined the behavior of front-line personnel. Multiple factors, including a militaristic chain of command within the AEC's lower managerial tiers, among military officers, radiation safety personnel, and contractors, anti-communist fears and secrecy, military urgency, and appeals to national security all fit Cover's model of "requisite cues" for the suppression of individual, "conscious," behavior based on social or ethical norms to the hierarchies of institutional authority. Such cues engendered obedience and loyalty among lower-level officials, managers, and technicians—those who understood the implications of radioactive exposure and who, were it not for the persistence of the institutional wartime culture and militarization that governed the priorities and decision-making of intermediate level officials, might have alerted public officials or the public about abuses of authority and reckless, irresponsible conduct.¹²

This re-evaluation of Dean's tenure as AEC Chairman and his administration of continental testing in Nevada uncovers the importance of the program's militarization and the product of that process: the self-interested use of the program and experimentation that was Atomic Governance. Following a brief overview of the continental test site, the first section of this chapter focuses on the significance of AEC leadership and of the AEC/military partnership to the management of weapons testing. It shows that Dean was a pivotal actor in the program's history, assessing what he knew the dangers of atmospheric weapons testing to be and, using extracts from the AEC's reports, illustrating the institutional abandonment of Lilienthal's emphasis on program safety in

¹² Robert Cover, "Violence and the Word," in *Narrative, Violence, and the Law*, Martha Minow, Michael Ryan, and Austin Sarat, eds., 220.

favor of weapons testing that was the priority of Dean's regime. The next section examines the strategies Dean used to deceive Truman and other elected officials. The history shows that Dean succeeded in keeping Truman and other elected officials in the dark about the types of tests that were being conducted in Nevada, the safety of those tests, and misled them about the progress of tactical weapons development. For the Army, especially, the promise of tactical weapons and the possibility that weapons tests and maneuvers could persuade the public and congressmen to support large numbers of ground troops had motivated the military's desire for a continental testing site in the first place and those ambitions dictated the way that officers used the Site. Publicizing tests and maneuvers to achieve support for conventional ground troops and for expansion of the AEC's weapons program is the subject of the third section of this chapter. It sets the stage for the fourth, which evaluates military maneuvers and civil defense exercises. It highlights the primacy of publicity to officers who subjected soldiers to "live" nuclear exercises and the negligible benefit of those exercises to the CDA. The primary beneficiaries of the CDA's participation at weapons tests were the AEC and the DOD. CDA involvement with weapons testing generated very little of the public and political support that its officials expected and very little practical knowledge, too, because of the AEC's reluctance to share with the CDA information about monitoring, shielding, and sheltering. In the process, CDA lost out while the AEC received positive publicity by appearing to partner with the CDA. For its part, the armed forces gained additional public and political support for military solutions because CDA publicity in newspapers and on television and circulation of nuclear devastated "doom towns" increased the desire for military solutions.

Much has been written about *what* happened at the Nevada Test Site. The goal of this chapter is to explain *why*. The AEC and military officers used continental weapons tests to keep alive the fear of an enemy nuclear attack while claiming reassuringly that fallout from American testing posed no danger to participants or to the public.¹³ Wartime strategies of control ensured that the message went uncontested, while officials in other federal agencies influenced by it became advocates for Dean and his military partners, unwittingly helping them to achieve their domestic political goals. After “Fox”, the fifth shot of the first series of tests caused radioactive snow to fall on Washington, D. C., for example, the head of the Radiation Section of the Bureau of Standards remarked that “he wouldn’t mind eating the snow.”¹⁴ Dean and his military partners exploited the program and experimentation and it was this process—and not ignorance, developmental requirements, or national security imperatives—that created the conditions for hazardous weapons testing.¹⁵ The history in this chapter shows that Dean, AEC administrators, and

¹³ According to Michael H. Armacost, the Army during the 1950s was engaged in a process of “organizational survival.” *The Politics of Weapons Innovation, The Thor-Jupiter Controversy* (New York: Columbia University Press, 1969), 33-47, 36.

¹⁴ *Science News Digest*, February 12, 1951.

¹⁵ The primacy of domestic imperatives of this analysis contrasts with those studies that defer to the official narrative and where the Korean War and national security exigencies loom large. For representative samples, see H. N. Friesen, Raytheon Services, *A Perspective on Atmospheric Nuclear Tests in Nevada, Fact Book* (prepared under contract for United States Department of Energy, Nevada Operations Office, Las Vegas, Nevada, Contract No. DE-AC08-91NV10833, August 1985; 2nd printing, April 1986; First Revision, April 1992; Second Revision, June 1995), 3-5. For the Korean War argument, see Titus, *Bombs in the Backyard*, 55, Fradkin, *Fallout*, 91-94; and Barton Hacker, who strikes an in-between note, recognizing the military’s earlier requests for a continental site but emphasizing economic incentives for continental testing, noting that the Korean War had undercut funding for atomic projects. *Elements of Controversy*, 38-40.

For studies that take a closer look at the domestic context and veer away from the Korean War, national security, rationale, see Miller, who draws a line between the Site and the military’s interest in small tactical weapons and the U.S.S.R.’s continental model, *Under the Cloud*, 80-81; Kevin O’Neill, who identifies a confluence of factors, among them the consternation of the Navy and Army with the Air Force and their desire to develop and test classes of tactical weapons to break what they viewed as an Air Force monopoly. O’Neill, “Building the Bomb,” and Stephen I. Schwartz, “Selecting a Continental Test Site” in *Atomic Audit*, 47-48, 50-51; Stewart L. Udall, who discusses the selection and approval of the Nevada site as an

their military partners misled President Truman and members of Congress about the types of weapons being detonated in Nevada, the pace of weapons development, and the dangers of radioactive fallout. This was Atomic Governance. And the waste and suffering that was a product of the atmospheric testing era was a direct result the self-interested use of the program by AEC officials and military officers.

Weapons Testing and the Nevada Test Site: An Introduction

The Nevada Test Site is located 65 miles northeast of Las Vegas, Nevada, and now covers 1,350 square miles, twice the 680 square miles that President Truman claimed for it on January 11, 1951. Of the first five tests in Nevada that comprised the *Ranger* series, two were one-kiloton, two others were eight-kiloton detonations, while the

example of the heavy-handedness of the nuclear establishment, the “surreptitious tradition of nuclear policymaking,” *Myths of August*, 218-219.

For the illness and death caused by testing, the CDC/NCI estimated that I-131 alone from inhalation or ingestion of contaminated milk or food caused at least 11,000 and as many as 212,000 excess thyroid cancers in America with a “medium” figure of 49,000. For an explanation of range in estimates, see <http://rex.nci.nih.gov/massmedia/falloutQ&A.html>. For the study, see Centers for Disease Control-National Cancer Institute, “Estimated Exposures and Thyroid Doses Received by the American People from Iodine 131 Following Nevada Atmospheric Nuclear Bomb Tests,” <http://www.cancer.gov/i131/fallout/contents.html>; A summary of the study is located at <http://www.cancer.gov/cancertopics/factsheet/risk/i-131-radioactive-fallout>.

One regional study found that deaths from leukemia peaked between 1959-1967 among children under fourteen in Utah, with the largest number of deaths among children born between 1951-1958—the years of atmospheric testing. See Lyon, et al., “Childhood Leukemia and Fallout from the Nevada Nuclear Tests,” *The New England Journal of Medicine* 300 (1979): 397, cited by Sue Rabbitt Roff, “Mock Turtle Arithmetic, Public Trust and the Nevada Test Site,” in *Science, Values, and the American West*, Stephen Tchudi, ed. (Reno, NV: Nevada Humanities Committee, 1997), 175-190, 187. The continued refusal by AEC officials, the military, and administrators of the AEC’s successor, the DOE, to admit that radioactive fallout was harmful has compounded the hazards of atmospheric testing by advocating—sometimes through the work of official historians—a climate of disbelief among other federal agencies, including the National Institutes of Health, who refused to grant funding for studies into the health effects of testing and, in the process, may have prevented people from seeking medical help for conditions that they did not relate to radioactive exposure. For the NIH rejection of three such studies and the relationship between those rejections and historical claims, see Roff, “Mock Turtle Arithmetic,” 176-185.

As of January, 2008, 18,885 participants, downwinders, and uranium miners covered under the Act had received \$1.2 billion in RECA compensation. Department of Justice, “Radiation Exposure Compensation Act Trust Fund: Overview,” available online at: <http://www.justice.gov/jmd/2009justification/pdfffy09-aeca.pdf>.

For the environment, see Howard Gordon Wilshire, Jane Nielson, Richard W. Hazlett, *The American West at Risk: Science, Myths, and Politics of Land Abuse and Recovery* (New York: Oxford University Press, 2008). For a discussion of testing and production, see 181-205; for the disregard of safety, see 205-211; for estimates of how long radioactive contamination may prove hazardous, see “The Forever Problem,” 270; for the AEC’s failure to follow up on scientific studies, see 395.

last test, “Fox”, was, at twenty-two kilotons, larger than the bomb that devastated Nagasaki. “Fox” shattered showroom windows in downtown Las Vegas and illuminated the Los Angeles skyline. The blast was felt 500 miles from the Site: south of the Mexican border and as far north as Boise, Idaho.¹⁶ Despite these dramatic effects, there was little local opposition to the Site’s creation. With payroll for preliminary construction approaching four million dollars, an amount equivalent to thirty-three million dollars in 2008, most residents and the local newspaper decided that the prospect of prosperity promised by future construction, filled hotel rooms, and nationwide exposure were compelling reasons for believing the assurances of Dean and other AEC officials that inconvenience would be the most serious consequence of weapons testing.¹⁷ After Dean learned from the *Ranger* series that the AEC’s statements about the safety of testing were effective in quelling fears and oppositions and that weapons could be detonated without evidence of immediate serious injury to participants or off-site civilians, bomb yields (and publicity) increased. Before the year ended, Dean’s AEC approved a thirty-one kiloton continental detonation. Within its second year, the Site was renamed the Nevada Proving Ground (NPG), becoming the sort of continental weapons testing facility that the military had repeatedly requested and that Truman and repeatedly refused to approve.¹⁸

¹⁶ William L. Laurence, “Tests of Atomic Artillery Indicated: Greatest Nevada Blast Lights West,” *New York Times*, February 7, 1951, 1, 16; “Great Blast Ends Atom Test Series,” *New York Times*, February 7, 1951, 16. For fallout trajectories across the continent and the radioactivity, much of it delivered to Refugio County, TX, see Miller, *U.S. Atlas of Nuclear Fallout*, Vol. 1, 51-62. Despite participants’ proximity to tests, a 2005 study performed by a contractor for the National Center for Disease Control found that people offsite were exposed to higher levels of radioactivity than on-site workers and participants. S. Cohen & Associates, “Draft Review of the NIOSH Site Profile for the Nevada Test Site,” Contract No. 200-2004-03805, submitted to Centers for Disease Control, December 13, 2005.

¹⁷ Eugene Moehring, *Resort City in the Sunbelt* (Reno: University of Nevada Press, 1986), 99. Figures for construction extrapolated to 2008 dollars. (<http://www.measuringworth.com>).

¹⁸ Carroll L. Tyler, “AEC Information Plan and Materials for Shot 3, Tumbler-Snapper Test Series” April 15, 1952, 11. AEC 505/25 Defendant’s Exhibit, DX 21949, *Prescott v. U.S.*

In mid 1953, after Lewis Strauss replaced Dean, the AEC allowed the detonations of a sixty-one kiloton air-drop bomb in 1953 and a seventy-four kiloton bomb suspended from a balloon in 1957. By the end of 1958 when President Eisenhower and Premier Khrushchev agreed to what turned out to be a temporary moratorium on atmospheric weapons testing, 128 detonations had been conducted at the AEC's Nevada Site.¹⁹

The Pacific Proving Grounds (PPG) was the AEC's first testing facility. It was located within the Pacific Trust Territory at Bikini and Eniwetok Atolls, 200 miles from the base at Kwajalein and approximately 2200 and 2370 nautical miles, respectively, southwest of Hawaii. The site of the *Crossroads*, it was purposefully remote, with "hundreds of miles of open sea in the direction in which the prevailing winds would carry radio-active particles."²⁰ Initially, its scientific facilities and housing were primitive, semi-permanent, structures funded by the AEC and constructed by the military for the *Sandstone* series of tests in 1948, when a force of 9,000-10,000 traveled to the site in planes and ships with 250,000 tons of cargo.²¹ In 1949, Lilienthal's AEC improved the PPG in anticipation of increased developmental testing requirements, constructing permanent administrative and technical facilities, housing for a resident community of scientists, military and civilian personnel, barracks for troops, accommodations for construction workers, and equipment storage. The AEC also made provisions for

¹⁹ Drawn from itemization by the Federation of the Atomic Scientists, "United States Nuclear Tests—by Date," <http://www.fas.org/nuke/guide/usa/nuclear/209chron.pdf>.

²⁰ Anthony Leviero, "U.S. Atomic Proving Ground Being Built On Pacific Atoll," *New York Times*, December 2, 1947, 1.

²¹ Neal O. Hines, *Proving Ground: An Account of the Radiobiological Studies in the Pacific, 1946-1961* (Seattle: University of Washington Press, 1962), 125. Sources differ for the number of people at the Sandstone series of tests. Hines cites 9,000; the Joint Task Force Seven pictorial record claims 10,000. Lt. Gen. John E. Hull, "Foreword," Clarence H. White, *Operation Sandstone: The Story of Joint Task Force Seven* (Washington, D.C.: Infantry Journal Press, 1949).

biological and medical experiments to investigate the hazards of nuclear radiation, building a research library and establishing a “breeding colony” on an island at Eniwetok so that scientists could work with “acclimatized, calibrated animals.”²² Two chapels, medical and dental facilities, barbershops, theatres, recreation rooms, playfields, and fenced lawns rounded out the amenities aimed at making life at the remote location a little easier for residents.²³ By Fall 1951, the PPG supported a population of approximately 10,000 people committed to the business of testing nuclear weapons.²⁴ Stateside, the AEC established a permanent unit at Los Alamos, “J” Division, to coordinate “activities at the proving ground [to formulate] scientific experiments for full-scale tests” and to “direct relevant research.”²⁵ It was “J” Division’s desire to conduct some interim experiments that were too large for their Los Alamos facility that Dean used to prime the JCAE in November 1950 for continental testing and in December to gain Truman’s approval for creation of the Nevada Site and experimentation.²⁶ The PPG was the site for 105 atmospheric nuclear tests, among them the largest in the nation’s arsenal,

²² W.D. Armstrong, et. al., Ad Hoc Committee for Screening, Division of Biology and Medicine, to Shields Warren, Director, June 10, 1949, and Attachment D, “Physical Facilities Required for the Biological and Medical Laboratory to Assure Satisfactory Working Conditions for the Program.” DOE Accession No. NV404073.

²³ Hines, *Proving Ground, An Account of the Radiobiological Studies in the Pacific, 1946-1961* (Seattle: University of Washington Press, 1962), 117.

²⁴ Correspondence [redacted] from N. E. Bradbury, Director, Los Alamos to Colonel Kenneth E. Fields, 11 October 1951, DIR-672, 3. 326 U.S. Atomic Energy Commission, Location LANL, Records Decimal 635, B9 D176, Folder 635 Laboratory Program 1951-6/30/57.

²⁵ Neal O. Hines, *Proving Ground: An Account of the Radiobiological Studies in the Pacific, 1946-1961*, 112-113.

²⁶ See Dean’s testimony before JCAE Meeting held Thursday, November 30, 1950, 44-45. As declassified: 881022/416-417.

twenty-eight H-bombs in the megaton range; and occasionally served as a supply depot for the Nevada Site.²⁷

After the creation of the continental site, all but the largest weapons were tested in Nevada. The first were air drops that caused little surface disturbance and reduced the amount of material radioactivised compared to weapons detonated near, on, or under, the ground. As testing continued, tower, surface, and subsurface shots became common and close-in fallout became a problem even as radioactive exposures nationwide increased.²⁸ The only health effects that the AEC/military worked to prevent as it conducted larger types of weapons tests were acute ones, those that would draw attention to the dangers of testing, spawn negative publicity, and perhaps threaten continental testing altogether.²⁹ In April 1952 the convenient experimental site in Nevada that Los Alamos scientists expected to use only for small, preliminary developmental experiments became the

²⁷ For *Upshot-Knothole's* "Harry" ("Dirty Harry") shot, an aluminum tower was shipped from the PPG to prevent delays in the schedule that might have occurred as a result of an insufficient production of steel towers. The aluminum tower may have contributed to the higher-than-expected fallout from "Harry". See William R. Kennedy, Jr., "Fallout Forecasting, 1945-1962," March, 1986, 24. Los Alamos, 10605-MS UC 11, DE86-009790.

²⁸ <http://www.docstoc.com/docs/537914/Draft-Review-of-the-NIOSH-Site-Profile-for-the-Nevada-Test-Site---Advisory-Board>. For fallout generally, see Fradkin, *Fallout*; for the health effects of atmospheric atomic testing, see Jay Gould and Benjamin Goldman, *Deadly Deceit, passim*. For a study that compares fallout dispersal with National Cancer Institute studies of nationwide cancer incidence, see Richard Miller, *The U.S. Atlas of Nuclear Fallout: Total Fallout 1951-1962*. Details about some of the earliest claims for damages filed by Nevadans are included in government documents. See letter from U.S. Attorney Madison B. Graves to Mr. Chester G. Brinch, Assistant General Counsel, U.S. AEC, Albuquerque, CIC 1338, and the decision to hold Lamb's claim about damage to his cattle for sixty to ninety days to see if they would heal or develop symptoms similar to animals exposed during Trinity.

²⁹ Officials had enough confidence in what they believed the short-term effects of radioactive exposure to be that they provided the military with values based on animal studies that officers could use as benchmarks to determine how much radioactivity a soldier could withstand. Letter from Marion W. Boyer, General Manager AEC To Robert LeBaron, Military Liaison Committee, January 10, 1951, ACHRE. The military subsequently decided to verify those values with their own series of animal studies. "Committee on Medical Sciences Research and Development Board, DOD, "Report of Meeting" Ad Hoc Working Group on Biomedical Participation on Future Atomic Weapons Test of the Joint Panel on Medical Aspects of Atomic Warfare, February 24, 1952, ACHRE Attachment 4, Briefing Book 6, Meeting 6, Tab F. www.gwu.edu/~7Ensarchiv/radiation/dir/mstreet/commeet/meet6/breif6/tab_f/br6fld.txt.

military's proving ground, a convenient place for the military tests and maneuvers that the AEC (under Lilienthal) anticipated would take place at the PPG.³⁰ It was immensely popular. As with the Pacific Site, where a Los Alamos scientist complained that experiments were made more complicated because "thousands" of people "dreamed up all sorts of reasons for being there,"³¹ the Site's convenience and the relative economy of experimentation meant that officers with AFSWP and the Army came up with all sorts of reasons and types of weapons to test.

Like a forest fire that generates its own weather, the Nevada Site spurred AEC and military expansion and funding for both skyrocketed. Within six months of its creation, the AEC asked for additional funds to maintain the pace of development. Truman took their request to Congress in August, asking for \$233,000,000 to supplement the \$1,200,000,000 already approved for 1952.³² In October 1951 then Secretary of Defense Lovett used the AEC's supplemental as a reason for increased DOD funding, clearing its own supplemental request with the JCAE so that the military could take advantage of the AEC's expansion. In a tangible expression of the centrality of the atomic program to the exploding military appropriations of the early 1950s, the Secretary anticipated needing enough funds to make use of the "several hundred percent increase"

³⁰ Carroll L. Tyler, Test Director, comments to press, "AEC Information Plan and Materials for Shot 3, Tumbler-Snapper Test Series," April 15, 1952, 11. AEC 505/25, *Prescott v. U.S.*, Defendant's Exhibit DX21949.

³¹ James Carothers, et al., *Caging the Dragon: The Containment of Underground Explosions*, [undated] Technical Report DOE/NV-388, DNA-TR-95-74; Lawrence Livermore National Laboratory; U.S. Department of Energy; Defense Nuclear Agency, 10-11.

³² Anthony Leviero, "Nevada Test Site Speeds Work on 'Smaller' Weapons, the Commission Reports," *New York Times*, August 1, 1951, 1.

of uranium and plutonium that the Secretary wanted for the armed forces.³³ Nevada testing was the direct provocation for both of these requests. As Dean and other AEC officials explained, the first series of tests resulted in enough technological progress in weapons development that money the AEC had expected to spend in 1953 could now be spent in 1952. Moreover, the Site had made testing so convenient that the AEC expected it to be a routine occurrence: “We will have much more frequent tests in the future.”³⁴ At the end of his term as Chairman, Dean took pride in championing military causes, boasting that between 1951-1953 he had doubled the AEC’s capacity to satisfy the military’s desires.³⁵

And yet, Dean’s support for military weapons testing resulted in duplicative and unnecessary testing that consumed military resources and reduced the availability of the Site for developmental testing and slowed progress. Appeals to national security and claims of “military urgency” notwithstanding, the AEC used these tactics to approve duplicative or unnecessary tests and, in at least one instance in 1952 to secure same-day permission to verify data already derived from earlier tests.³⁶ Dean’s AEC provided

³³ For the discussion of the supplemental and its relationship to the AEC’s approved supplemental, see Secretary of Defense Robert A. Lovett, “Presentation of the Secretary of Defense and the Joint Chiefs of Staff,” October 1, 1951, appropriations on 1977, 1989-1990; on the increase in fissionable material, see 1982-1983. Congress of the United States, Joint Committee on Atomic Energy, 82nd Congress.

³⁴ Anthony Leviero, “Nevada Test Site Speeds Work on ‘Smaller’ Weapons, the Commission Reports; Truman Asks Funds Rise, requests that \$233,000,000 be added to \$1,200,000,000 1952 appropriation,” *New York Times*, August 1, 1951; 1, 4.

³⁵ Gordon Dean, *Report on the Atom*, 133.

³⁶ Under a claim of “extreme urgency,” for example, AEC officials secured same-day presidential permission to expend material resources for an explosion to verify blast data of earlier tests. “Memorandum for the Executive Secretary, National Security Council, Subject: Test to Determine Air Blast Effects of Atomic Weapons,” attached to [sanitized] recommendation for approval, “Memorandum for the President, Subject: Test... (Operation Tumbler),” from James S. Lay, Jr., Executive Secretary of the National Security Council, February 20, 1952. The president approved the recommendations that same day. President’s Secretary’s Files, Folder: Publicly Available Documents, Papers of Harry S. Truman, HST Library. For general information about nuclear weapons tests along with explanations about the technological reasons

“civilian” cover to the Army and AFSWP’s self-interested use of the program.

Capitalizing on that support and the Site’s convenience, officers adopted what amounted to a “cafeteria” approach. Ten months after testing began, Los Alamos’s Director wrote that the laboratory’s efforts to satisfy military demands for a different sorts of weapons may have lent variety to the stockpile but it hamstrung both research and development, consuming enough of the laboratory’s time and energy to impede “longer range progress.”³⁷ Frustrated after military officers complained about Los Alamos’s ability to meet military demands, the Director lashed out:

It is the subject of no little Laboratory bitterness that these criticisms are made of the Los Alamos Scientific Laboratory at precisely the time when it has apparently been a military necessity to take a retrogressive step in Laboratory philosophy and return to the production field.³⁸

By January 1953, the factor governing continental weapons testing was the functional capacity of the Site determined by routines already established. At that time, officials envisioned more of the same: laboratory requirements would “approximate the effective capacity of the NPG with regard to frequency, yield and type,” and with the addition of tests in the works for the Spring 1953 series, “future tests [would] conform

for some of them, see *The Nuclear Testing Archive*, available online at <http://nuclearweaponarchive.org/index.html>. For additional resources about weapons testing and links to libraries and collections, see the *Trinity Atomic Web Site, History, Technology, and Consequences in Historical Documents, Photos and Videos*, <http://www.cddc.vt.edu/host/atomic/nukeeffct/index.html>.

One interpretation holds that the publicity “circus” about the atomic cannon may have brought about an end to the Korean War. If so, that means that one of the smallest nuclear devices was the one that had a direct effect on foreign policy. According to James Lamont, “it was fired only once, but it helped end a war.” “The Atomic Cannon,” (*American Heritage*) *Invention and Technology*, Vol. 21, Issue 1 (Summer, 2005).

³⁷ Correspondence [redacted] from N. E. Bradbury, Director, Los Alamos to Colonel Kenneth E. Fields, 11 October 1951, 7. DIR-672, 3. 326 U.S. Atomic Energy Commission, LANL, Records Decimal 635, B9 D176, Folder 635 Laboratory Program 1951-6/30/57.

³⁸ Correspondence [redacted] from N. E. Bradbury, Director, Los Alamos to Colonel Kenneth E. Fields, 11 October 1951, 5.

generally as to types with those tested in the past.”³⁹ Dean and AEC administrators also gave Army officers permission to test weapons the AEC’s own experts previously decided were not suitable for detonation in an arid location, causing contamination problems as early as mid 1952 that threatened the use of the site for scientific, developmental, tests.⁴⁰ Within two years of the Site’s creation, Los Alamos scientists complained that they would need another experimental site if it continued to be monopolized by the military, civil defense, and for the “reportorial press.”⁴¹

From Safety to Risk

Dean’s primary interest was to protect the autonomy that AEC officials and his military partners enjoyed over the program and its resources. The extent of this protectionism was more deliberate and comprehensive than the carelessness, ignorance, negligence, and short-sightedness that have become legendary characteristics of the AEC’s history.⁴² During the atmospheric era, AEC officials and military officers sacrificed safety in the interests of promotion, to economize, to accelerate testing

³⁹ U.S. Atomic Energy Commission, “Report of Committee on Operational Future of Nevada Proving Grounds,” May 11, 1953, (Meeting date, January 14, 1953) 2. NVO 720368; RG 326, Collection DBM, Box 3362, Folder 3.

⁴⁰ See AEC’s Office of Test Operations meeting with Army officers requesting that they devise methods to decontaminate four different areas and a handful of facilities and, additionally, to stabilize any soil they removed and relocated to prevent additional contamination. “Notes on Meeting with Army Representatives to Discuss Decontamination of Areas, Meeting date July 24, 1952; Report Date, July 31, 1952. Atomic Energy Commission, Location: LANL, Collection, J-Div; Folder: Decontamination. *Prescott v. US*, Defendant’s Exhibit DX21785.

⁴¹ “Summary of Minutes, Committee on Operational Future, NPG” Santa Fe Operations Office [SFOO], January 14, 1953.

⁴² See Howard G. Wilshire, Jane E. Nielson, Richard W. Hazlett, *The American West at Risk: Science, Myths, and Politics of Land Abuse and Recovery* (New York: Oxford University Press, 2008), especially 204-205. For continued irregularities, see Board on Radiation Effects Research, Division on Earth and Life Studies, National Research Council of the National Academies, *A Review of the Dose Reconstruction Program of the Defense Threat Reduction Agency* (Washington, D.C., National Academies Press, 2003), 3-4, for an example of faulty methodology, see 201.

schedules; and, on occasion, to avoid inconveniencing or disappointing congressmen, dignitaries, and other guests invited to witness a detonation. In addition to outright deception, this required (a) an institutional marginalization of the standards for safety that Lilienthal imposed as an institutional priority and inculcated in production facilities and laboratories; and, (b) the downplaying of the hazards of radioactivity and fallout that had circulated since the Hiroshima bombing.

Lilienthal had responded to the uncertainties spawned by the debate between experts who believed in the “no threshold” concept of radiation exposure—where no exposure was without danger—and those who argued for adoption of a “low threshold” standard by trying to reduce exposures to the lowest extent possible. He also backed the setting of dose standards by an independent authority.⁴³ The matter became acute as Lilienthal reached the end of his tenure as the increased use of radioactive isotopes in peacetime applications coincided with the increased experimentation and exposure potential brought on by the decision to develop an H-bomb. This precautionary approach evaporated with Lilienthal’s resignation, militarization, and Dean’s expansionary goals.

For Dean, downplaying the hazards of continental weapons testing was made easier by Truman’s hydrogen bomb decision. The prospect of a weapon thousands of times larger than the bombs that had devastated Hiroshima and Nagasaki gave those supportive of the AEC/military partnership a reference point for bomb magnitude that dwarfed the destructive potential for earlier bombs. In January 1951, the same month that testing begin in Nevada, William L. Laurence, the *New York Times* science writer who had chronicled the Manhattan Project, portrayed the ferocity of the new bomb in *The Hell*

⁴³ “Control of Radiation Hazards in the Atomic Energy Program,” “The Protection Policy,” *Eighth Semiannual Report of the Atomic Energy Commission*, July 1950, 18.

Bomb.⁴⁴ After testing began, even participants failed to grasp the yield of bomb tests in Nevada. In one instance, the memories and images of the column and mushroom cloud of seawater and vapor that descended after the underwater “Baker” bomb to swamp ships in Bikini’s harbor created the mistaken impression that the bombs detonated in Nevada were not, as was often the case, larger, but instead seemed to be much smaller “firecrackers.”⁴⁵ By emphasizing the size of weapons tested in the Pacific and the prospect of the increased yields and destructive capacity of thermonuclear weapons, Dean’s statements and AEC publicity caused even more slippage in the way the general public, elected officials, and federal officials, AEC personnel and contractors, and military officers thought about atom bombs—once the “ultimate weapon,” before anyone had witnessed an H-bomb explosion.⁴⁶ Dean’s AEC also downplayed the significance of manmade sources of radioactive contamination by playing up the ubiquitous presence of natural sources of radioactive energy in everyday life.⁴⁷

The following section compares two *Semi-Annual Reports to Congress*, one put together toward the end of Lilienthal’s tenure and another at the end of Dean’s, to illustrate the significance of the AEC chairman’s goals to the program’s standards for

⁴⁴ William L. Laurence, *The Hell Bomb* (New York: Alfred A. Knopf, 1951).

⁴⁵ K. J. Evans, “Alfred O’Donnell, The Nuclear Measure of a Man,” in A.D. Hopkins and K. J. Evans, *The First 100, Portraits of the Men and Women who Shaped Las Vegas, Part II* (Las Vegas, NV, Stephens Press; Huntington Press: 1999). Online at <http://www.1st100.com/part2/odonnell.html>

⁴⁶ For the proliferation of this notion, see Gordon Arneson’s articulation of the State Department’s distaste for imagining the H-bomb as “a whole new order of magnitude,” in the minutes of the meeting between State, Defense, and the AEC about how best to announce the first detonation, [Sanitized] “In the Matter Of L Panel Meeting,” July 11, 1952, 11. SMOF: Psychological Strategy Board Files, Box 24, Folder 334 Panel L. Papers of Harry S. Truman, HST Library.

⁴⁷ Catherine Caufield cites a meeting that occurred before Christmas 1950 where military and AEC staffers decided that “the most important angle to get across” was to make “people feel at home with neutrons trotting around.” *Multiple Exposures, Chronicles of the Radiation Age* (Chicago, IL: University of Chicago Press, 1990), 104.

safety. Because both Dean and Lilienthal used the Act's requirement that they submit reports to Congress as a vehicle for documenting their achievements and as a means of persuading Congress and the public alike to accept their vision of the program's value and its future, the reports provide insight into their personalities and motivations. The reports also illustrate how the goals and approaches of commissioners determined the priority of AEC precautionary standards, rendering suspect the claims by Dean and military officers that advances in scientific understanding were responsible for changes in safety standards during the early years of atmospheric testing. The reports mark an administrative shift in perspective that occurred after Lilienthal's resignation and the institutional transformation that occurred with Dean's chairmanship and the advent of continental testing. The latter illustrates the persuasive strategies used by the AEC to garner acceptance for weapons tests and the fine line the militarized AEC walked between the skillful re-packaging of information and deception.

In July 1950 the AEC awarded pride of place to the dangers of radioactive exposure in its *Eighth Semi-Annual Report*. From the title of Part One of the Report, "Control of Radiation Hazards in the Atomic Energy Program," to a cover page, a montage of photographs of warning signs from AEC production facilities that featured not only the common Danger and trefoil warning, but also handwritten signs: "STAY OUT FLOOR HIGHLY CONTAMINATED," "CONTAMINATED GLASSWARE" and special purpose signs, "HOT SINK," "FOR ALPHA CONTAMINATED CLOTHING ONLY," "HOT TONGS ONLY," "REMOVE RUBBERS/CONTAMINATED BOUNDARY THIS EDGE," a somewhat mysterious "ABOSLUTELY NO SHAVING PERMITTED WITHIN RESTRICTED AREA" sign, and a full page image of a chained

and padlocked door with “RADIATION HAZARD HOT RUN” on facing the first page of the report, the report’s theme was unmistakable. Clearly, the AEC wanted to impress on readers the uncommon dangers of radioactivity and make them aware of some of the precautions necessary to protect workers at AEC facilities. The report began with a recitation of the AEC’s legislative mandate to maintain safety and cited portions of the Atomic Energy Act that outlined the Commission’s duty to “protect the health of employees and of the public in carrying out its program of research, production, and weapons testing.” The second paragraph reinforced the montage’s portrayal of the critical issue of safety by quoting from testimony by a Manhattan administrator following the war that “the atomic energy program [was] ‘by long odds the most dangerous manufacturing process in which men have ever engaged.’”⁴⁸ The AEC expanded on those two themes through 161 pages, that included specific details about exposure and graphic charts that portrayed dose ranges and health effects, subheadings such as, “The Hazards of Radiation,” “How Radiations Cause Damage, and “Where the Hazards Arise,” pictures of radiation protection equipment, and discussions of protocols designed to ensure the safe handling of radioactive material.⁴⁹ While adopting a low-threshold standard, 15 rem per year below which exposures “may safely be regarded as insignificant,” the AEC had set a goal for its facilities and contractors to reduce exposure to the greatest possible extent. “When knowledge of the effects of many kinds of exposure is fragmentary and incomplete, as it is today, the only safe procedure is to include very large safety

⁴⁸ United States Atomic Energy Commission, *Eighth Semi-Annual Report of the Atomic Energy Commission*, “Control of Radiation Hazards in the Atomic Energy Program,” July 1950 (Washington, D.C.: United States Government Printing Office, 1950), 3.

⁴⁹ *Eighth Semi-Annual Report*, 4-7.

factors.”⁵⁰ To demonstrate the success of this commitment, the AEC reported that the average of the ten highest exposures at Hanford for 1949 was “1.1 r, or 93 percent below the permissible limit; at Oak ridge ... the average was 4.2 r, or 72 percent below the limit.”⁵¹ Additionally, while noting that non-AEC affiliated institutions allowed “substantially greater” exposures and considered them safe, and that there were valid arguments to be made about whether the cost of preventing exposures—estimated for construction of facilities alone to be about twelve times the cost of a plant dealing with non-radioactive material—could be reduced without significantly compromising safety, the AEC reaffirmed its commitment to safety above all:

In the view of the Commission, upward adjustment of permissible levels of radiation can be allowed only if it is determined with reasonable certitude that higher exposures will be harmless. ... It has preferred to err on the side of safety and it is still possible that some standards may need to be tightened with the increase of knowledge about the long-range effects of radiation.⁵²

The AEC dedicated a short section on military testing, “Control of Hazards at Weapons Tests,” and opened it with a frank statement: “The explosion of atomic weapons in testing operation releases large amounts of all types of ionizing radiation,” and noted that of the six weapons detonated during peacetime, there had never been an injury related to the explosion itself but that during recovery operations, some contractor personnel had suffered beta burns to their hands.⁵³ Except for a summary of the tests held to date, the remainder of the information in the section was drawn from the final report of

⁵⁰ *Eighth Semi-Annual Report*, 15.

⁵¹ *Eighth Semi-Annual Report*, 16-17.

⁵² *Eighth Semi-Annual Report*, 18.

⁵³ *Eighth Semi-Annual Report*, 119.

1948's *Operation Sandstone* because radiation safety for that operation was under the sole direction of the Joint Task Force Commander. Among the advance precautions were two weeks of lectures to train radiation safety personnel, full dress rehearsals with departure, re-entry, and evacuation practice. To prevent injuries to personnel during the tests, the test island was completely evacuated and all personnel and ships were moved at least ten miles away. To prevent unintended exposures, the downwind area was charted and patrolled, with no ship allowed to enter a zone where fallout might occur.⁵⁴

The 1950 *Report* portrayed the program as a system where safety was not just a facet of the operation, but integral to the process of development itself. This extended through to the conclusion, where pending scientific discoveries of less costly ways to prevent injury from radioactive exposures, “the AEC can fulfill its obligations only by taking all feasible precautions to safeguard workers and the general public against the potential hazards of ... production and development.”⁵⁵ In Lilienthal's AEC, the expense and trouble of safety precautions was warranted not only by what was not yet known about radioactive hazards, but also by virtue of the AEC's obligations under the Atomic Energy Act. The philosophy—one that had come under attack in early 1950 by Los Alamos officials who complained to Shields Warren that meeting the stricter standards arrived at by an international committee would be costly, difficult to achieve, and limit the laboratory's progress—did not survive Lilienthal's term.⁵⁶

⁵⁴ *Eighth Semi-Annual Report*, 119-122.

⁵⁵ *Eighth Semi-Annual Report*, 161.

⁵⁶ Wright Langham, Los Alamos to Dr. Shields Warren, Director Division of Biology and Medicine, January 20, 1950. LANL/RC, Collection TR 6704, Book 236, G-3, Folder 39. Facsimile of letter with attachments available on the world wide web at http://gwu.edu/nsarchiv/radiation/dir/mstreet/commeet/meet11/brief11/tab_g/br11glu.txt. Portions of this letter also cited by President's Advisory Committee, *The Human Radiation Experiments*, 141-142. No

As Chairman, Dean fostered a culture that rewarded decisions that streamlined increases in production and experimentation at the cost of safety. He encouraged public and institutional acceptance of his pro-military ambitions and program expansion by downplaying the hazards of experimentation in ways that shifted responsibility for harm away from the AEC and its administrators. He brought about an institutional transformation from the top down and presided over a regime that squeezed out Lilienthal's standard bearers. The result was a uniform, pro-military, pro-experimentation philosophy that dominated AEC decision-making.

By 1953, the changed priorities of a militarized AEC were reflected in the AEC's *Thirteenth Semi-Annual Report*. Dean's AEC replaced the responsibility to balance development with the prevention of known and potential hazards—that Lilienthal regarded as a legislative mandate—with a vision of the AEC as a military provider charged with a duty to develop weapons and to do so economically. In the revised concept, this duty included continental weapons testing as a matter of course. It also sidelined the issue of long-term illness caused by radiation exposure, taking only those precautions that were incontrovertible, focusing almost entirely on those acute injuries that resulted from high level exposures.

Selections from the 1953 report illustrate that Dean's AEC had eradicated the notion that radioactive hazards were inevitable and replaced it with the position that

mention is made of Langham's intervention in the matter of establishing dose in a Los Alamos recapitulation of the Chalk River Conference. See William C. Inkret, Charles B. Meinhold, and John C. Taschner, "A Brief History of Radiation" *Los Alamos Science* 23 (Los Alamos National Laboratory 1995): 119.

The most comprehensive study of the NCRP and the process by which radioactive exposure standards were established, is Gilbert F. Wittemore's institutional study, "The National Committee on Radiation Protection 1928-1960: From Professional Guidelines to Government Regulation," (Ph.D. Thesis, Harvard University, 1986). See also Caufield, *Multiple Exposures*, 120. For Caufield's examination of how the AEC's programs influenced standards and subverted widely accepted standards, see 116-138.

weapons testing was the inevitable quotient and hazard was a manageable quantity. Under the heading “The Need for Nuclear Test Detonations,” the AEC explained that experimentation was necessary because although it was possible “to evaluate many weapons principles and designs in the laboratory or by mathematical computation ... under certain circumstances, the only practical method of evaluation is that of actually detonating a nuclear ‘gadget,’ or device, to test the design or principle involved.”⁵⁷ It emphasized the economic benefits of continental testing no less than six times; claimed forthrightly that testing was safe at least three times; and, drawing from the twenty tests conducted by the time the report was issued, mentioned at least seven times that no one had been harmed or exposed to radiation from fallout that exceeded their maximum permissible dose.⁵⁸ While the AEC advised the report’s readers that it considered the “maximum permissible levels” for external radiation (0.3 r/week), it finished that same sentence with a legalistic qualification that it should not be taken to mean that the “maximum permissible level” was hazardous. The AEC argued that it took a dose of 25 rem “given in a few minutes or hours” to “produce detectable effects on the blood” and even then, that dose would not “so far as is known” cause irreparable damage.⁵⁹ Qualifications such as “detectable” highlight the AEC’s interest in discussing only short-term, observable, health effects. Moreover, the AEC worked to create an impression that it was actually taking a conservative approach to radiation safety by diluting exposure levels through averaging and creating imaginary distance between the AEC and the

⁵⁷ *Thirteenth Semi-Annual Report*, 79.

⁵⁸ *Thirteenth Semi-Annual Report*, economic benefits: 78-79, 80, 81, 82 (2 times); the savings of multi-purpose uses for each test, 79; safety, 78, 81, 83; no harm, 83, 105, 113, 114, 116, 123, 124-125.

⁵⁹ *Thirteenth Semi-Annual Report*, 113.

experts who determined exposure thresholds. Citing a supposedly independent “ad hoc committee composed of authorities in the fields of medicine and roentgenology” whose members were, in fact, connected in one way or another with the AEC and its programs, the Report indicated that the committee had determined that a dose ten times the AEC’s “maximum permissible” .03/week dose, or 3 r, was safe whether it was an accumulated dosage received over a long period of time or all at once during a ten week period.⁶⁰ The AEC also benefited from the military maneuvers, using soldiers participating in exercises to ally fear and downplay dangers: “thousands” of military personnel had been in foxholes as close as 7,000 yards away from ground zero without being injured.⁶¹ The AEC also drew selectively on the history of radium exposure to downplay the dangers of internal radiation. Ignoring the fate of the radium dial painters altogether, the AEC reported that people who had accidentally or therapeutically absorbed and “carried in their skeletons” a one-microgram measure of radium (ten times the AEC’s permissible limit) exhibited “no observable damage.”⁶² It used comparisons between therapeutic and naturally occurring radioactivity and manmade radioactive fallout from testing to reinforce the notion that weapons testing had been conducted well within the margins of safety and presented no danger to those on or off site.

Even the structure of the report relegated the issue of safety to a level below that of development and funding. The AEC subtitled its January 1953 Report *Assuring Public*

⁶⁰ *Thirteenth Semi-Annual Report*, 113.

⁶¹ *Thirteenth Semi-Annual Report*, 83. See also Hacker, *Elements of Controversy*, 75-76.

⁶² *Thirteenth Semi Annual Report*, 115. Stafford Warren’s discussion of what seems to be the same example included the information that the one microgram lodged in the skeletons of two of the radium dial painters caused both women years later to contract a “rapidly fatal” cancer and die soon after their diagnoses. Stafford L. Warren, M.D., “Address given before Optimus Club at Biltmore Hotel,” May 29, 1947, 16. Box 285, Folder 2, Stafford Warren mss.

Safety in Continental Weapons Tests, but relegated the discussion of that particular issue to Part Three. Preceding it were “Major Activities in Atomic Energy Programs, July-December 1952” (Part One) and “Condensed AEC Annual Financial Report, Fiscal Year 1952” (Part Two.) At forty-eight pages, the final segment on safety took up slightly more than one-third of the document, excluding appendices.⁶³ The first three paragraphs of the section described the location of the site; avoided the word bomb by referring to the twenty “explosions” there as “tests;” and identified the possible offsite effects of such “tests” as blast waves, radioactive fallout, and flashes of light. Of the three, the only one the AEC suggested was dangerous was the light flash, which was “potentially a source of hazard to persons as far as 30 miles away.” The fourth paragraph characterized people who expressed concerns about testing in “some communities” as “uninformed” and their worries unfounded or based on misunderstanding or misinformation. In this way, the AEC shifted the burden for any anxiety about fallout to the people themselves, who had become unnecessarily worried because they had used measurement equipment “improperly,” had relied on “faulty interpretation of [equipment] readings,” or who had become unnecessarily alarmed about any level of fallout, no matter how small, because they did not realize “that they are continuously exposed to radiation from natural sources.”⁶⁴ Reinforcing the continuing presence of naturally occurring radioactivity, the report noted that fallout caused an “increase in natural radiation.” The authors included two different discussions under “Effects of Weapons Tests” subheadings. The first

⁶³ Excluding appendices, the Report was 125 pages long. *Thirteenth Semiannual Report of the Atomic Energy Commission, Assuring Public Safety in Continental Weapons Tests* (Washington, D.C.: United States Government Printing Office, January 1953).

⁶⁴ *Thirteenth Semi-Annual Report*, 77.

contained four “general statements” about testing and presumed a high level of confidence in AEC decision-making, pointing out that “no person had been exposed to a harmful level of fallout,” that no hazardous accumulation of radioactivity had built up in the soil or at dangerous levels in food,” and that fallout was “far below the level which could cause a detectable increase in mutations or inheritable variations,” as if to suggest that the only possible long term effect from radioactive fallout was a generational one, and noted that although blast waves had caused property damage, no people had been injured.⁶⁵

The second discussion described an atomic explosion and included separate explanations of blast effects: flash, air blast, influences on the weather and the troposphere, ozonosphere, and ionosphere. A section on damage, settlement, and mitigation pointed out that the AEC paid no claims for property damage over \$1,000.00. The footnoted details indicate that total settlements increased as testing levels and the size of “devices” increased, with 113 claims totaling \$15,000 for the first series; \$27,929.59 paid for 268 allowed claims after the second—the result of a single “blast” in November—and \$42,929 paid to settle 381 claims after the third. The section included language claiming vaguely that “many variables” prevented the AEC from avoiding off-site damage. It did so in a way that reinforced the notion that both weapons testing and damage was something that the public needed to learn to accommodate, shifted the responsibility for the damage away from the AEC and toward the property owners. The AEC argued that people offsite needed to accept some of the burden for preventing property damage. For example, the Report noted that damage might not have occurred had it not been for the age and construction of buildings, suggesting that residents should

⁶⁵ *Thirteenth Semi-Annual Report*, 78.

have upgraded or reinforced their buildings. About broken windows, the AEC pointed out that no damage would have occurred had doors or windows been opened to equalize the pressure of the blast.⁶⁶

Under “Establishment of the Nevada Proving Ground,” a discussion of the national security value of weapons tests and the cost savings of continental testing preceded a section entitled “Possible Hazard From Fall-Out.” Ironically, that section drew attention away from the possibility that fallout might harm people. What it did do was to create a historical narrative that validated the assertions of Dean’s AEC that continental testing posed no dangers. The story left out enough details to imply that only an overabundance of caution had caused testing to be conducted remotely, an impression that in the language of the report had since been authoritatively revised. According to that history, in 1947 a question arose about whether “persons or property” might be damaged by blast or fallout and was settled temporarily with a decision to conduct testing “overseas” until “it could be established more definitely that continental detonations would not endanger the public health and safety.” The three paragraph summary mentioned little about what had been learned during earlier tests.⁶⁷ As with the JCS’s Evaluation Report for Operation Crossroads, the AEC excluded information that would compromise its goals.

It overlooked entirely the hazards acknowledged, and provided for, during Pacific weapons tests; made no mention of *Operation Crossroads* and what was learned about fallout from the two tests at Bikini. Only in passing did it acknowledge the 1948

⁶⁶ *Thirteenth Semi-Annual Report*, 83-89.

⁶⁷ *Thirteenth Semi-Annual Report*, 80.

Sandstone series at Eniwetok that were the first peacetime tests conducted by the AEC. The two hazards it did discuss were portrayed as incidental, easily remedied, and minor. Drawing from the pre-AEC Trinity test at Alamogordo, the report noted that cattle had suffered “skin burns,” with the only “detectable” damage being the “subsequent graying of hair on their backs.” The authors prevented readers from making sense of the relationship between these skin burns and Trinity by omitting the information gathered by Stafford Warren and delivered as part of his report on the test and in talks that he gave to small audiences afterward, that the cattle suffering radiation burns from Trinity’s twenty-two kiloton detonation had been grazing at distances that ranged from fifty to one-hundred miles from the site.⁶⁸ Authors left it to the reader’s imagination to estimate the animals’ proximity to ground zero with an unspecific comment that they were “near” the test site.⁶⁹ The other hazard mentioned was the fogging of film after the Trinity test, a material that the AEC singled out as unique, one that was “extremely sensitive to radiation.”

The selective release of information about radioactivity that Dean adopted as an extension of Hull’s “re-education” campaign and the methods for classification that Groves and Nichols managed for the JCS led to uninformed decision-making in media circles and increased radiation hazards far from the AEC’s proving grounds. In 1953, for example, the same year that the AEC issued its *Thirteenth Semi-Annual Report*, a member of the AEC’s Advisory Committee for Biology and Medicine, Giocchino Failla, reported that he learned that the Navy had been using Strontium as an ingredient in the

⁶⁸ Warren, “The Atom Bomb,” March 1947, 23-24. Stafford Warren mss.

⁶⁹ *Thirteenth Semi-Annual Report*, 80.

button markers it used to mark passageways in the event of a power outage.⁷⁰ Failla's comments included a reminder to the group that Strontium was "one of the most hazardous materials ever to have [been] distributed." Despite that fact, the institutional urge to protect the AEC's autonomy and authority seems to have prevented Failla from warning either his informant or Navy officials directly about the danger of using Strontium for its glow-in-the-dark properties. Instead, he waited and brought the issue before the Committee at one of its regularly-scheduled meetings. That same urge was reflected in the Committee's recommendations to give the problem additional thought and that Failla and John Bugher, then-Director of the AEC's Division of Biology and Medicine, "consult and arrange for calling the problem to the attention of the proper people."⁷¹ The ignorance that led to the use of Strontium as a material for markers was a direct result of the way that the Military Establishment and the Military Liaison Committee used its ability to limit in self-serving ways what became known about hazards. And it was so effective that once it had become part of the AEC's administrative philosophy with Dean's chairmanship, Dean had confidence that the decisions he and other AEC administrators made to permit risky weapons tests in Nevada would not leak out of the organization to cast suspicion on the alternative history relayed in the AEC's 1953 Report.

Dean's enthusiasm for weapons testing and satisfying his military partners combined with his authority over the circulation of information instigated a pattern of detonating weapons with yields that were larger, and with methods, that exceeded the

⁷⁰ "Minutes," Meeting of the Advisory Committee of Biology and Medicine, December 11, 12, 1953; ACBM 711931, 326 U.S. Atomic Energy Commission, Division of Biology and Medicine, Box 1, Folder 3. 11-12.

⁷¹ "Minutes," 12.

recommended boundaries for continental, desert, experiments that AEC and military experts established early in the Site's history. In a phenomenon known to exist since Trinity, and one that was known to be exacerbated by the aridity of the Nevada Site, the amount of fallout produced by a test was not just a product of yield, but also by how close to the ground the explosion occurred. Both the AEC and military officers knew that by detonating a bomb at an altitude sufficient to prevent the fireball from reaching the ground, they could reduce substantially the amount of material that would be radioactivised, drawn up into the mushroom cloud, and dispersed through air currents and winds far from the site of the detonation. Before the Site's creation, the Director of Military Applications implied that the bombs to be exploded in Nevada would not produce fallout on the scale of the Trinity test. In paperwork the DMA submitted to Dean (at his request) in December 1950, "a substantial improvement in predicted safety" over the Trinity experience could be achieved through elevation and paving, factors that would limit fallout to such an extent that yield boundaries of twenty-five kiloton could "certainly" and fifty kiloton "probably" be "detonated within acceptable safety limits"⁷²

As Richard B. Holtzman (an AEC advisor engaged at the Radiological Physics Division of Argonne National Laboratory) noted, the only types of tests envisioned for Nevada when testing began were air-drops and neither the aridity nor the meteorological characteristics of the Nevada Site seem to have factored into test planning. Holtzman explained during a meeting in 1951 after the *Ranger* series of tests that air delivered and

⁷² Director of Military Application, "Atomic Energy Commission Selection of a Continental Test Site, Report by the Director of Military Application," [undated], 4. Submitted to AEC and approved during meeting 504, December 12, 1950; approval, AEC 141/7, December 13, 1950. U.S. DOE NVO750330.

detonated weapons reduced the possibility that inaccurate weather forecasts would result in dangerous fallout dispersals:

I don't think you can count on the meteorologists to do the forecasting here with any degree of reliability ... the real facts are that at Ranger we did not forecast the winds with any great degree of accuracy, we just didn't care what the winds were because we were so sure with air bursts that it would be all right.⁷³

Ironically, the purpose of the meeting Holtzman attended was to come up with a way to accommodate military requests to test bombs at and below the surface to determine how yield and placement affected the size of a crater left after a detonation. The tests were expected to produce so much radioactive contamination that, even after the creation of the Nevada Site, the upper echelon planned to conduct the tests at Amchitka, a place remote enough to prevent the possibility that fallout would lead to overexposures.⁷⁴

Sometime after Secretary of Defense George Marshall submitted the Amchitka plan to the NSC for approval and submission to the President in May 1951, lower-level officers asked for and received AEC approval for a surface and a subsurface test for Nevada.

“Sugar” and “Uncle” conducted on November 19 and 29, 1951, multiplied what

Holtzman called the “uncertainties” of testing in Nevada.⁷⁵ Three years later, and in response to a slightly different problem—reducing on-site radioactive contamination

⁷³ “Notes on the meeting of a Committee to Consider the Feasibility and Conditions for a Preliminary Radiological Safety Shot for Operation “Windsquall,” SD-9241, [redacted], 15. DOE-030195-A, attached to June 8, 1951, letter from Shields Warren, Director Division of Biology & Medicine to Dr. Louis Hempelmann, University of Rochester. DOE Acc. No. NVO751002.

⁷⁴ 21 May 1951, George C. Marshall, Secretary of Defense, “Memorandum for the Executive Secretary, National Security Council, Subject: Operation WINDSTORM,” attachment to NSC (Lay) to Truman, June 4, 1951, PSF Subject File, Box 175, Atomic Testing Windstorm, HST Library.

⁷⁵ “Sugar” was a 1.2 kiloton bomb detonated slightly above the surface, and produced a crater twenty-one feet deep and ninety feet wide. “Uncle” was also a 1.2 kiloton bomb, but it was detonated seventeen feet below the surface. It left a crater fifty-three feet deep and two-hundred sixty feet wide.

because internal radioactive exposures had become a “considerable problem” for personnel cleaning up after detonations—, an AEC committee reiterated the same recommendations it had earlier: tests should be detonated at higher elevations and the soil underneath detonations stabilized. Thus, after two years of testing, the AEC had not implemented protocols that the DMA had implied in 1950 would be employed to reduce the dangers of experimentation.

Significantly, AEC officials recognized at that time that its failure to implement those rudimentary precautions had exposed workers to potentially dangerous levels of internal radioactive exposure that could jeopardize their health.⁷⁶ Additionally, they recognized that their actions could have caused overexposures to people offsite. Still, they dismissed the significance of accumulating internal exposures as far as 200 miles from the site. In their words, people offsite had gotten lucky—they had not been exposed to as much radioactivity as they might have had it not been for the “good fortune which has on occasion caused highly-radioactive clouds to wend their way in between communities.”⁷⁷ As for limiting fallout by paving underneath blasts, that recommendation was not adopted until March 1955.⁷⁸

Increasing fallout was a product of atomic governance. As the AEC and its military partners grew more confident in the use of deceit to mask the hazards of continental weapons tests and as they used the Site more frequently for promotional

⁷⁶ U.S. Atomic Energy Commission, “Report of Committee on Operational Future of Nevada Proving Ground,” May 11, 1953, [Meeting, January 14, 1953], 15. NVO 720368; RG 326 U.S. AEC, Collection DBM, Box 3362, Folder 3.

⁷⁷ “Report of Committee on Operational Future of Nevada Proving Ground,” May 11, 1953, [Meeting, January 14, 1953], 16.

⁷⁸ For the use of asphalt, see “Quiet Test Site Awaits Mystery April Operations,” *Las Vegas Sun*, March 31, 1955.

demonstrations, the motivations for reducing fallout diminished in inverse proportion to increases in the frequency of testing higher-yield weapons, tower shots, or exotics, such as the atomic cannon—all of which produced high levels of radioactive fallout.⁷⁹ During the first year of testing, Dean and AEC administrators sent a signal down the managerial tiers and out through program affiliates that it would accommodate military requests for tests that its own top health advisor found too dangerous to be conducted in Nevada. Shields Warren, then Director of the Division of Biology and Medicine, argued that because of the increased amount of fallout and inhalation hazard, the military should not detonate bombs from towers or conduct those tests in an area where the ocean would absorb the higher levels of fallout they would produce. Despite his objections, AEC administrators approved the military's request to conduct tower shots, a method that the military preferred because it provided greater control over detonation, measurement of yield, and because commanders could situate soldiers closer to detonations if they did not need to compensate for targeting problems with air drops.⁸⁰ The need to justify

⁷⁹ For the military's claims, see Robert LeBaron of the Military Liaison Committee, who argued that the first tower shot in Nevada was a matter of military urgency. In making his appeal, LeBaron seems to have believed more incentive was needed to receive approval, so he also cited the project's cost: "The Air Force and AFSWP have spent over one million dollars in developing the equipment and techniques involved in this project and it is very important than an operational test be carried out at the earliest practicable date." "2. Project 1.1-Free Air Pressure" in "Memorandum for the Chairman, Atomic Energy Commission," August 14, 1951, Subject: "Operations Planned for Buster-Jangle," 4. Attached to AEC 446/6, August 20, 1951, U.S. DOE Archives, 1951-58 Secretariat File, Box 1261, Folder ML&A-7 Buster-Jangle, Vol. 1; Prescott v. US, Defendant's Exhibit DX21783.

For the discussions of fallout-producing military shots and the Test Director's approval, see "Meeting of a Committee to Consider the Feasibility and Conditions for a Preliminary Radiologic Safety Shot for Jangle," Los Alamos Scientific Laboratory, May 21 and 22, 1951, Prescott v. U.S., Defendant's exhibit DX390241. See also Harold D. Anamosa, Acting Secretary, Atomic Energy Commission, meeting no. 694, "Minutes [with deletions] May 14, 1952." Alvin C. Graves, "AEC Information Plan and Materials for Shot 3, Tumbler-Snapper Test Series" April 15, 1952, 20. "A tower shot is preferable. . .because we can fix zero time with accuracy . . . [to] time signals to open camera shutters . . . and turn on electrical equipment." AEC 505/25, Prescott v. U.S., Defendant's Exhibit DX21949.

⁸⁰ See the recommendations from AFSWP and other military personnel prepared in response to a June 1952 request for safety criteria for military exercises. "When an atomic device is not detonated on a tower, but

compromises such as these that Dean made to satisfy his military partners explains the inclusion of misleading discussions about radioactive hazards and the history of weapons testing contained in the AEC's 1953 Report.

The Report is significant in the history of militarization for several reasons. It reflected the routinization within the program of the wartime strategies of control that had led to the program's militarization and Dean's elevation to Chairman. It incorporated the lessons learned over two years of continental testing about the practice and politics of exploitation, among which was that persistent references to cost savings and safety provided cover for the tremendous cost of expansion and the exploitation of the program by AEC officials, military officers, and an expanding network of affiliates. As such, it is an exemplar for how Dean and the AEC used deceit, euphemism, military urgency, secrecy, the selective use of information, and congenial scientific expertise, to create an artificial distinction between the dangers of radioactive fallout that would be produced by

rather is delivered to ground zero by gun, guided missile, rocket, or aircraft it is necessary to consider the possibility of an error in the delivery system." Jark to [various] 4. The Air Force refused to give AFSWP any concrete answer to their question about the accuracy of delivery, noting that although it had not been off-target at the Site by more than 400 feet, other factors such as the "bombsight, weather, erratic characteristics of the bomb, and the bombardier" made it impossible for them to assure accuracy in yards or feet. See Memoranda October 7, 1952, "Troop Participation at Continental Atomic Weapons Test," from John K. Gerhart, Brigadier General, USAF, Deputy Director of Operations, Deputy Chief of Staff, Operations. AFSWP suggested greater distances than field officers. A commander with Army Field Forces suggested that an additional 2,000 yards be added to the distance soldiers were entrenched. A figure that AFSWP increased in its recommendation to 3,000 yards, along with a suggestion that soldiers be entrenched in a line parallel to the bombing run. See "Complete Discussion" Item 5(c), 5, attached to C.D. Edelman, Major General GS, Assistant Chief of Staff, "Instructions for Positioning DA Personnel at Continental Atomic Tests" attached to 20 February 1953 Memorandum from Carl Jark, Brigadier General, for the Assistant Chief of Staff, to [various]. ACHRE Briefing Book 8, available online at http://www.gwu.edu/~nsarchiv/radiation/dir/mstreet/commeet/meet8/brief8/tab_f/br8flf.txt

For Warren's objections to conducting tests that would produce large amounts of fallout, see Shields Warren, M.D., Director Division of Biology and Medicine to General James McCormack, Jr., Director Division of Military Applications, "Office Memorandum," February 21, 1951, U.S. DOE Archives, Collection DMA, Box 3783, Folder MRS 7. Warren feared a long-term inhalation hazard from radioactive material of long half-life being constantly stirred by activity or winds. By contrast, conducting the same test at the PPG would mean that fallout would be absorbed by the ocean without a continuing possibility of exposure.

an enemy's bomb and radioactive fallout produced by American bombs to serve domestic, institutional goals.

After two years of continental testing, Dean's abdication of responsibility for civilian safety permeated the AEC. The factors that made experimentation needlessly dangerous were aspects of a deliberate institutional strategy that internalized, organized, and employed strategies of control specifically designed to guard against any threat to the autonomy of the AEC and its military partners. A review of the 1953 *Upshot-Knothole* series of tests and the commissioner's involvement as that series progressed illustrates how thoroughly the military's mission had penetrated into the AEC's administrative, managerial, and advisory structure. One of the most significant differences between earlier tests and the 1953 testing series was that Shields Warren, who had been the Director of the Division of Biology and Medicine under Lilienthal and who during his service under Dean took a firm stand against the military's most hazardous proposals, had resigned. His replacement, John C. Bugher, had little of Warren's familiarity with radioactivity and its effects. Before 1937, Bugher taught bacteriology and pathology at the University of Michigan and then joined the Rockefeller Foundation as a member of its field staff. In 1951, he became a consultant for nuclear affairs, and in 1952 Dean appointed him to be Warren's replacement. Like Dean, Bugher made the military's mission his own and he viewed fallout in a way similar to Dean: as more of a psychological or public relations problem than as a physiological one. Under Bugher, the Division served, like the entire AEC, the military.

Throughout the planning and execution phases of *Upshot-Knothole* conducted from March through June 1953, Bugher and officials serving under him systematized

media manipulation and deception. The need to overemphasize the safety of even blatantly hazardous testing practices had become especially acute after 1952's test series drew complaints from Utahans and their Congressman Douglas R. Stringfellow, which were encapsulated in an article in Salt Lake's *Deseret News*: "We are living in the atomic age whether we like it or not, but we don't want the atomic age to be living with us."⁸¹ With heavy fallout expected from the ten (later eleven) shots of the 1953 series, the AEC discussed ways to head off antagonism, privileging public relations over safety and developing an "information plan concerning the public health aspects of spring tests."⁸² As a measure of Dean's confidence in the loyalty of his subordinates, he and the Commissioners supported the efforts of intermediate-level officials such as Test Director Alvin C. Graves to instruct front-line officials in ways to deal with the public. The operational criteria for *Upshot-Knothole* contained an Order instructing radiation safety monitors in the fine art of public relations.⁸³ Graves turned employees into functionaries, expected to deny that their presence was even necessary. Via a "Test Director's Operations Order," Graves warned the monitors "to avoid causing fear" and provided sample dialogue. For example, monitors at check points were instructed to use innocuous euphemisms for radioactive material such as "dust" or "stuff": "If we find traces of fallout inside your car, we may wash or vacuum the car at our expense, even if there isn't enough of the stuff to hurt anyone." Graves also instructed monitors to downplay the radiation expected to register on monitors's geiger counters by dismissing it as a function

⁸¹ *Deseret News*, May 9, 1952, 2B.

⁸² AEC Meeting No. 814, CIC 14001.

⁸³ "Operation Order No. 1-53 (*Upshot-Knothole*)," 326 U.S. Atomic Energy Commission, location LANL, Collection Records Center E-Y B-39, Folder Test Director's Operation Order No. 1-53.

of the instrument's sensitivity and comparing radioactive fallout to what people might find on their bedside table:

We fired an atomic bomb near here this morning and we are checking to see if any dust from it fell on the highways. Don't be worried if the needle kicks around a bit, because things like a luminous alarm clock can give you quite a reading on this meter.⁸⁴

The effort Graves put into organizing public relations to forestall negative responses the AEC expected from a series that would produce high levels of fallout was greater than the effort he put into establishing the criteria for a scientific study of fallout from the series. Only after the series was underway—and presumably the study as well—did he revise his methodology to include areas “at various distances up to 100 miles from ground zero.”⁸⁵ At the core of the AEC's approach was a policy to permit risky testing and to deny responsibility, a routine that was useful when it was caught unawares, as it was repeatedly during *Upshot-Knothole*.

The “Nancy” shot, the second of *Upshot-Knothole* detonated on March 24, 1953, was codenamed “Nevada Zombie,” and at six and one-half tons was one of the largest weapons ever detonated from the top of a 300 ft. tower.⁸⁶ The shot was one of the high-profile media events of the series and dispersed radiation over 97 percent of America's counties, and caused enough losses of livestock to Southern Utah sheepmen that after AEC officials claimed the losses were the result of malnutrition, they filed suit.⁸⁷

⁸⁴ “Operation Order No. 1-53 (*Upshot-Knothole*).”

⁸⁵ Test Director Alvin C. Graves to Personnel concerned with Weapons Test Report Programs, May 6, 1953, esp. item 27.1, “Study of Off-Site Air-Borne radioactive materials, Nevada Proving Grounds, Gamma Fallout originating from Upshot 2,3,4,5,7 and 8 at various distances.” CIC 14169.

⁸⁶ For an account of *Nancy* and the effects of fallout from that test and others of *Upshot-Knothole* on sheepmen and people in Southern Utah, see John G. Fuller's account, *The Day We Bombed Utah*, passim.

⁸⁷ For the nationwide fallout, see Miller, *The U.S. Atlas of Nuclear Fallout*, 143. The lawsuit was *Bulloch v. U.S.*

“Simon,” the seventh shot of *Upshot-Knothole*, was a forty-three kiloton device that was detonated from a 300 ft. high tower at 4:30 a.m. on April 25. The highest levels of fallout from “Simon” fell in Clark County, Nevada, with the cities of Warren and Washington, New York, coming in second.⁸⁸ Though AEC officials originally denied that radioactivity in New York was a product of “Simon,” officials reversed themselves and took responsibility after students and a professor at the Rensselaer Polytechnic Institute measured extraordinarily high levels of radioactivity (270,000 times more radioactive than water approved for drinking.)⁸⁹ In Troy, radioactivity on the ground reached 10 r., a dose more than double the 3.9 r. allowed for test site workers in a ten-week period (the 3.9 measure already more than four times the .9 r. that Canadian and UK researchers recommended as a maximum weekly dose for workers and that AEC officials discounted as “inadvisable”). Still, the media coverage bore the AEC’s touch. As reported in the *New York Times*, Albany, New York, had had an “unfortunate” encounter with fallout carried in a thunderstorm. The admission came well after the time when officials could have warned residents about protective measures, and was issued with a “no harm, no foul” reassuring statement that the levels of radioactivity were well below safe standards. As the *Times* put it, rain was the most important factor: the “City is sopping but safe.”⁹⁰ The ninth shot, the thirty-two kiloton “Harry,” has gone down in history for a number of reasons: it was the most efficient fission weapon under 100 kt ever detonated—one that did not go into production because it was technologically obsolete at the time it was

⁸⁸ Miller, *U.S. Atlas of Nuclear Fallout*, 162-168.

⁸⁹ For more on the incident, including the collection of samples by students, see Caufield, *Multiple Exposures*, 125.

⁹⁰ For the rain-out, see Miller, *Under the Cloud*, 170. For the AEC’s public admission and disavowal of hazard, see *New York Times*, March 20, 1953, 25.

detonated—and it caused the most exposures for offsite gamma radiation of any continental test, so much that it has come to be known as “Dirty Harry.”⁹¹ At least one of the reasons for the calamity was that it was planned as a public relations spectacle. The AEC and military officers invited a large group of congressmen, visitors from Utah, and a group of national observers, expecting especially to impress Utahans with the AEC’s safety precautions. “Harry” was plagued from the start. A larger number of tests that Spring and insufficient planning meant that officials did not have on hand the steel tower they needed to detonate it. In place of the steel tower, they shipped in an aluminum tower from the PPG and used it, despite the fact that earlier tests had demonstrated that it was not a suitable material to use for Nevada tests.⁹² Originally scheduled for May 2, the test was first postponed because contamination from an earlier shot prevented workmen from entering the area. Rescheduled for May 16, rain and clouds caused the shot to be delayed a second time.⁹³ On May 19, Test Director Graves gave the okay for “Harry” to be detonated despite the fact that weather conditions had not much improved. Hundreds of spectators watched as the cloud climbed to 38,484 feet before it met up with a 91 mph northwest wind. Fallout from the blast moved offsite, across highways leading into and out of Las Vegas, and toward St. George, Utah. AEC monitors inspected “hundreds” of vehicles at six check points, and washed nearly 100 contaminated cars—reassuring the motorists as Graves instructed. After St. George’s Chief of Police complied with AEC requests to ask residents to stay indoors and to wash their clothes, he proudly claimed to

⁹¹ Harry produced 30,000 person-roentgens of gamma radiation out of a total of 85,000. Nuclear Weapons Archive, <http://nuclearweaponarchive.org/Usa/Tests/Upshotk.html>

⁹² See William R. Kennedy, Jr., “Fallout Forecasting, 1945-1962,” March, 1986, 24. Los Alamos, 10605-MS UC 11, DE86-009790.

⁹³ *Las Vegas Sun*, May 16, 1953, 1; May 19, 1953, 1.

have done so “as not to frighten or alarm the people,” adding that they had all taken it in stride. Fallout had become a routine occurrence in St. George: radioactive clouds “always come over.”⁹⁴

The experiences of Frank Butrico, one of the radiation monitors sent into St. George that day, reveals the power of the AEC’s military culture to overcome the ethical responsibility felt by one technician as a result of the systematic privileging of public relations over safety. When Butrico picked up radioactivity in the middle of St. George, he contacted his superiors at the Nevada Test Site for instructions. An hour after his monitor reached its maximum range—300-350 mr/hr—Butrico received approval to issue the warning to stay indoors. Afterward, he said, he saw so many cars on the roads, people on the streets, and grade-school children playing outside during morning recess that he concluded that many had not received it. Supervisors instructed Butrico to keep changing and washing his clothes and taking showers until his personal readings decreased. When he asked if he should issue the same warnings to the community, he received a “resounding ‘no’” because it might cause “panic.”⁹⁵ As an example of the level of awareness that AEC monitors possessed about the dangers of external and internal radioactive exposures, Butrico and fellow monitors in St. George also asked Test Site officials if they should collect samples of local milk. Receiving the same negative reply, Butrico purchased a quart of milk from a store, seeking to avoid the sort of alarm that might be raised had he requested samples from the local dairies or from families with

⁹⁴ Chief Lamb quoted in *Las Vegas Sun*, May 20, 1953, 1.

⁹⁵ This account is drawn from Frank Butrico’s recollections included in the televised version of *Turning Point: Cover-Up at Ground Zero*, Elena Mannes, producer, for ABC News. Broadcast January 30, 1994.

backyard cows, and submitted it to AEC officials. He never learned whether it was tested for contamination.⁹⁶

Butrico's behavior and that of other monitors in St. George after "Harry" cannot be explained narrowly as a product of their position within the bureaucratic AEC hierarchy and their obedience to superior authority. That Butrico asked his superiors for permission to help people avoid the danger he believed them to be in illustrates that he had accepted the authority of the AEC's militaristic chain of command. But, that Butrico subsequently obeyed orders that conflicted with what he believed to be the right thing to do illustrates the importance of *habitus* and the resilience of the wartime institutional culture of the Manhattan Project and its influence over the AEC of the 1950s. During peacetime, in the small town of St. George, the force of institutional cultural imperatives and *habitus* kept Butrico from acting in accordance with his professional ethical standards and, more significantly, from following the direction of his own moral compass. That Butrico was not motivated entirely by the AEC's regulatory structure or, more significantly, by the national security imperatives that are so often used to explain the behavior of AEC officials during the atmospheric testing era, is illustrated by Butrico's ambivalent reaction to the orders he received and his attempts to make right from wrong: requesting permission to issue additional warnings and buying milk so that it could be tested and the findings put to use in the future. Without knowing it, Butrico was a participant in a superficial show of the AEC's commitment to safety. AEC officials not only prevented Butrico from providing people with rudimentary precautions they could have taken to protect themselves, but it also failed to provide them with the type of instruments that were routinely used at the time to detect radiation to the thyroid. Nor did

⁹⁶ See Fuller, *The Day We Bombed Utah*, 34.

AEC officials provide for internal monitoring (urine, fecal, or blood samples) from people exposed during the “Harry” incident, even though that procedure was then typical in laboratories when workmen had been exposed to lesser dosages.⁹⁷

AEC Commissioners who met as the series progressed ignored their authority to modify policies to prevent tests that would produce high levels of fallout while working to prevent future public relations problems. At an April 1 meeting, the AEC briefly asked about the research on “the genetic effects of radiation” but returned to focus on the “PR aspects” of fallout.⁹⁸ When Commissioners pressed the Division of Biology and Medicine’s John C. Bugher for advice about radioactive fallout and hazards, he discounted the notion that any harm had been done by using averages to dilute exposures and harm and rationalized the figures for exposure differently depending on the circumstance.⁹⁹ As Bugher sidestepped his responsibilities in favor of finding the means to continue testing rather than searching for ways to ensure that it was conducted safely, Commissioners abandoned theirs—asking few, or no, follow up questions to explanations that Bugher supplied that relied on different methodologies to estimate harm. In May, Bugher dismissed the significance of heavy exposures for people in Nevada and Southern Utah because of low population numbers: “fortunately, only thinly populated areas had been affected and the exposures incurred were not considered to be dangerous.” For the

⁹⁷ *Allen v. U.S.*, 374, 375.

⁹⁸ AEC Meeting No. 845, April 1, 1953, CIC 14003.

⁹⁹ For an example of Bugher’s skill at averaging away consequences, see his response to a recommendation from Hardin Jones, a University of California, Berkeley physicist and Assistant Director of the University’s Donner Laboratory, to establish (and reduce) the maximum permissible dosage based on his own studies and practices adopted in England on the basis of their studies. Bugher responded to Jones’s observations with a suggestion that although the experiences of some individuals provided values for establishing permissible dosages, the dosages should be based on “population parameters” and statistical life expectancies instead. See Libby, Box 9, “Sunshine Correspondence, Jones, Hardin Donner Library” U.S. AEC RG 326, NARA.

New York rain-out, Bugher admitted that a “relatively large” dose had been delivered. But, instead of using population density as with the Nevada and Utah fallout events, he extrapolated and estimated dose spatially, on a per-square-mile basis. In this formulation, the radioactive contamination in New York remained “well below the maximum permissible level.”¹⁰⁰

By 1953, Commissioners were either ignorant of the fundamentals of atmospheric testing or aware of them but preferred to detach themselves from their duties under the law. The result was that the body charged with program management and direction was unable to assert anything but the most superficial direction or control over the decisions made by the AEC’s operational staff. When they met on May 13 to discuss the fallout—literally and figuratively—of *Upshot-Knothole*, they seem to have been unaware of a committee formed to evaluate policies at the Site, despite the fact that the Committee on the Operational Future of Nevada Proving Grounds formed by the Manager of the AEC’s Santa Fe Operations Office came together in January 1953 and its recommendations about yield and type of tests for the Site emerged on May 11, two days before the AEC meeting.¹⁰¹ At the May 13 meeting, Commissioners asked about the fallout problems that had plagued the entire series and asked about Site and test management.¹⁰² About the unexpectedly high yield of “Simon”, Captain John T. Hayward, Deputy Director of Military Applications, remarked that the military did not yet have an explanation, but

¹⁰⁰ See Item No. 4, “Fall-out from April 25 Test Detonation,” AEC Meeting No. 862, May 13, 1953, 292-293, SAA 20012282A00J.

¹⁰¹ See U.S. AEC, Santa Fe Operations Office, “Report of Committee on Operational Future of Nevada Proving Grounds,” May 11, 1953. U.S. DOE Archives, RG 326 U.S. Atomic Energy Commission, Collection DBM, Box 3362, Folder 3, NVO720368.

¹⁰² The discussion in this paragraph is drawn from AEC Meeting No. 862, May 13, 1953, SAA20012282A00, Minutes of Meetings 795-883, Vol. II, 1953, 292, 293.

would present one when the “facts were known.” When Commissioners asked Bugher how such fallout incidents might be prevented in the future, Dean intervened. Dean’s response amounted to a vague statement that absolved himself and his officials from any responsibility for testing excesses. Dean failed to mention the boundaries for yield that Warren had tried to implement, the Committee formed to study testing practices, and used language as imprecise as that in the *Thirteenth Semi-Annual Report* to make, in essence, an argument that because no boundaries had been pre-established, none were necessary:

apparently it had simply been understood that relatively large yield devices would be detonated outside the Continental U.S. However no firm criteria for deciding such issues had been established.

After the Chairman finished, Bugher shifted the discussion away from the hazards of fallout to public relations. Bugher did so in a way that left no doubt that it would be the military, and not the AEC, who would make the final decision. “It might be advisable to prepare a press release concerning fall-out from the April 25 shot,” and told the Commissioners that he would “discuss the matter with the Division of Military Application and Information Services.”

On May 21, 1953, Commissioners received answers about the criteria for approving a shot that were nearly as vague as those delivered by Dean about size.¹⁰³ Graves was apparently responsible for determining which parts of the United States received the most fallout during *Upshot-Knothole*, but he crafted his answers in terms of future tests—not in answer to his management of the instant series. Attempts to prevent

¹⁰³ The discussion of this issue is drawn from AEC Meeting No. 865, May 21, 1953. U.S. DOE Archives, U.S. Atomic Energy Commission, Minutes of Meetings 795-883, Vol. II, 1953, Item No. 2, 310-311. See also Fuller’s explanation, *The Day We Bombed Utah*, 36-38.

fallout within a range of 500 miles of the test site might, Graves said, “well be undesirable in terms of long-range fallout.” Explaining his method for deciding to approve or call off shots, he said that “shots will not be fired if winds at the 30-45,000 foot altitude are in the direction of St. George—Bunkerville area.” Again, because that area had been especially hard hit during *Upshot-Knothole*, it appears that this requirement was also one that would be implemented in the future. As inexact as Graves’s criteria were, perhaps the most alarming comment he made was that the standards he described, and that he claimed to have rigidly followed, had never achieved the level of operational protocols. In fact, the measures that Graves used to determine whether a planned test should be fired or be cancelled had “not been written down.”¹⁰⁴ That Commissioners let Graves’s explanation go without comment suggest that (a) they had not yet had time to consider the significance of something so fundamental; (b) their devolution of authority over testing to managers had been so complete that they accepted such operational informality as a matter of course; or (c) that they, along with Dean and his militarized test organization had reached a deliberate or unconscious conclusion to avoid the establishment of standards that might limit the flexibility and authority of administrators and officers.

As the meeting continued, the discussion reveals that the Commissioners were more interested in mitigating a potential disaster than in preventing one from occurring. After Bugher joined Graves in pointing to uncertainties about weather forecasting as the reason for unexpected fallout, a couple of commissioners began to ask about the plans for dealing with catastrophe—perhaps having arrived at an unstated conclusion that a

¹⁰⁴ AEC Meeting No. 865, May 21, 1953. U.S. DOE Archives, U.S. Atomic Energy Commission, Minutes of Meetings 795-883, Vol. II, 1953, Item No. 2, 310.

grievous mis-step was inevitable. Commissioners Henry D. Smyth and Eugene M. Zuckert commented on the potential for thunderstorms to caused high concentrations of fallout and concluded that the reason a serious rain-out incident had been avoided was “due in some part to good fortune.” Bugher’s answer to Zuckert’s follow-up question about what he would do should a rain-out occur illustrates that the Director of the Division of Biology and Medicine had no plan in place. Instead, he vaguely reinforced how dangerous such an incident might be, resulting in “many r. per hour” and added that if a rain-out occurred over a small area such as St. George, the town “could be evacuated in time.” If it were to happen over Salt Lake City, however, then “all that could be done would be to have the inhabitants remain indoors.” The discussion ended with a request that Graves write down the standards for the Commission’s benefit the criteria he followed for deciding whether to allow or cancel a detonation. Dean then asked that “everything be done to avoid another fall-out over St. George.” At no time during this discussion did any Commissioner or advisor suggest limiting fallout by restricting the yield of atomic weapons the military tested or by requiring different methods for detonating them.

Dean’s AEC sidestepped or avoided altogether the responsibility to control the hazards attendant to weapons experimentation while counting on their authority to persuade the public and elected officials that weapons testing was being conducted safely. Fallout from *Upshot-Knothole*’s cannon shot, three airdrops, and seven towers blasts traveled on Spring winds from Southern Nevada, across the heartland, and to the Eastern seaboard.¹⁰⁵ In conjunction with the tests, over 20,100 DOD personnel

¹⁰⁵ For fallout trajectories and dispersion rates for *Upshot-Knothole*, see Miller, *U.S. Atlas of Nuclear Fallout*, 133-184.

participated in Desert Rock V, maneuvers that earned distinction as having an “unusually large” number of over-exposed officers and soldiers. And because the AEC assigned responsibility for radiation safety protocols for maneuvers to the military, a group that during *Upshot-Knothole* included AFSWP, Army, Navy, Air Force, Marines, and Coast Guard groups, the official “maximum” exposure limit for the entire exercise was 6 r., established by the Office, Chief of Army Field Forces, double the AEC’s 3.9 r. exposure limit, a dose that was already more liberal than international standards.¹⁰⁶ The eight officers who volunteered to entrench closer to the tests than frontline soldiers during “Simon” received 9.5-17.5 r, and up to 28 r. of additional neutron radiation. Some participating soldiers received over 10 r., and one Marine was exposed to 22 r. Even the Army’s trained radiation-safety personnel received dosages over 16 r. after entering an “unexpectedly contaminated area” with their monitors turned off.¹⁰⁷

In the course of Los Alamos’s post mortem of the event, J-Division’s Gaelen Felt referred to the series as “the troubles”—as if it represented some unavoidable set of circumstances—and then reported observations that placed responsibility squarely on the decisions made by the AEC and its military partners about the size and manner of testing. Felt’s comments in his report to the Test Director had been standard fare since Trinity but during the era of Atomic Governance had become irrelevant to the AEC and its military

¹⁰⁶ See “Department of Defense Plan for Troop Participation in Operation UPHOT-KNOTHOLE,” attached to “Memorandum” from Carl H. Jark, Brigadier General, Chief, Organization and Training, September 12, 1952, Subject: Operation Knothole. ACHRE Briefing Book 8, available online at http://www.gwu.edu/~nsarchiv/radiation/dir/mstreet/commeet/meet8/brief8/tab_f/br8flf.txt

¹⁰⁷ The preceding information on DOD participation is drawn from the summary of *Upshot-Knothole* produced by the Defense Threat Reduction Agency, “Fact Sheet,” 1, 9-10, available online at www.dtra.mil/rd/programs/nuclear_personnel/pubs.cfm.

partners: “Generally speaking, tower shots are more hazardous than free air bursts, high yields are more hazardous than low, and weather conditions have a pronounced effect.”¹⁰⁸

Along with a window into the consequences of militarily-supportive AEC decision-making, the history of *Upshot-Knothole* lays bare the elitism and racism behind the AEC/DOD disregard for the West’s people and ecology.¹⁰⁹ While it is true that officials universally downplayed the hazards of radioactive fallout and made little or no effort to tailor the management of tests to prevent fallout dispersal nationwide, the way they dealt with overexposures differed depending on where they occurred and who was affected. Bugher, for example, could have applied identical strategies to explain (or explain away) the fallout-produced overexposures in areas bordering the Site as he did for those in New York, but he did not. For Bugher, and for those Commissioners who failed to question his reasoning during the May 13 AEC meeting, the people of Nevada and Southern Utah comprised an insignificant population compared to those in New York.¹¹⁰ In response to the New York fallout incident, the AEC made some effort to remedy the effects of the fallout by funding as one of its “Major Activities” experiments directed by Harvard and Rensselaer Polytechnic Institute in water treatment for suppliers in Massachusetts (Lawrence, Cambridge, and Boston) and New York (Troy and Albany) that removed radioactive isotopes from fallout-contaminated water. As a result, people in

¹⁰⁸ “Memo to Al Graves, J-Division Leader from Gaelen Felt, Group J-15, Subject: Radiation Hazards Near Nevada Proving Grounds,” August 1953, CIC 0000892.

¹⁰⁹ A “national sacrifice zone” in the words of Michael Carricato, cited by Mike Davis, *Dead Cities* (New York: The New Press, 2002), 33. See especially Chapter Two, “Ecocide in Marlboro Country,” 33-63.

¹¹⁰ AEC Meeting 862, May 13, 1953, 292-293. RG 326 U.S. AEC, Collection Minutes of Meetings 795-883, Folder Vol. 11, 1953, NARA.

those areas—unlike those in the West or other areas—received water decontaminated to a level that exceeded standards then in effect.¹¹¹

What Did Truman Know and When Did He Know It?

Of the five detonations that made up the first testing series in Nevada, only the first and third were in the one kiloton range that Marshall had identified in another context as “small” and which, along with Dean’s characterization of tests as “experiments” or of “gadgets,” might be supposed as forming some sort of working definition for Truman and his advisors during the early age of continental tests.¹¹² The second and the fourth shots were eight kiloton detonations, including “Baker 2,” a 10,800 lb. bomb built on the “Fat Man” Nagasaki model; another shattered barracks windows at an Air Force facility thirty-five miles from the site, automobile showroom windows seventy miles away in Las Vegas, and lit up the pre-dawn sky of Los Angeles. It surely exceeded anyone’s notion of what Dean called a “low-order device.”¹¹³

There is no indication that the ferocity of testing caused Truman any concern, but, there is also no reason to believe that he understood that what had occurred was that bombs had been detonated in Nevada or that he would have approved of it if he had.¹¹⁴ In

¹¹¹ U.S. Atomic Energy Commission, *Sixteenth Semiannual Report of the Atomic Energy Commission*, “Major Activities in the Atomic Energy Programs January-July 1954,” 33.

¹¹² 21 May 1951, George C. Marshall, Secretary of Defense, “Memorandum for the Executive Secretary, National Security Council, Subject: Operation WINDSTORM,” attachment to NSC (Lay) to Truman, June 4, 1951, PSF Subject File, Box 175, Atomic Testing Windstorm, Harry S. Truman Presidential Library. the military cancelled its plans for Operation Windstorm and incorporated it into an expanded series of tests, *Buster-Jangle*, held in October and November, 1951.

¹¹³ William Laurence, “Great Blast Ends Atom Test Series,” *New York Times*, February 7, 1951, 16. Also, for “Baker,” see Miller, *U.S. Atlas of Nuclear Fallout*, Vol. 1, 51-62.

¹¹⁴ Despite the large size of “Fox” and effects, little information exists about the content of fallout or its trajectory. The test was not included in the National Cancer Institute study, Miller, *U.S. Atlas of Nuclear Fallout*, 15. Mobile monitors did record radioactivity from the fallout cloud at Mt. Charleston as the cloud passed on its way to Las Vegas. Hacker, *Elements of Controversy*, 52.

fact, despite the heralded national security significance of the program that followed the Soviets' atomic success, the H-bomb decision, and the advent of continental testing, Truman seems to have accepted Dean's description of the bombs as "experiments" or "gadgets" and remained otherwise generally incurious about the program and how the Nevada Site was being used.¹¹⁵ Truman's ignorance operated to the benefit of Dean and his military partners, who pursued their own objectives by exploiting the still-suppositional but prolific discussion in the national press about small-scale, conventionalized, nuclear weapons and whatever popular notions that Truman may have harbored about scientists and their experiments.¹¹⁶ Truman's overestimation of the number of bombs in America's arsenal affected his postwar foreign policy judgment and decision-making. Dean perpetuated the president's misunderstandings, jeopardizing sound decision-making about the program, weapons testing, and about the use of nuclear weapons on the battlefield.

Truman's misconceptions extended across the spectrum, from the types of weapons that were being produced and tested in Nevada to the sorts of weapons available for troops in Korea. There is no indication that he was aware of either the size or the type of "experiment" that had lit up the Los Angeles skyline; or, given the reassurances of safety issued by Dean and AEC officials, that the fallout from the tests that traveled across the United States was anything other than harmless. In fact, it appears that because Dean avoided the word "bomb," using instead euphemisms such as "experiments,"

¹¹⁵ On the extent to which Truman trusted Dean, see AEC Commissioner Zuckert's recollections. Oral History Interview, transcript 62. HST Library.

¹¹⁶ For an example of media supposition, see William L. Laurence, "Tests of Atomic Artillery Indicated; Greatest Nevada Blast Lights West," *New York Times*, February 7, 1951, 1, 16;

“devices,” and “gadgets,” Truman may have been unaware throughout his term that atom bombs really were being testing in Nevada.¹¹⁷ Before discussing how Dean’s purposeful deceptions interfered with Truman’s ability to make decisions about domestic and foreign policy, the following example places more of the responsibility on Dean’s shoulders by illustrating that it was not just Truman who was misled about the program.

The use of wartime strategies of control by the AEC and its military partners also prevented congressmen from exercising meaningful oversight. One measure of their success was that witnesses to weapons tests doubted what they saw in favor of the misconceptions they held based on the misleading and deceptive information about weapons testing and radioactive fallout the AEC promulgated. In 1953, for example, Samuel W. Yorty, then a Democratic Representative from California who later became Mayor of Los Angeles, was among those who watched “Simon” explode. Exploded from a 300 ft. tower, the bomb’s yield was approximately forty-three kilotons, larger than what had been anticipated and slightly more than twice the size of the bomb that devastated Nagasaki.

The numbers of personnel and participants would have provided an indication of the complexity and cost of the test. Those working at the Site included radiation safety personnel who monitored and participated in decontamination procedures, AEC contractors who performed construction work, scientists from Los Alamos and UC Radiation Lab and members of the Weapons Development Group who conducted twenty-three experiments, and AFSWP’s Military Effects Group carrying out another twenty-seven experiments to determine the effects of the weapon on assorted military targets.

¹¹⁷ Dean did use the word “bomb” in a statement he gave to the press in April 1952, before Operation Big Shot. Richard Lee Miller, *Under the Cloud*, 145-146.

Additionally, the CDA's Civil Effects Group reportedly studied the durability of shelters and weapons effects on "living organisms and drugs." DOD support personnel numbered approximately 350, while 3,000 uniformed soldiers from all over the United States and others from the U.S. Sixth Army assembled at Camp Desert Rock V for maneuvers. Some "officer observers" voluntarily entrenched themselves between troop trenches and ground zero. In addition, Marine Corps helicopter units and planes and crews from the Air Force's Special Weapons Unit based at Kirkland Air Force Base in New Mexico participated. Fallout from "Simon" meant that the excitement continued after the test. For the first time in the Site's history, the AEC fallout closed Highways 91 and 93, the major roads in and out of Southern Nevada, and travelers heading north, south, east, and west, waited through roadblocks, monitoring, and decontamination performed by AEC and DOD personnel. The AEC also decontaminated automobiles in North Las Vegas, St. George, and Alamo, Nevada.

Later, when discussing his experience on the House floor, Yorty insisted that he had not seen a bomb. The *New York Times* quoted his statement verbatim, indicating that they were concerned with making sure that they had not misunderstood what he had said. The explosion was not a bomb, Yorty explained, but "an atomic device used to test theories applicable to bombs. Actual completed bombs, because of their costly complexity, are not used for such a test."¹¹⁸ The distinction between a "device" and a "bomb" may have given Yorty a way of expressing his belief that continental weapons tests were of a much different character than those tested at the PPG. The fact is, however, that "Simon's" yield was larger than the average of the three shots made during

¹¹⁸ "'Device,' Not Bomb, Held Used in Last Atomic Test," *New York Times*, May 1, 1953, 22.

Sandstone in 1948 and only slightly smaller than two of the four detonations during 1951's *Operation Greenhouse*—all conducted in the Pacific.¹¹⁹ It is impossible to know whether Yorty had the type of information to make a similar comparison between Pacific tests conducted in previous years and the test that he witnessed as is possible now, but the fact that he could witness the spectacle that was “Simon” and believe he had not seen a bomb testifies to the power of the Dean's euphemistic deceptions. Yorty certainly noticed the height of the mushroom cloud—one that reached 44,000 feet.¹²⁰

Yorty's comments illustrate that he was among those convinced by the comparisons that Dean and his military partners made between Nevada and Pacific testing to create the impression that Nevada tests were, size-wise, insignificant. This was a comparison made easier by the prospect of H-bombs that were thousands of times more powerful than earlier models—the non-thermonuclear “atom” bombs used in Japan and at *Crossroads*. Imaginatively, none of the earlier types of fission weapons could compete in conceptual fearsomeness with descriptions circulating about the H-bomb in newspapers and in Laurence's *The Hell Bomb*. Such comparisons, when combined with Dean's euphemistic language, fueled a popular notion that the AEC failed to dispute: that tactical nuclear weapons were being tested in Nevada. Repetition reinforced the notion. The distinction between what was tested in Nevada and the bombs that were detonated in the

¹¹⁹ The three *Sandstone* tests were X-Ray (37 kt), Yoke (49 kt), and Zebra, (18 kt). <http://www.lanl.gov/history/postwar/sandstone.shtml> (last accessed May 25, 2009). The two non-thermonuclear bombs tested during *Operation Greenhouse*, April-May 1951, were “Dog” (81 kt) and “Easy” (47 kt). The two thermonuclear fusion devices were George (225 kt) and Item (45.5 kt). <http://nuclearweaponarchive.org/Usa/Tests/Grnhouse.html> (last accessed May 25, 2009).

¹²⁰ Information in this paragraph about “Simon” drawn from “Shot Simon, A Test of the UPSHOT-KNOTHOLE Series, 25 April 1953,” United States Atmospheric Nuclear Weapons Tests Nuclear Test Personnel Review, Prepared by the Defense Nuclear Agency as Executive Agency for the Department of Defense, DNA 6016F, 13 January 1982.

Pacific had become so prevalent in AEC statements and press materials that a staff writer for *National Geographic* made note of the distinction, but did so in a way that suggested he sensed some artfulness in the AEC's explanation:

Today's most powerful atomic bombs are never exploded in Nevada. Instead, the Atomic Energy Commission speaks of "nuclear devices" and "diagnostic shots." The Army talks of small-scale "tactical weapons," including the atomic artillery shell.¹²¹

Dean's careful use of language and the autonomy that he and his military partners exercised over weapons development and testing, combined with their monopoly over what was known, and not known, about the program and experimentation, contributed to Yorty's and Truman's misunderstandings. More than protecting their ability to manage the program in the interests of increasing their influence on the domestic political front, however, Dean and his military partners used these and other strategies to shape foreign policy.

The confidence that Dean gained in his ability to manipulate Truman into believing that Nevada testing was innocuous through the simple act of linguistic repackaging allowed him to use the same strategy in a bid to bring about another significant change in policy. In July 1951, while cease fire talks were underway, Dean educated members of the upper echelon in the manipulative deployment of language, seeking to help them secure permission to deploy atom bombs against North Korean and Chinese troops. Though nuclear bombs of the sort used against Japan had increased in yield and destructive capability significantly in the postwar years, Dean used the difference between those fission bombs and what Truman and others thought about the greater destructive potential of the still-undeveloped H-bomb to create the imaginative

¹²¹Samuel W. Matthews, "Nevada Learns to Live with the Atom," *National Geographic*, June 1953, 839-850, quote, 843.

space for a fission bomb to be considered a tactical weapon. In Dean's summary of the July meeting, he wrote that he suggested to Army command that they should describe the atom bomb as a "tactical" weapon to supply the conceptual shift necessary to overcome whatever reluctance preventing its use that existed in the administration.¹²² The meeting between Dean, Secretary of the Army Frank Pace, Jr., and Defense Department officials took place after one Army study concluded—as earlier studies had not—that force concentrations and terrain did not, as had been previously believed, rule out using nuclear weapons against forces in North Korea. The meeting's purpose was to draft a memorandum to present those findings to George C. Marshall, then Secretary of State, that would, with Marshall's approval, be submitted to the president. Dean and the others at the meeting supported not only using the bomb to stem Chinese involvement in Korea, but also a transfer of bomb custody from the AEC to the military. Once the transfer was complete, bombs could then be delivered to the theatre and used immediately should officers there find that some pre-determined concentration of enemy troops emerged.

The important issue is not that, like many other Americans, Dean and his colleagues believed that all available weapons should be used in Korea—a belief fostered, in part, by the military's monopolization of information about the residual effects of radioactive fallout and the program's militarization. Instead, this incident is significant because Dean and the officers at the meeting planned to accomplish that goal through deceit, manipulating the president and his closest advisors into believing that they were suggesting that "tactical" atomic weapons could be used against North Korean forces. At the same time, they implied that "tactical weapons were available, leaving room for some conjecture—perhaps by Truman—about whether the tactical weapons that

¹²² Dean Diary entry, July 12, 1951, *Forging the Atomic Shield*, 157-160.

were available and being recommended for use were typical “tactical” weapons such as cannon, or were, in fact, atom bombs to be used in a way that Dean defined as “tactical.”

The first ingredient Dean identified that the memorandum to Marshall should include, and the one that received the most attention throughout his summary of the meeting, was that it should “stress the importance of new terminology; the reference to this use as a tactical use.”¹²³ Second, Dean suggested that it include the study’s findings and an argument that a bomb used tactically could be used to take “the heart out of the Chinese Army.”¹²⁴ Finally, Dean made sure that he would be able to take part in the final deliberations. He suggested the Memorandum include a recommendation that the president refer the matter to the NSC’s Special Subcommittee—the subcommittee composed of himself, the Secretary of Defense and the Secretary of State, and the same one he used to receive approval for continental atomic testing. Dean noted that the group was in agreement that “one of the real hurdles” would be the resistance to the use of the bomb that then existed. For Dean, however, who optimistically anticipated only benefits from the bomb’s use, it was the only hurdle.

Dean exuded confidence in his ability to foretell all the possible implications that might arise from the bomb’s use. When Pace asked Dean about possible domestic and diplomatic repercussions, Dean explained to him that if the bomb were used, it would neither adversely affect public opinion nor disturb the already-tense situation with the Soviets. Paraphrasing MacArthur, he explained to Pace that the popularity of victory would be enough to quell any public opposition. And, the bomb would not cause the Soviets to react. Dean explained to the officers that using the bomb in Korea would not

¹²³ Dean Diary entry, July 12, 1951, 158

¹²⁴ Dean Diary entry, July 12, 1951, 158

“tee-off a third world war” because “Russians do not act except by plan.” Here, Dean betrayed some familiarity with a Forrestal’s philosophy of the Soviet mindset that using the bomb would not be enough to cause the Soviets to diverge from their strategy of advancing “across Europe.” The meeting continued with discussion of the wording for the memorandum. Dean’s summary reveals that his plan depended on using both deceit and military urgency to secure approval. The way that Dean reported reinforcing his views suggests that Dean found himself making a case to the officers for the bomb’s use. He emphasized that his predictions were based on manufacturing a re-conceptualization of the A-bomb as a tactical weapon—while admitting to the officers that it was not—and, making a claim for military urgency to the military officers present, stressed the need to accomplish that goal before time ran out: “There is no need to wait for the purely tactical weapons ... and we may not have the time to wait for it.”¹²⁵ Dean’s conclusion lays bare the connection he made between the way he had convinced Truman to approve continental weapons testing and what he expected to be the result of the memorandum, expressing confidence that re-characterizing the bomb as a tactical weapon would be sufficient to break down the barriers to the use of the bomb in war.

we want to honestly be able to say that this gadget is a small bang gadget or a tactical gadget for the purpose of securing the support after the attack of people in the Middle East, Western Europe, Asiatics generally and for that matter the people of this country. We discussed at some length the terminology which might be used. I stated should such a weapon be dropped, the term “tactical” was the best yet evolved but it was the feeling that a new term was needed, such as ~~junior~~ “small bang weapons,” “Nevada bombs,” etc. No very good names were produced.¹²⁶

¹²⁵ Dean Diary entry, July 12, 1951, 160. Though portions of this paragraph are redacted, they appear to be sections that deal with weapon design and stockpile information that are ordinarily classified and would not affect these observations.

¹²⁶ Strikethrough in original. Dean Diary entry, July 12, 1951, 160.

The fact that the military officers attending the meeting were not as satisfied as Dean was with the word “tactical” illustrates just how revolutionary was Dean’s proposal. For them, this was not a rhetorical or an ideological problem, but a practical one, with the word “tactical” conjuring up a conception of distinct levels of warfare that encompassed not only equipment for a hierarchy of responsibility. “Tactical” described the lowest level, one involving battlefield command and soldiers; “strategic” was the highest, a theatre-level engagement or one that involved larger issues of how the war would be conducted.¹²⁷ Though some elasticity occurred (and still occurs) between levels, the A-bomb (as Dean referred to it) just did not fit into a military conception of a “tactical” weapon: something used by soldiers on a battlefield, as an element deployed under a field commander at the combat level in a battle, engagement, or action involving a small unit.¹²⁸ For the officers present, using the bomb against troop concentrations that Dean estimated (in his summary) at 250,000 rose well above the level of battlefield or campaign to the theatre level—it would be, no matter what Dean wanted to call it, a strategic use.¹²⁹

¹²⁷ As it would for Eisenhower, where the use of “tactical” nuclear weapons was a field commander’s responsibility, but “strategic” use was a matter to be decided in Washington. Robert Cutler, “Memorandum for the Record” December 2, 1953. “Atomic Weapons, Correspondence and Background for Presidential Approval and Instructions for use of [1953-1960] (1), White House Office, Office of the Special Assistant for National Security Affairs: Records, 1952-1961, NSC Series, Subject Subseries, Box No. 6, A67-50 & A67-64, DDE Library.

¹²⁸ Definition drawn from a recent edition of the Army’s *Field Manual 3-0*, Headquarters, Department of the Army, Washington DC, February 2008, 6-1--6-4. Because the primary change to the concepts of tactical and strategic occurred in 1983 with the insertion of an “operational” level of command between the tactical and strategic levels of war, the scope and purpose of neither term would not have changed substantively between the 1951 and now.

¹²⁹ *Field Manual 3-0*, 6-2.

The issue had, in fact, already been joined. The strategic/tactical distinction was one that then Secretary of Defense Robert A. Lovett made to the JCAE on October 1, 1951, when he appeared before the Committee to discuss the military's plans for using atomic weapons. During his testimony, he worked to correct the Committee members' misconceptions about the use of atomic weapons in Korea. Before advising the JCAE that it would be at least two years before the technology was available to deliver with accuracy anything approaching a weapon that could be used tactically, he called the notion that atom bombs could be used in Korea "patently absurd," given that the armed forces had "thousands of individual targets ... such as bridges and vehicles on the roads ... all the way from Ryojun and Chongjin and Wonson to Seoul and China."¹³⁰ The officers meeting with Dean, and Secretary Lovett, too, were also likely aware, as Dean was not, of at least one or more of the no fewer than six studies carried out or commissioned by the Army between 1945-1951 to evaluate the tactical possibilities of atomic weapons to not only capitalize on the military value of atomic science but also to prevent the Army from being squeezed aside in favor of the Air Force and its value as a force for the delivery of strategic atomic weapons. They all failed.

What Dean failed to grasp was that the insistence on the utility of tactical weapons Army officers made was not based on any plan to use the weapons to achieve a military goal, but to use the idea of tactical weapons to achieve a domestic political goal: congressional support and funding for conventional ground forces. The Army's opponents were the Air Force and the Navy (the branches increasingly favored by

¹³⁰ "Presentation of the Secretary of Defense and the Joint Chiefs of Staff," Congress of the United States, Joint Committee on Atomic Energy, October 1, 1951, 1970-2103, 1985-1988. JCAE hearing October 1, 1951, 82nd Congress.

congressional benefactors because of their ability to deliver nuclear weapons) and congressmen (who believed that ground troops would not be necessary in a nuclear war and should not be maintained except at minimal levels.) Dean's suggestion to use atom bombs tactically was not one that would help the Army achieve its objective; instead, it assumed that, at least in the near term, a bomb would be dropped from an airplane. As such, the plan operated against what this study reveals, that the Army was trying to accomplish an objective similar to what Navy officers sought to accomplish in 1946 with *Operation Crossroads*: to prove its viability. When Dean met with the officers, one of the Army's objectives was to promote, through maneuvers at the Nevada Site, that ground troops would field, and be the ones to deliver, nuclear shells on the battlefield.

As John J. Midgley, Jr. found in his study of the Army's history with nuclear weapons, the powerful incentives that drove the Army to investigate ways to use atomic weapons tactically resulted in no good solutions.¹³¹ From the end of World War II through 1977, Midgley discovered what he concluded was a "Nuclear Will-O'-The Wisp," a disparity between the Army's desire for, and collection of, a nuclearized arsenal and its inability to guide commanders on how they might incorporate those weapons into their operations or ways that ground troops could use them.¹³² In 1949, for example, an exasperated AFSWAP's Chief, Brigadier General Herbert B. Loper, insisted that the efforts to identify a tactical use of atomic weapons were futile: "Show me how to use this weapon tactically, if you can. It is not a tactical weapon."¹³³ Even Dean's friend, Senator

¹³¹ John J. Midgley, JR., *Deadly Illusions: Army Policy for the Nuclear Battlefield* (Boulder, Colorado: Westview Press, 1986), 1-23.

¹³² Midgley, *Deadly Illusions*, 175-176.

¹³³ Emphasis in original. Cited by Midgley, *Deadly Illusions*, 1.

Brien McMahon, who at times seems to have been confused about the differences between fission (atom bomb) and thermonuclear (H-bomb) weapons, and who pushed as hard as anyone in Congress for the atomization of the entire U.S. arsenal, showed no inclination in 1951 to blur or eradicate the conventional divide between tactical and strategic in a discussion where he described the atomization of conventional artillery.¹³⁴ Four years after the meeting Dean described, Army officers were still—as they had been since the end of World War II—making the case for the relevance of conventional forces and the use of human delivery systems for tactical nuclear weapons. In doing so, they clung to the distinction that Dean wanted to downplay and divided in the conventional way strategic and tactical weapons, arguing that both were valuable and necessary—atom bombs as an economical alternative to conventionally loaded B-29s and mobile units armed with tactical weapons, “atomic cannon, rockets, and guided missiles (short range).”¹³⁵ Tactical weapons remained high on the JCAE’s and armed forces’ wish lists. They were, according to a JCAE advisor who outlined the tactical weapons problem for McMahon in 1951, the perfect economic and strategic solution: the “natural armaments of a numerically inferior but technologically superior” nation and a “natural answer to the armed hordes of the Soviet Union and its satellites.”¹³⁶ With the only danger mentioned

¹³⁴ Senator Brien McMahon detailed a list of weapons from atomic shells fired by mobile specialist soldiers to bomb bays carrying hydrogen bombs on the Senate floor in 1951. Selection quoted in *Bulletin of the Atomic Scientists*, October 1954, 10:8, 317. For McMahon’s confusion, see [Sanitized] “In the Matter Of L Panel Meeting,” July 11, 1952, 24. SMOF: Psychological Strategy Board Files, Box 24, Folder 334 Panel L. Papers of Harry S. Truman, HST Library.

¹³⁵ The parenthetical “short range” to emphasize the Army’s expected use for nuclear missiles as opposed to the Navy’s, shipboard, long-range missiles. Colonel George C. Reinhardt, Lt. William L. Kintner, “The Tactical Side of Atomic Warfare,” *Bulletin of the Atomic Scientists* 11 (1955): 53-58, quote from 54.

¹³⁶ J. K. Mansfield, Chief of Special Projects, “Memorandum for the Chairman, Some Comments on Tactical Atomic Weapons,” August 15, 1951, 1. Papers of Harry S. Truman, President’s Secretary’s File, Subject: NSC Atomic, Folder, AE Expansion of Atomic Energy, HST Library.

by that advisor the possibility of “hitting our own troops,” it seems that the fantasy militarization fostered about the innocuousness of U.S. sourced fallout fed into the JCAE advisor’s sense at that time that tactical weapons were a heaven-sent possibility.¹³⁷

Truman was unable to sort through the hype, misinformation, and misleading language to determine what the program had accomplished and what it had not. Some of this can be attributed to Truman himself, who was apparently satisfied with what Dean told him. But Truman’s misconceptions had not grown overnight; his lack of understanding was a consequence of the process of militarization: strategies of control such as manipulation of the media and the use of secrecy by the military and its supporters from World War II forward, and, the downplaying by the JCS, the MLC, and individual officers such as Lt. Gen. Hull, of the health effects of U.S.-produced radioactive fallout. Dean, owing his position to the militarization of the program, followed their lead, deceived Truman about the scope of continental nuclear tests and manipulated the media to underestimate the hazards of nuclear experiments. So, too, did military officers, who persistently used claims to national security through the press and elsewhere to promote weapons development, arguing for the value of bombs and nuclearized conventional weapons for war. Simultaneously, the use and misuse of Atomic Secrecy spawned supposition. Misunderstanding and confusion about the program and nuclear weapons were inevitable.

All of these factors influenced Truman’s thinking about the program and about what was going on in Nevada. Some insight into Truman’s thinking emerges from Dean’s diary. In February 1951 Dean made a note that suggests that Truman believed that only scientific experiments or some sort of small, tactical weapon was being fired in Nevada.

¹³⁷ J. K. Mansfield, “Memorandum for the Chairman” August 15, 1951, 3.

After *Ranger*, the first series in Nevada, came to a close, Truman asked Dean for a written report about the tests and indicated that he “might be able to attend one of the Eniwetok tests.”¹³⁸ Had Truman recognized at that time that bombs were being detonated in Nevada, it is unlikely that he would have concluded a mention of his interest in watching a bomb detonation by saying that he hoped to be able to travel to the Pacific to do so. Dean reminded Truman of this comment on October 15, 1951, as an introduction to an invitation to attend “one of the test explosions” at the Site during the *Buster-Jangle* series planned for October 19–November 29, 1951. Dean avoided the word “bomb” in his invitation, describing the blasts as “explosions” or “shots,” and indicated that the first four were “designed to find more efficient ways of using fissionable material.” The fifth—in language that indicates Dean wanted to encourage Truman’s assumptions about the progress of tactical weapons—was a “stockpile model, considerably smaller in diameter and weight than anything heretofore tested, and probably it will be the most interesting shot to witness.”¹³⁹ Truman did not take Dean up on his invitation. Dean’s language, however, reinforced yet again the notion that tactical weapons were being developed in Nevada.

The larger implications of how Truman’s misconceptions affected policymaking arose in August 1951 after the first round of tests and after Truman had submitted the Supplemental request for AEC funding. Dean learned from his friend Senator McMahon that Truman believed that tactical, projectile, atomic weapons had been perfected and

¹³⁸ Dean Diary entry February 8, 1951, *Forging the Atomic Shield*, 115.

¹³⁹ Gordon Dean, Chairman, Atomic Energy Commission to President Truman, October 15, 1951. Papers of Harry S. Truman, PSF: Subject File, National Security Council Atomic, File, Atomic Testing: Buster Jangle. HST Library.

were ready to be used. Because McMahon’s explanation was nearly identical to the one Dean had proposed to officers during his meeting about tactical weapons a month earlier, either the memorandum or the content of that meeting had come to Truman’s attention or Dean characterized it as such when he referenced it in his diary. McMahon told Dean that Truman was considering using tactical weapons should “intelligence” reveal that there existed an “attractive concentration of troops” against which cannon-fired atomic artillery could be usefully deployed. Dean quickly arranged for a meeting with Truman over the lunch hour on August 31 to let him know that atomic artillery did not yet exist. He explained that one shell would be tested later that year in Nevada and was expected to become a limited “stockpile” item available sometime after May 1952 but that production problems with the 280 millimeter rifle to fire it would mean that it would probably be Fall 1952 before it could be included in the arsenal.¹⁴⁰ For Dean’s part, instead of learning from this episode that the president needed to be better informed, he seems to have corrected Truman’s understanding of atomic artillery without explaining that what was available—and what had been and would be detonated in Nevada—was bombs. He pressed his case for using bombs as tactical weapons by letting Truman know that although the AEC could not provide artillery shells to be deployed in Korea in the short-term, an ample capacity of “existing weapons” could be used “at any moment against troop concentrations.”¹⁴¹

Eight months later, with no indication that his idea to re-package bombs as tactical weapons was going forward, Dean went public. During an April briefing for

¹⁴⁰ Dean Diary entry, August 31, 1951, *Forging the Atomic Shield*, 161.

¹⁴¹ Dean Diary entry, August 31, 1951, *Forging the Atomic Shield*, 161.

reporters assembled to view “Charlie,” or “Operation Big Shot,” the first televised detonation in Nevada, Dean trivialized the belief that atom bombs were solely strategic, and ignored the fact that Truman, congressmen, and military officers did not share his enthusiasm for using atom bombs as tactical weapons. Dean suggested that those who were up-to-date with the issue had already accepted that atom bombs could be used as tactical weapons and characterized those who failed to adopt his perspective as a minority fringe who clung to an outmoded or old-fashioned concept.

there is one thing you will be aware of tomorrow—if you are not aware of it already—and that is the changing concepts, in connection with atomic weapons, that have taken place since Bikini. In 1946, atomic weapons were thought of by most people as strategic weapons...they were considered to be weapons that could only be used by a strategic air force carrying an attack against the industrial heartland of an enemy. In those days it was fashionable to assume that a dozen or so such weapons ... could knock out any of the major powers of the world. Since then, this concept has been rather radically revised. Today, atomic weapons are thought of as tactical as well as strategic weapons—that is, they are thought of as weapons that can be employed by military forces in the field against military forces in the field.¹⁴²

Whether Dean had begun to despair about the possibility that an atomic gun or cannon could ever be developed for routine use for troops or whether he believed that atom bombs should be used tactically until a more portable, and workable, atomic device was developed—or used alongside it, Dean’s semantic wordplay kept Truman and other elected officials unaware of what types of weapons were being detonated in Nevada and allowed Truman to remain confused about what types of nuclear weapons existed in American, and Russian, arsenals.

Reporters covering Sam Yorty’s comment on the House floor in 1953 about the “devices” tested in Nevada, surmised that the same conceptual distinction between

¹⁴² Miller, *Under the Cloud*, 146.

“devices” and “bombs” might have been what Truman had in mind when he had said on another occasion that he was “not sure” that Russia had developed an atom bomb.¹⁴³

Truman’s statement so rattled AEC officials that AEC Commissioner Eugene Zuckert later admitted “it knocked me right flat.”¹⁴⁴ Zuckert recalled that reporters tracked Dean down to a hotel in Toledo and Dean told them that the president would “never” have said such a thing. Later, Dean learned that Truman reiterated his statement when the reporter contacted him for confirmation.¹⁴⁵ Oppenheimer was similarly bewildered by Truman’s statement, calling it “disturbing” that despite what Truman knew of the intelligence he could doubt that the Soviets had a bomb; and could only surmise that secrecy prevented it being “talked about, or thought about, or understood.”¹⁴⁶

Truman’s misconceptions illustrate the significance of the partnership forged between the AEC and the military and the potency of wartime strategies of control they employed during the era of Atomic Governance. Truman’s misconceptions derived in part from assumptions about the differences between “military” and “civilian, and the perception that Dean’s perspective about atomic weapons, testing, and safety, would differ from those of military officers, who were expected to give first priority to national security and defense. But his misconceptions were also among the consequences of militarization and the extra-constitutional abuse of authority built on the willingness of Dean, intermediate-level AEC administrators, and military officers to use techniques that

¹⁴³ “‘Device,’ Not Bomb, Held Used in Last Atomic Test,” *New York Times*, May 1, 1953, 22.

¹⁴⁴ Eugene Zuckert, Oral Interview transcript, 64. HST Library.

¹⁴⁵ Zuckert oral interview transcript, 65. Oral History Interview conducted September 17, 1971, transcript, HST Library.

¹⁴⁶ J. Robert Oppenheimer, “Atomic Weapons and American Policy, *Bulletin of the Atomic Scientists* 9 (1953): 202-205, quote from 204.

kept elected officials and the general public alike un- or ill-informed about atomic science, weapons, and the hazards of experimentation.

Militarization was the essential ingredient in the process that allowed Dean, AEC affiliates, and their military partners to sustain their claims to expertise and to carry the program in the direction that they wanted it to go. Neither Dean nor his military partners could depend solely on their status or expertise, or on their untypical cozy relationship with influential congressmen, to achieve their goals.¹⁴⁷ In part, and especially during the first year of testing, neither status nor expertise alone could have prevented some doubts from being raised about the ability of Dean and other AEC officials after their predictions about test effects were so wrong. During the first round of testing, for example, the AEC officials informed the local Las Vegas newspaper reporters that “residents probably won’t see or feel the effects.”¹⁴⁸ Two weeks later, the headlines read “Vegans Atomized” and “Sky Lights Up, Doors Slam—But Life Goes On.”¹⁴⁹ The tests in Nevada were national news. Had Dean and others in charge of the tests relied on nothing more than their positions or administrative authority—as some administrators did in the postwar state—their authority would have been jeopardized by their inability to predict the outcomes. A theoretical perspective on the significance of the authority embodied in AEC officials and military officers, of their selective release of information and the words they used to describe what they were doing, and on the ways that all of that was received, lends understanding into the power of the AEC/military partnership.

¹⁴⁷ Daniel R. Ernst, “Law and the State, 1920-2000: Institutional Growth and Structural Change,” *The Cambridge History of Law in America, Vol. III*, Michael Grossberg, Christopher Tomlins, eds. (New York: Cambridge University Press, 2008), 20-21.

¹⁴⁸ *Review Journal*, January 12, 1951, 1.

¹⁴⁹ *Review Journal*, January 28, 1951, 1.

As Pierre Bourdieu explained, the power to exercise authority in the name of the state depends not only on holding a position of authority, but on creating the conditions where that authority cannot be challenged. Dean's partnership with the military and their combined ability to control what was and what was not known about the program and experimentation provided the circumstances through which Dean was able to persuade Truman that the explosions occurring in Nevada were not from nuclear bombs, but "devices." Dean and other AEC administrators operated in ways similar to the judges in Bourdieu's study of the justice system: they exercised authority in the name of the state, and their statements—and the language used to construct those statements—were, in Bourdieu's formulation, "magical acts," the "quintessential form of authorized, public, official speech, spoken in the name of and to everyone." Their success, however, was dependent on being "universally recognized" and creating a "situation which no one can refuse or ignore the point of view, the vision, which they impose."¹⁵⁰ This leads to the significance of those pre-conditions: for Dean, the critical element was his partnership with the military. Dean succeeded in using language to manipulate perception only insofar as he had the full backing of officers and they presented a coordinated message—with the creation of the continental site and weapons experimentation, for example. Where he did not, and when it was left up to him alone to prompt the necessary conceptual shift as with his bid to repurpose atom bombs as tactical weapons, he failed. With atomic science and weapons, where both complexity, secrecy, and a history of deception contributed to speculation in the media about the development smaller

¹⁵⁰ Pierre Bourdieu, "The Force of Law: Toward a Sociology of the Juridical Field," *The Hastings Law Journal*, July 1987, 836-838.

Eugene Zuckert, who served as an AEC Commissioner under Dean and Strauss, used the word "magic" ("Dean had great magic...") to characterize Dean during an interview in 1971. Oral History Interview conducted September 17, 1971, transcript, 72. HST Library.

weapons and misunderstanding among members of the public, the president, his advisors, and members of the JCAE, euphemism (“magic”) worked: Dean imposed his vision with a linguistic trick that played on his listener’s imaginations and turned bombs into something less, “devices.” In the same context, Dean’s efforts to perform a similar terminological twist with the words “tactical” and “strategic,” whose meanings and relationship to one another were generally understood, fixed in common parlance and in military practice, were unsuccessful. The fact that he attempted it suggests that Dean may have been unaware of how much he owed to the JCS/MLC classified review system of militarization and the program of re-education Lt. Gen. Hull and his colleagues conducted to be successful in creating the alternative reality that opened the door for the Site and routine testing there. It may be that he was unwittingly influenced, at least in part, by military’s mis-information campaign. He certainly overestimated his own ability to shift—without military cooperation—the meaning of words in the military’s own lexicon.

Promotion as an Institutional Imperative: The Illusion of Control

Promotion was the cornerstone of Atomic Governance. Convenience and economy certainly contributed to the demands placed on the Site by scientists and military officers, but the primary reason why Nevada testing was such a hazardous endeavor was the primacy of promotion to the AEC and its military partners. The primacy of public relations to AEC officials and military officers who partnered in managing the program and testing meant that experimentation in Nevada, whether used for demonstration purposes or not, was a sort of theatre, where the illusion of mastery over atomic weapons and the illusion of safety were more important than reality. The

creation of the illusion was a multi-faceted product of militarization and ranged from purposeful deceit—the claims of AEC officials that testing was safe, for example, when even Dean acknowledged the likelihood that tests would produce radioactive fallout that could cause skin burns—through the selective restriction of information about the hazards of experimentation, to mischaracterization. Dean and his military partners conducted a political exercise with the Nevada Test Site by means of practices that were destructive of human life and representative government.

By 1950, atom (fission) bombs were increasingly viewed not in light of their own immediate and long-term destructive potential, but in relation to the vastly more destructive potential of the thermonuclear (fusion) bomb. Dean used relative terms such as “small” and “large” to reinforce the differences and exploited this conceptual comparison to minimize the dangers of atom bombs and combined it with the technological imperative of militarization: the drive to do more with more. Just as the AEC made it appear in its Report that scientific advances had changed understandings about radioactive hazards, military officers also worked to establish some conceptual distance from the mid-1940s impressions of experimentation as a hazardous affair—particularly those generated by the well-publicized *Operation Crossroads*—by implying that through scientific and technological advances, planned nuclear detonations had become manageable and risks negligible.

For Army officials, persuading the public and legislators that radioactive contamination could be managed was a priority if they were to gain support for their contention that conventional troops could wield tactical nuclear weapons effectively. This process of re-education occurred from the highest levels of the administration to the

general public through statements to the press and through information included during indoctrinations conducted in Nevada to teach soldiers about the “facts”—as the Army conceived them—of atomic warfare. In one case, it reached from General Groves all the way down to schoolchildren, when the *Journal of Educational Psychology* featured a year’s summary of atomic energy exhibits and quoted Groves: “nuclear energy, like fire and electricity, can be a good and useful servant.”¹⁵¹ An example of the way this worked within the administrative circles of the Truman administration emerges from a 1950 DOD report on “New Weapons” that was circulated to the National Security Council, the Secretary of the Treasury, the Attorney General, the Department of Agriculture, the Public Health Service, and “certain other interested agencies.”¹⁵² In what appears to have been an insertion into a section discussing radiological warfare, the protection of troops, and the difficulties of inflicting substantial short-term injuries in an atomic attack, a segment of the report dredged up the sinking of ships at *Crossroads* to compare the difference in expertise between 1946 and 1950 and implying that radioactivity was, in fact, not the unmanageable problem that it had appeared to be during and following that operation. The author(s) of the segment explained that it was not radioactive contamination, but a combination of ignorance and caution that led to the ships’ sinking. It was not true that they “constituted a grave radiological hazard and could not be decontaminated.”¹⁵³ Instead, the Navy’s decision to sink the ships was nothing more than an excess of precaution, the result of “adhering” to a “conservative” safety policy because

¹⁵¹ Cited by Winkler, *Life Under a Cloud*, 139.

¹⁵² “New Weapons,” attachment to January 26, 1950 Memorandum from James S. Lay, Jr., Executive Secretary National Security Council to National Security Council, PSF: Subject File, National Security Council Atomic, Box 176, Atomic Weapons Stockpile, Papers of Harry S. Truman, HST Library.

¹⁵³ “New Weapons,” 10.

“of the unknown factor of permissible safe dosage.”¹⁵⁴ The segment concluded with a strangely worded sentence that suggested progress had been made since the days of rudimentary decontamination methods used during *Crossroads* without actually claiming that procedures for decontamination were possible.

Since that time when large scale decontamination of material was first attempted the Department of Defense has been carrying on a vigorous program to improve methods which can provide successful decontamination.¹⁵⁵

A different type of subtlety was necessary to convince the public that radioactive contamination was manageable without attracting the attention of scientists and other public observers who might contradict what the DOD wanted people to believe and without irritating Truman, and later Eisenhower, who disapproved of direct informational statements about weapons as possible violations of national security regulations and of their effect on intra-service rivalries.¹⁵⁶

To carry out their goal of shaping public opinion about atomic warfare and its effects, officers used soldiers that they brought to the Nevada site under the auspices of indoctrinating them in atomic warfare as conduits to the general public. Soldiers attending maneuvers were urged to share what they learned from their lectures and experiences back with soldiers at their home bases and also with their families and

¹⁵⁴ “New Weapons,” 10.

¹⁵⁵ “New Weapons,” 11.

¹⁵⁶ For an example of the way Truman dealt with the problem, see the discussion of his request to the Psychological Strategy Board to develop a way of preventing officials from making public statements that were not cleared in advance. [Sanitized] Minutes of the Tenth Meeting, Psychological Strategy Board, 21 February 1952, Agenda Item No. 3, “Public Statements with Respect to Certain American Weapons,” 7-11. Collection: SMOF, Psychological Strategy Board, Box 28, Folder Minutes #337, HST Library.

friends.¹⁵⁷ Again, the more Army officers quietly worked off the *Crossroads* model for political aggrandizement the more they worked to distance themselves completely from *Operation Crossroads*. Among the things that soldiers learned during indoctrination at the test site and, and that was reinforced by questioning during post-shot psychological surveys, was that none of the *Crossroads* ships was sunk because of radioactive contamination.¹⁵⁸

The promotional value of those tests planned as spectacles increased the pressure on military officers and the AEC alike to put on a good show to guard against the possibility of embarrassment. This was even more important after the AEC's initial efforts to control publicity by force-feeding selected information and pictures to reporters backfired. After whetting the appetites of media representatives with an announcement in August 1951 that testing would become a "commonplace" in Nevada and there was a possibility that the press and civil defense personnel might be admitted, reporters responded angrily to being shut out of the subsequent November tests.¹⁵⁹ They decried what they viewed as an illicit use of secrecy that excluded reporters from the Site but welcomed chatty congressmen and others. They spent their time in Las Vegas speculating—sometimes based on smiles or scowls of scientists returning to their hotels

¹⁵⁷ Human Resources Research Office, Motivation, Morale, and Leadership Division, [HumRRO] *Desert Rock IV: Reactions of an Armored Infantry Battalion to an Atomic Bomb Maneuver*, August 1953. See especially Chapter 5, "Post-Maneuver Dissemination of Information and Attitudes, The Study of Dissemination," 68. NVO 751017. Information dissemination was one of three issues the military focused on in its own psychological studies. See, for example, Army Field Forces Human Research Unit No. 2, *Reactions of Troop Participants and Forward Volunteer Officer Groups to Atomic Exercises*, 2, 11. Defense Technical Information Center, DOD AD-478-053.

¹⁵⁸ Question/Answer No. 56, "How many ships in the Bikini tests had to be sunk because they were too radioactive to be used again? (No ships had to be sunk)" HumRRO *Desert Rock IV: Reactions of an Armored Infantry Battalion to an Atomic Bomb Maneuver*, August 1953, 216. NVO 751017.

¹⁵⁹ "New Atomic Tests Slated in Nevada," *New York Times*, August 29, 1951, 1.

along Fremont Street—and submitting stories critical of the military and the AEC. Reporters’ barbs hit every tender spot: that atomic science was not living up to its military potential, that taxpayer’s money was being wasted, and that the AEC and the military were engaged in “play acting.”¹⁶⁰ The AEC responded with a version of the Crossroad plan, controlling the message and the reporters it allowed onsite.

Unable to thoroughly modulate information about tests through releases issued by the AEC/DOD Joint Information Office and releasing its own photographs and film produced by Lookout Mountain Studios, the AEC added a layer of non-affiliated reporters and cameramen to its existing public relations machine and began allowing them onsite.¹⁶¹ To satisfy their audience and to deliver the desired signal, they used briefings to limit and control what reporters learned and wrote about, managed reporters’ movements by transporting them to, on, and from, the Site. And, as at *Crossroads*, selection to attend a shot was a mark of prestige for reporters that offset the convenience

¹⁶⁰ Quote from *Minneapolis Tribune*, November 14, 1951, included along with other examples of negative publicity from the *Los Angeles Times*, November 12, 1951, “AEC v. the Reporters,” *Time*, November 12, 1951; “Editorial,” *Rochester Democrat-Chronicle*, November 13, 1951; the *Atlanta Journal-Constitution*, November 25, 1951; and the comments of William L. Lawrence who participated in a November 8, 1951 panel on secrecy in Philadelphia, collected and summarized by the AEC and included as “Appendix A, Press Comment on AEC News Policy During Buster-Jangle Series,” attached to AEC Division of Information Services report, “Admission of Limited Selected Group of Uncleared Observers to One Shot Spring 1952 Test Series in Nevada,” AEC 505/15, attachment to letter, Gordon Dean to Mr. Joseph Short, White House Press Secretary, March 13, 1952, Papers of Harry S. Truman, PSF: Subject File, National Security Council Atomic, File: Atomic Testing: General, HST Library.

¹⁶¹ As Titus noted, AEC news releases received “top billing” and were nearly a continuous feature in newspapers throughout the 1950s. Titus, “Selling the Bomb: Public Relations Efforts by the Atomic Energy Commission During the 1950s and Early 1960s,” *Government Publications Review* 16, 15-29, 18.

Bob Mielke argues that the form of nuclear documentaries, from their book-like quality, chronological structure, authoritative narration, timely (more or less) commentary, and a bomb detonation conclusion, represented the “high water mark” for American militarization and provoked for many viewers the drama to provoke a sensory feeling that “I am seeing how I will probably die.” “Rhetoric and Ideology in the Nuclear Test Documentary,” *Film Quarterly* 58 (2005): 28-37, 35.

For a brief history of Lookout Mountain Studios, a state-of-the-art facility with its own production teams that was located at an Air Force station on a hilltop in a residential area of Hollywood., see DOE factsheet, “The Nevada Test Site’s Secret Film Studio: Lookout Mountain,” available online http://www.nv.doe.gov/library/factsheets/DOENV_1142.pdf .

of enduring repeated, “many” in the words of one, formal briefings.¹⁶² Even more prestige attached to those reporters chosen by lot to experience the shot in one of the trenches. All of this ensured loyalty to the AEC and its military partners and obedience: grateful reporters failed to question the AEC’s assurances of safety and repeated them, verbatim, in their articles.¹⁶³

To guarantee positive publicity from demonstrations, the AEC detonated especially large or unusual weapons, as was the case with the atomic cannon, resulting in unnecessarily high contamination and diminished safety standards. As early as 1946, officials were mindful that weapons tests could generate negative publicity. During the planning for *Crossroads*, Oppenheimer pointed out in the letter he sent to Truman listing his objections to *Operation Crossroads*, that there was a one-in-fifteen chance that the bomb would be a “dud,” a consequence that would have a direct influence on public opinion at home and abroad.¹⁶⁴ In 1952, for example, Dean’s planning for the AEC’s first full-dress press event, “Charlie”, or “Operation Big Shot,” ignored the issue of safety altogether while including assurances to the White House Press Secretary Joseph Short that “there will be no danger of observers getting an erroneous impression that it is a

¹⁶² Samuel W. Matthews, “Nevada Learns to Live with the Atom: While Blasts Teach Civilians and Soldiers Survival in Atomic War, the Sagebrush State Takes the Spectacular Tests in Stride,” *National Geographic*, June 1953, “many,” 839.

¹⁶³ Matthews was one of the “Trembling Twenty,” twenty reporters whose names had been drawn from a hat to experience the shot from a trench two miles from ground zero (839). In his article about the experience, he quoted the AEC, “No person has been exposed to a harmful amount of radiation from fallout ... injured by blast waves ... successive tests have not resulted in the accumulation of a hazardous amount of radioactivity in the soil.” Matthews, “Nevada Learns to Live with the Atom,” *National Geographic*, 843,846.

¹⁶⁴ Oppenheimer to Truman, May 3, 1946, (quote from item 4) attached to Memorandum from Truman to Acheson, May 7, 1946. Papers of Harry S. Truman, PSF: Subject File, National Security Council Atomic, File: Atomic Testing: General, HST Library.

‘fizzle.’”¹⁶⁵ Dean’s priorities were evident from his own ranking: out of the five itemized points in his letter to Short, he placed the explosion’s quality second only to the number of observers expected to attend—one-hundred state and city civil defense officials and medical professionals along with “325 press, periodical, radio-television, newsreel, and still picture correspondents”—and before his summary of the security precautions established for the test. The event, conducted on April 22, 1952, lived up to Dean’s expectations. The thirty-one kiloton “Charlie” was large as any weapon detonated up to that time in Nevada.¹⁶⁶ Dean uncharacteristically identified the test as a “bomb” during a pre-shot address the day before the event, but followed that comment by comparing it with the size of tests conducted in the Pacific: it was “not the largest bomb that we have exploded. If it were, we would not be exploding it here within the United States. We would, instead, be exploding it at Eniwetok.”¹⁶⁷ “Charlie” may not have been the largest bomb that the AEC had ever detonated, but it dispersed fallout into 99 percent of U.S. counties, with the highest radioactive value recorded in Glenn County, California, followed by areas of Alabama and Florida.¹⁶⁸ In 1953, invitees to “Harry,” who had waited through two earlier delays, would not be disappointed again when the AEC decided to detonate it on May 19, despite the presence of a still-overcast sky and wind

¹⁶⁵ Gordon Dean to Mr. Joseph Short, March 13, 1952, Papers of Harry S. Truman, PSF: Subject File, National Security Council Atomic, File: Atomic Testing: General. For another account of *Charlie* that includes Dean’s statement to the press before the test, see Richard Lee Miller, *Under the Cloud*, 145-146.

¹⁶⁶ As the first televised event in Nevada, it was featured in the DOE’s commemoration of the 50th anniversary of the Test Site. See U.S. DOE, “Test Site Becomes Mecca to International Press,” *NTS 50th Anniversary Newsletter*, online at <http://www.nv.doe.gov/library/publications/newsviews/mecca.htm>.

¹⁶⁷ Richard Miller, *Under the Cloud*, 145.

¹⁶⁸ U.S. *Atlas of Nuclear Fallout*, 108.

currents that would put fallout on a path for Southern Utah.¹⁶⁹ As this example illustrates, another reason why promotion increased the hazards of continental testing was that advance planning required for media and dignitaries operated against the possibility that the AEC would postpone or cancel tests for safety reasons. To guarantee cooperation from the media, particularly radio and television, the AEC and its military partners accommodated the need of broadcasters to know in advance about the timing of shots so that they could plan for transmission of stories, images, and programs.¹⁷⁰

Political exploitation of weapons tests required manufacturing the impression that blasts and their effects were predictable and radioactive fallout was safe, an impression that contributed to the enthusiasm of congressmen, government officials, members of the media and the general public for witnessing shots. The AEC and DOD expected so many Washington, D. C. area officials to attend operation *Tumbler-Snapper* in Spring 1952, for example, that AFSWP devised a routine to streamline the clearance and credentialing process by checking observers boarding planes in Washington, D.C. and telephoning lists of names to AEC officials at the Test Site.¹⁷¹ On March 17, 1953, over 800 members of the national press, radio, television, and Civil Defense officials assembled to witness “Annie,” a 2700 pound “tactical” shell detonated from a 300 foot tower. Carried on the front page of the *New York Times* and national television, millions of people saw or read

¹⁶⁹ For the shot delays, see *Las Vegas Sun*, May 16, 1953, 1; May 19, 1953, 1. For the weather on the day of the blast, see *Las Vegas Review Journal*, May 19, 1953. For the Utah invitees, see *Deseret News*, March 27, 1953.

¹⁷⁰ For an example, see the directions supplied to the Joint Information Office via “Memorandum” to Dr. John Bugher, Director of Division of Biology and Medicine, et al dated February 12, 1953, by R.L. Southwick, Assistant Chief, Public Information Service, for an “open” shot during *Upshot-Knothole*, “Draft Information Plan for “Open” Shot Operation *Upshot-Knothole*,” NVO40404682.

¹⁷¹ Armed Forces Special Weapons Project, *First History of AFSWP, 1947-1954*, Vol. 5- 1952, Chapter 3-Headquarters, Pt. II, Sections 8 through 13, 3.12.17. Defense Nuclear Agency, DNA1.941128.004b,

about the blast. Though not among the largest tests conducted in Nevada, “Annie” produced fallout in 95 percent of U.S. counties, ranking it twenty-first among all atmospheric tests that sent fallout offsite. Although the highest fallout levels were recorded in Washington County, Utah, hot spots—areas measuring significantly higher levels of fallout—were recorded the day after the test in five New Jersey counties.¹⁷² Recent accounts describe “Annie” as one detonated for the CDA.¹⁷³ At the time, however, the *New York Times* relayed the theme of an AEC release: the test was a national security imperative, the “latest in the series of tests designed to maintain the United States’ lead in atomic weapon development.”¹⁷⁴

AEC officials and military officers had no more enthusiastic boosters in their promotional campaign than most of the residents, newspaper editors, and politicians in Nevada. Senator Pat McCarran of the appropriations committee and the editors of *Las Vegas Review Journal* and later the *Las Vegas Sun* newspapers not only welcomed the project to Nevada, but also defended the AEC officials and military officers against complaints from a handful of Nevadans who dared to speak out and residents of California and Utah who argued that fallout from weapons testing was dangerous.

¹⁷² For *Annie*, see William L. Laurence, “Millions on TV See Explosion That Rocks Desert Like Quake,” *New York Times*, March 18, 1953, 1; Miller, *The U.S. Atlas of Nuclear Fallout*, 135.

¹⁷³ Department of Energy, *Nevada Test Site Guide*, DOE/NV-715, November 2001, 44.

¹⁷⁴ Laurence, “Millions...,” *New York Times*, March 18, 1953, 1. For the media/state relationship, see Andrew D. Grossman, who argues in his study of civil defense that in becoming a “willing client of the state” the media helped restrict public discourse. Andrew D. Grossman, *Neither Dead nor Red* (London: Routledge, 2001), 47. Grossman argues that civic education was more than just a mechanism of the state, but a “technology” that centralized and expanded state power through the employment of de-centralized anti-statist mechanisms, especially civil defense. 10-11. Dee Garrison carries those themes forward with a study of the use of secrecy by government officials who used civil defense as a means of resolving for public consumption the paradox of a vision of nuclear holocaust, and especially the wholesale obliteration of civilization embodied by MAD that would have made life unlivable for all but the most elite officials. *Bracing for Armageddon: Why Civil Defense Never Worked* (Oxford; New York: Oxford University Press, 206).

Together, McCarran and the newspapers fostered so much support for the program that by 1953 AEC officials reported that the “attitude” of people in the region about the Site and weapons testing was “to some degree that of participants.”¹⁷⁵ As a component of the AEC/military campaign of re-education, and an ongoing “educational” imperative to prevent what the AEC called a “latent fear of radiation,” the local press became unofficial collaborators, using appeals to national security, anti-communist rhetoric, and ridicule to mask their support for a program that provided so many economic benefits.¹⁷⁶ Out of 161 articles sampled in Las Vegas newspapers about the program between 1951-1958, eighty-six were informative articles about individual series or tests, troop maneuvers, or civil defense exercises. Ten of the total contained information about the hazards of testing or radioactive fallout derived from other news sources. Sixty-five out of the total were editorials or persuasive articles that emphasized the benefits of testing; twenty-nine discussed test safety; twenty others, the direct economic benefits of the Site; and sixteen pointed to the national security importance of tests or the dangers of communism.¹⁷⁷

As boosters, the local press’s interest in prosperity caused newspapermen to make appeals to national security and anti-communist rhetoric in support of testing in Nevada while ignoring or disregarding information circulated in the national publications about

¹⁷⁵ U.S. Atomic Energy Commission, “Report of Committee on Operational Future of Nevada Proving Grounds,” May 11, 1953, (Meeting date, January 14, 1953) 5. NVO 720368; RG 326, Collection DBM, Box 3362, Folder 3.

¹⁷⁶ For the AEC’s concern with preventing a “flare-up” of fear, see “Report of Committee on Operation Future of Nevada Proving Grounds,” May 11, 1953, 5. For the importance of local press in areas such as Las Vegas, where there were few other venues for news, see A. Crigler, ed., *The Psychology of Political Communication* (Ann Arbor: University of Michigan Press, 1996), 4. For the significance of the press in framing issues generally, see D. Croteau, W. Hoynes, *By Invitation Only, How the Media Limit Political Debate* (Monroe, Common Courage Press, 1994), 30.

¹⁷⁷ Derived from a survey of coverage about the Nevada Test Site, the AEC, and weapons testing in the *Las Vegas Sun* and the *Las Vegas Review Journal* from January 1951 through March 19, 1958.

the hazards of radioactive fallout. As the earlier example about the *Las Vegas Sun* editor's complaints about smokestack fallout illustrated, airborne pollution was something that members of the newspaper press believed harmful.¹⁷⁸ Where radioactive fallout was concerned, however, that editor and his colleagues in Las Vegas paid almost no attention to the scientific studies of the dangers of fallout and the precautionary recommendations contained in other publication to prevent or reduce exposure to radioactive hazards. There were, in fact, many reasons for locals to be skeptical about the AEC's claims that fallout was not dangerous.

Even before the Soviet test, for example, a sampling from the *Science News Letter* and *Science Digest* illustrates the nature of the articles that appeared about radioactive hazards that passed the test for non-restricted information. These included warnings about the relationship between radiation and disease, "A-Bomb can Speed Cancer," genetic damage—"Abnormal Offspring," "Effects of Radiation on Offspring Called Insidious," "Radiation Produces Freaks"—fallout, "Death Sand Kills Subtly" and "Atom Dust Weapon."¹⁷⁹ The *Review Journal* dismissed this sort of information with a John Wayne-ish bravado, welcoming the site's creation with a front page headline that may have been intended to shame into submission those who harbored very real concerns: "Heck, We're Not Scared!"¹⁸⁰ On January 10, 1951, the *Review Journal* estimated that the site would

¹⁷⁸ Hank Greenspun, *Las Vegas Sun*, November 20, 1954, 1.

¹⁷⁹ "A-Bomb" *Science News Letter*, September 10, 1949; "Abnormal Offspring," *Science News Letter*, April 16, 1949; "Effects ... Insidious," *Science News Letter*, May 7, 1949; "Radiation Produces Freaks," *Science News Letter*, March 4, 1950; "Death Sand Kills Subtly," *Science News Letter*, August 5, 1950; "Atom Dust Weapon," *Science Digest*, September, 1950.

¹⁸⁰ *Review Journal*, January 12, 1951, 1.

result in a five-million-dollar windfall and that more would follow.¹⁸¹ Purposefully, as the fearlessly bold headline indicated, they ignored or subordinated information about the hazards of radioactive exposure and fallout. A scant five days before the first test, for example, *The New Republic* carried John Newman's review of *The Hell Bomb*, a book written by William L. Laurence, the science reporter Groves hired to chronicle the Manhattan Project. *The Hell Bomb* called attention to the degree of devastation likely from the explosion and the resulting fallout.

“In the long run,” as Lord Keynes once pointed out quite reasonably, “we shall all be dead.” The opinion was voiced in more hopeful times. It now seems likely that the run for most of us may be considerably shortened.¹⁸²

Like the AEC, however, newspapers in Las Vegas emphasized the dangers of enemy fallout produced by Soviet nuclear weapons while downplaying the effects of fallout from nuclear bombs detonated in Nevada.

This pro-AEC stance was driven by the economic benefits testing brought to Southern Nevada. After newspapers in Los Angeles, for example, criticized the AEC for conducting hazardous nuclear testing in Nevada, the *Review Journal* responded with an editorial claiming that the Los Angeles newspapers were engaged in a disingenuous ploy for tourist dollars. The paper's editor castigated Los Angeles editors for spreading unfounded concern to “frighten Southern California people and dollars into staying home.”¹⁸³ At the same time, the newspaper's editor John Cahlan also worked to diffuse

¹⁸¹ *Review Journal*, January 10, 1951, 1.

¹⁸² Newman, J., review of *The Hell Bomb*, *The New Republic*, January 22, 1951, 29.

¹⁸³ John Cahlan, *Review Journal*, January 30, 1951.

the anxiety of locals—evidence that not all Southern Nevadan’s were comforted by the AEC’s claims of safety—by singling them out as alarmists,

yesterday’s sensation has become commonplace. ...A lot of people ... allowed their imaginations to carry them completely away. ...Today, of course, they’re smiling at themselves and wondering why they allowed themselves to be disturbed at all.¹⁸⁴

From Cahlan’s perspective, geiger counters were useful only as props for models hired to promote atomic tourism.¹⁸⁵ For editors such as Cahlan, anti-communism called for testing and testing meant dollars for Las Vegas. In front page stories carried during the spring of 1951, for example, the newspaper covered the death sentence handed down to Julius and Ethel Rosenberg after their convictions for espionage, CDA rehearsals in Michigan simulating a Russian attack, underground construction at Dugway Proving Ground in Utah in preparation for a “third world war,” increases in the U.S. stockpile to maintain “constant readiness,” and the announcement that an additional \$1 million would be spent on expansion of the Nevada Test Site.¹⁸⁶

The immediate consequence of media support for the Site was that it stifled local opposition and perhaps postponed the emergence of a national political conversation about the necessity and risks of atmospheric continental testing.¹⁸⁷ In the long term, local media cooperation with the program provided the AEC/military partnership with the means to promote the most optimistic opinions about the hazards of radioactive fallout

¹⁸⁴ Cahlan, *Review Journal*, January 30, 1951.

¹⁸⁵ Gladwin Hill, *New York Times Magazine*, February 11, 1951.

¹⁸⁶ *Las Vegas Review Journal*: Rosenberg, April 5, 1951, 1; CDA, April 16, 1951, 1; Dugway, May 23, 1951, 1; Site expansion, May 1, 1951.

¹⁸⁷ For an example of the success of a grass roots effort to mobilize opposition and prevent the AEC from disposing of nuclear waste near a Cape Cod community in 1959, see E. J. Kahn, Jr., “Our Far-Flung Correspondents, “The Government and the People,” *The New Yorker*, October 15, 1960, 104-124.

generated by AEC experts and to dismiss the pessimistic views of others outside the AEC's network who argued that testing and fallout were more dangerous than the AEC wanted to admit. Because of the media's cooperation with the AEC, a potential political discussion about the cost and safety of the continental program itself devolved (as discussed in the next chapter) into a debate about safety that politicized scientific issues.¹⁸⁸ What is unavoidable is the fact that the support that local and national media gave to the AEC and its military partners during the atmospheric weapons era creating the conditions for hazardous experimentation that jeopardized the health of people throughout America who were unaware that radioactive contamination was contained in the milk and bread they and their children consumed and those soldiers who had no choice but to cooperate with the self-interested goals of officers to demonstrate that ground troops would be critical in a nuclear war.

Weapons Testing, Maneuvers, Civil Defense

The Army's need to gain political traction against the sense growing among congressmen that a nuclear-equipped Air Force and the Navy provided sufficient defense remained a priority throughout the atmospheric testing era. It reached critical proportions during the Eisenhower administration, when the *Crossroads* veteran and then-Chairman of the Joint Chiefs of Staff Admiral Radford backed the doctrine of massive retaliation through aerial bombardment and severe limitations for conventional forces.¹⁸⁹ In protest

¹⁸⁸ As Geoffrey Sea, a radiobiological health physicist pointed out in a 1994 article, print and television media remained uninterested in reporting about the AEC's activities in the 1970s and 1980s despite researchers presenting them with mounting evidence of human radiation experimentation. "The Radiation Story No One Would Touch," *Columbia Journalism Review* 32 (1994): 37.

¹⁸⁹ Anthony Leviero, "The Paradox that is Admiral Radford," *New York Times Sunday Magazine*, August 5, 1956, 6.

against that philosophy, both Generals Matthew Ridgway and Maxwell Taylor stepped down as Chiefs of Staff of the Army during the Eisenhower administration.¹⁹⁰

The Army's insecurities became especially acute in the Fall of 1951. On October 1, two weeks before soldiers from Camp Campbell, Kentucky, arrived in Nevada to become part of a 5,000 man force at Camp Desert Rock, the Army's Chief of Staff Lawton Collins, found himself making a case for the Army's salience before the JCAE. His main goal was to counteract the belief that ground troops could be all eliminated because the Air Force, Navy, and Marines were best equipped to fight a nuclear war. As if to symbolize a hierarchy of importance among the services, Collins's turn to talk without much interruption came toward the end of the hearing. He followed testimony from Secretary of Defense Robert A. Levitt and General Hoyt S. Vandenberg and Admiral William M. Fechteler, the Chiefs of the Air Force and Navy. While Collins was waiting, Vandenberg presumed to speak for him, explaining that the Army was "very much interested" in artillery, but did not yet know "how it is going to work ... what its area is going to be ... and what type is the best to get, and therefore he [Collins] can't lay down at this time the exact number that he wants."¹⁹¹ When Collins tried to respond to Vandenberg's comment, Senator Jackson interrupted him. When his turn finally came, he began to brief the Committee on the Army's plans and the training it had conducted to ready commanders and soldiers for tactical warfare. Senator Hickenlooper's follow-up illustrates how tenuous was the Army's claim to atomic resources and, perhaps in the mind of Collins, was the Army's future. In phrasing that indicates Hickenlooper's mind

¹⁹⁰ Armacost, *The Politics of Weapons Innovation*, 122-167.

¹⁹¹ General Vandenberg testimony, October 1, 1951, "Presentation of the Secretary of Defense and the Joint Chiefs of Staff," Joint Committee on Atomic Energy, 82nd Congress, 1970-2103, quote at 1995.

was nearly made up about the irrelevance of the Army, and suggesting that he was familiar with Dean's position on the tactical use of nuclear bombs, he put the General on the spot:

I would like to have the reasoning by which the Army justifies the extensive investigation and development of ground atomic weapons which manifestly can be delivered only a short distance as against using the Air Force for ... the tactical delivery ... the Air Force [could] deliver that weapon on target ... keeping the technique within one service, rather than to have perhaps conflicting operations or duplicating operations.¹⁹²

The General then repeated points he had already made about the significance of ground soldiers for locating and developing targets, massing enemy troops into bomb-able concentrations and delivering tactical weapons during inclement weather. To this summary, Vandenberg replied that the Air Force was already equipped to deliver small, tactical-sized atomic bombs and missiles. Not only was Collins's testimony undercut by Vandenberg's, it was also overshadowed by Senator Bricker. Bricker drew from Collins's explanation to complain about a magazine article he had read, presumably one detailing the training at Sandia that Collins had emphasized as part of the Army's mission to prepare for the time when tactical weapons would be coming off line. Leapfrogging over Collins, Bricker directed his consternation with the article to Secretary of Defense Lovett, who sided with Bricker over Collins:

Senator Bricker. You are talking about the concentration of troops and the use of artillery in meeting those concentrations ... and the tactical use of it, and I saw that story in one of the magazines and they had the men marching around the road and the concentration points and so on. In your judgment isn't too much publicity being given to all of these operations that are underway now?

Secretary Lovett. I can't tell you how strongly I feel about it, Senator Bricker, it is absolutely outrageous.

¹⁹² Senator Hickenlooper, October 1, 1951, "Presentation of the Secretary of Defense and the Joint Chiefs of Staff," Joint Committee on Atomic Energy. Joint Committee on Atomic Energy, 82nd Congress.

Senator Bricker. Measures ought to be taken to stop it at once.

Secretary Lovett. Yes, sir.

Senator Bricker. I don't know whether the rest of the committee agrees with me or not, but that to me was very dangerous.¹⁹³

The problems the Army had in 1951 securing respect from elected officials as well as the Secretary of Defense prompted the Army's desire to demonstrate its soldiers' capabilities in "live" training exercises despite the fact that (according to Marine officers who participated) they were less effective than maneuvers employing simulated nuclear weapons.

For Army officers, the unspoken benefit of "live" training was the same as it had been for a continental site after the war: publicity. There was a direct line between this pre-1949 history and maneuvers at the Nevada Test Site: The Commander for the *Ranger* series of tests was Maj. D.H. Russell, the same officer who had been in charge of the 1948 *Operation Sandstone*. After *Ranger*, the Army immediately began planning *Buster-Jangle*, tests and maneuvers scheduled for October-November 1951. Called "Desert Rock I," those exercises disappointed General John E. Hull. Hull had, in the years since advocating for his re-education campaign and service as a Lt. General and commander at Sandstone, become Vice Chief of Staff of the U.S. Army. After "Desert Rock I," Hull complained that radiation safety precautions at that first exercise were too strict, reducing his 6,500 troops to "purely observers."¹⁹⁴ A year later, Hull posed for a photograph with

¹⁹³ Exchange between Senator Bricker and Secretary Lovett, October 1, 1951, "Presentation of the Secretary of Defense and the Joint Chiefs of Staff," at 2078. Joint Committee on Atomic Energy, 82nd Congress.

¹⁹⁴ Hull's comments cited under subheading "Estimate of the Maneuver," Armed Services Technical Information Agency, [Human Resource Research Office, HumRRO], U.S. Army Desert Rock I, "a consolidated account of psychological research done in connection with exercise Desert Rock I," Report AD 006092, DNA1.940920.065.

the Commander of “Desert Rock IV,” seemingly pleased with the event and the fact that soldiers were no longer observers—after “Desert Rock I,” the AEC acquiesced to officers’ requests to position soldiers closer to ground zero and for increases in the amount of radiation to which soldiers could be exposed.¹⁹⁵ That exercise involved approximately 10,000 soldiers, roughly the same number that Hull commanded during *Sandstone*.

Officers who decided to demonstrate that soldiers could function on a nuclear battlefield for domestic political gain knowingly took risks with their long-term health. In the years that had passed since *Crossroads*, when sailors were exposed to dangerous levels of radioactivity in the interests of the Navy’s political goals, nothing had been discovered to prevent long-term injury from radioactive exposure. In 1949, Shields Warren anticipated the Army’s plan to introduce and attempt to accustom troops to radioactive fallout and in an effort to supply officers with information about boundaries for dose and tolerance. He contacted Dr. Joseph G. Hamilton of the University of California Berkeley’s Crocker Laboratory and provided him with all available information to launch a thorough appraisal of the problem.¹⁹⁶ Hamilton was recognized

¹⁹⁵ Desert Rock IV began in April and ended in June 1952. Photograph of General John E. Hull, Vice Chief of Staff, U.S. Army with Lt. General Joseph M. Swing, Exercise Commander, Commanding General, Sixth Army, in “Report on Exercise Desert Rock IV” 7 August 1953, 3. ARM1.950310.008. For number of participants, see C. Dennis Robinette, et. al., “Studies of Participants in Nuclear Tests: Final Report 1 September 1978-31 October 1984,” (May 1985); National Research Council, “Table of announced tests and participants,” in “Mortality of Nuclear Weapons Test Participants 7. DOE/EV/01577; For the military’s reasoning about troop exercises, where a tower shot allowed positioning soldiers 2,000 feet closer to ground zero than an air-drop shot, see n. 93, above; and preliminary planning for Desert Rock V, “Department of Defense Plan for Troop Participation in Operation *Upshot-Knothole*,” 4; and, “Instructions for positioning Department of the Army personnel in Continental Atomic Tests,” attached to Memorandum, Exercise Desert Rock V, February 20, 1953, Carl H. Jark, Brigadier General, G3, Chief, Organization and Training Division, ACHRE Briefing Book 8, online at http://www.gwu.edu/~nsarchiv/radiation/dir/mstreet/commeet/meet8/brief8/tab_f/br8flf.txt.

¹⁹⁶ Joseph G. Hamilton, M.D. to Shields Warren, M.D., Director of Division of Biology and Medicine, November 28, 1950. A copy of this document is in the author’s possession. In the years since 1982 when

as a conscientious researcher, one of the premier authorities on the health effects of radioactive exposure, was at Bikini as “sort of a walking encyclopedia,” and was interested especially in respiratory exposure and the behavior of radioactive particles in the lung.¹⁹⁷ Hamilton determined that troops might remain operational if not psychologically disturbed, but noted that the root issue was internal radioactive poisoning from inhalation. Recommending more experimentation to determine, with precision, the exact strata of safe to dangerous levels, Hamilton recommended that no training maneuvers be attempted until lengthy experiments had been performed using “large monkeys such as chimpanzees,” and warned that the AEC could otherwise be accused of recklessly endangering human lives. As an indication of how close Hamilton believed the AEC and military officers interested in weapons testing were coming to a line that should never again be crossed, he drew on what was then recent history, explaining that doing so without waiting for the results of animal studies smacked “a little of the Buchenwald touch.”¹⁹⁸ Hamilton made his comparison of military maneuvers with human experimentation knowing that military officers favored experiments to evaluate how humans reacted to various dosages of radiation to establish concrete guidelines for commanders interested primarily in knowing how much radiation a soldier could tolerate

Dorothy Legarreta uncovered the document in Hamilton’s papers at the UC Berkeley Library, “the Buchenwald Touch” has become emblematic with human radiation experimentation. While it may have been related to then-ongoing human experimentation, the context of the letter suggests that Warren asked for Hamilton’s opinion because of the military’s repeated insistence for data about acute exposures combined with what he knew about plans for nuclear maneuvers and hoped, perhaps that Hamilton’s research had enough definitive information to dissuade officers from subjecting soldiers to conditions where they would inhale radioactive fallout.

¹⁹⁷ Patricia C. Wallace Durbin-Heavey, Ph.D., Oral History Interview, “Research at Crocker Laboratory and the Lawrence Berkeley Laboratory,” Interview conducted 1979-1980, by Sally Smith Hughes, Ph.D., 18, 29, 40. History of Science and Technology Program, Medical Physics Oral History Series, The Bancroft Library, University of California, Berkeley.

¹⁹⁸ Joseph G. Hamilton, M.D. to Shields Warren, M.D., Director of Division of Biology and Medicine, November 28, 1950.

before becoming ineffective in battle. It is, perhaps, because of this that military officers did not appreciate the connection that Hamilton made between nuclear maneuvers and human experimentation. In any event, they planned and conducted maneuvers without regard to the long-term effect of inhaled radioactive contamination on the health of soldiers that they brought to Nevada.

The thinking of military officers about the significance of short-term and long-term injuries that influenced how they conducted maneuvers in Nevada emerges from a discussion about the problem before testing in Nevada began during a meeting of the Committee on Medical Sciences of the DOD's Research and Development Board held on May 23, 1950. During the meeting, doctors, scientists, and officers from the Army, Navy and Air Force, discussed experiments aimed at satisfying the military's need for information about radiation exposure. While acknowledging some interest in long-term health effects, officers attending that meeting were primarily interested in functional understanding they could give a commander of forces during a nuclear war—how much radiation a soldier could endure in the short term and still fight:

The levels we are particularly interested in are those of relatively short duration. In other words, a man may develop a cancer 20 years later but if he is in the middle of combat we don't think that would deter from actually [accomplishing?] something, so that what we are interested in is what level is going to make this man sick or noneffective within a period of 30 days, in all probability. Now we are very much interested in long-term effects but when you start thinking militarily of this, if men are going out on these missions anyway, a high percentage is not coming back, the fact that you may get cancer 20 years later is just of no significance to us.¹⁹⁹

¹⁹⁹ Bracketed addition mine. It appears that the sentence suffers from a transcription error and the suggested "accomplishment" is a reasonable replacement for "actually" or in addition to it. Colonel William S. Stone, Medical Corps, United States Army, "Transcript of Meeting Held on 23 May 1950," Department of Defense, The Research and Development Board Committee on Medical Sciences, 10. DOD-080694-A; ACHRE ACH1.950808.002.

Six months later, officers pressed their case outside the confines of the DOD, employing wartime strategies of control—appeals to national security and military urgency—and invoked *Crossroads* in an effort to convince Shields Warren and other members of the AEC’s Advisory Committee for Biology and Medicine to approve human experiments. Brig. Gen James Cooney of the Division of Military Application discounted as unreliable estimates already made based on studies of the victims of the Hiroshima and Nagasaki bombings and animals after the war. He insisted that the only estimates that would satisfy the military and its commanders would be those based on human data, and tried to convince members of the Advisory Committee with appeals to national security and military urgency. Cooney warned the committee that unless it was willing to risk the lives of some experimental subjects, the result would be that no one would find out until a battle, when “we ... force people and force thousands of young men perhaps and maybe lose the battle as a result of [what is] not known, and so on?”²⁰⁰ Cooney’s ideas mattered. It was he, as Shields Warren recalled years later, who approved the 3.9 r. standard for off-site exposures to fallout resulting from Nevada tests.²⁰¹

The disregard for the long-term radioactive health effects exhibited by officers conducting maneuvers for public consumption at the Site reflect the adoption for purposes of the maneuvers the same disregard for the long-term health effects that Cooney and his colleagues considered insignificant from the point of view of a (real)

²⁰⁰ Transcript of meeting, November 10, 1950, AEC Advisory Committee on Biology and Medicine, 170-171. U.S. DOE Archives, 326 U.S. Atomic Energy Commission, Collection, Div. Biology & Medicine, Box 3218, Folder ACBM Minutes.

²⁰¹ Cited by Stewart Udall. According to his account, Warren was deliberately excluded from that meeting. *Myths of August*, 221. For a discussion of the reasoning for the on and off-site 3.9 standard, see “Interpretation of the Standards of Radiological Exposure, *Prescott v. U.S.*, CIV LV-80-143, Defendant’s exhibit DX21915.

battlefield. On January 26, 1951, one day before the first continental weapons test was conducted at the Nevada site, a DOD committee summarized the problems of atomic warfare, the work underway to investigate those problems, and estimates about research progress.²⁰² The first item of that summary pointed out that the Panel was interested only in matters of “immediate military significance” and identified as irrelevant any health effect that would not result in debilitation or require evacuation.

Long term effects, such as reduction in fertility, increase in the number of mutations, and reduction in the ultimate life span of exposed individuals, will be the concern of military planners, but will hardly affect the decisions of commanders in the field.²⁰³

Because of the partnership between the program and the military, what commanders in the field wanted influenced the hazards of continental testing. In a 1954 report, Los Alamos Test Director Alvin Graves noted that persons off-site were subject to exposures that exceeded the 3.9 r. per quarter standard and explained those overexposures as militarily necessary:

One must conclude that between the ‘safe’ laboratory standard of 3.9 r./quarter and the ‘militarily significant’ dose of 50 r. there is a wide region in which one must operate if test operations are to be conducted.²⁰⁴

But the 50 r. dose that even the military had defined as “significant” was not a firm boundary. Following “Badger,” a 23 kt device detonated from a tower on April 18, 1953,

²⁰² January 26, 1951, Joint Panel on Medical Aspects of Atomic Warfare, “Technical Estimates, 1951” Department of Defense Research and Development Board, Committee on Medical Sciences, and Committee on Atomic Energy, BAW 13/4, Log No. 38684, Opennet NV0750091. The Committee was created in February 1949. Joseph F. Sadusk, JR., M.D. Executive Director, Committee on Medical Sciences, “Directive Joint Panel on Medical Aspects of Atomic Warfare” 23 February 1949, BAW 1/1, ACH1.000004.019bb, attached to June 19, 1994, ACHRE Staff memorandum, “Documentation of Government Purpose: Military Research Programs” ACH1 000004.019ba.

²⁰³ January 26, 1951, Joint Panel on Medical Aspects of Atomic Warfare, “Technical Estimates, 1951” 1.

²⁰⁴ Udall, *Myths of August*, 243.

during the *Upshot-Knothole* series, recovery parties were given permission to exceed the 10 r./hr standard for recovery operations when they were allowed to use the Mercury Highway to get to the recovery area, a circumstance under which they were exposed to radiation intensities from fallout above 50 r./hr. That opened the door for other recovery teams, 133 in all, comprising 396 men, to exceed the 10 r./hr standard, additional overexposures resulting from the recovery operations themselves as well as the time spent getting to and from recovery areas in contaminated vehicles. Ninety-two vehicles used during “Badger” required decontamination after the shot. The blast left a 100 r. “integrated dose line” thirty-five miles out from ground zero, a 10 r. dose level 110 miles from the blast, with the highest levels of fallout between the Site and Lake Mead. It also produced “significant” ground levels from Williams, Arizona, to the “South Rim of the Grand Canyon of the Colorado River,” measured by a Los Alamos scientist using a form of reference that suggests he may have had some interest in emphasizing that fallout had affected water supplies.²⁰⁵ For Test Director Alvin Graves, as for others in the program, their responsibility to the military overshadowed their administrative “civilian” responsibilities and public relations took precedence over safety. Graves’s plan for counteracting negative publicity about the dangers of fallout by publicly announcing that exposures of 15 r. were of little consequence, “equivalent to ... a piece of carborundum in the eye or a cut finger, and because of that, the AEC would henceforth report exposures that exceeded 15 r. as “accidents.” This, he argued, would “be extremely useful for public relations.”²⁰⁶

²⁰⁵ “Radiological Safety Operation” Operation *Upshot-Knothole*, Nevada Proving Ground, Ch. 7, Shot Badger, 17 to 23 April 1953, 93-95. *Prescott v. U.S.*, Plaintiff’s Exhibit 138.

²⁰⁶ Cited by Udall, *Myths of August*, 244.

The AEC and military officers who engaged in such downplaying of the health effects of fallout in the interests of creating realistic scenarios for troop exercises and promotional demonstrations did so despite the fact that “live” exercises offered less in the way of practical training benefits than those conducted with simulated weapons. The Marines’ own record of its participation in “Desert Rock VI” in March 1955 reveals that “live” maneuvers were primarily useful for training their radiation monitors, not soldiers. This was the case because “live” detonations inevitably meant that they had to evacuate soldiers before they could accomplish their objectives while exercises with simulated weapons, a common practice during the atmospheric era, gave soldiers a more thorough training experience. Marine officers, for example, expressed satisfaction with the functional results of exercises they conducted using “atomic simulators” at their own bases.²⁰⁷ A Marine Corps recapitulation of the “Desert Rock VI” operation reflected the Corps’ gratitude for the opportunity to conduct “realistic” maneuvers during a nuclear detonation but added that simulations were used to serve the same purpose: “the maneuver itself could readily have been executed with equal success at Camp Pendleton with the use of atomic simulators.”²⁰⁸ In addition, the use of a “live” weapon limited the potential benefit of the exercise. Soldiers were unable to complete the entire maneuver because of “artificialities,” elements introduced into the exercise to make the use of real

²⁰⁷ “Report of Exercise Desert Rock VI-Marine Corps; 3rd Marine Corps Provisional Atomic Exercise Brigade, March ‘55” VII-2, Technical Library of the Armed Forces Special Weapons Project, 11 May 1955, DNA1.940923.027, HRE-0626. [Note: Though the HRE number indicates that this document was collected in conjunction with ACHRE’s mission, it is not identified by the ACHRE in the list of documents collected as of June 1995. See “Brief Descriptions of Documents Acquired as of June 16, 1995” though some documents pertaining to Desert Rock maneuvers were listed. See online compendium, <http://www.gwu.edu/~nsarchiv/radiation/dir/mstreet/research/docs/precis.txt>.]

²⁰⁸ “Report of Exercise Desert Rock VI-Marine Corps 3d Marine Corps Provisional Atomic Exercise Brigade, March ‘55’,” Section VII-2. A/12441 at Technical Library of the Armed Forces Special Weapons Project, 11 May 55, DNA1.940923.027.

atomic weapons possible.²⁰⁹ The Corps did indicate that, as they had during “Desert Rock V” when approximately 2,100 marines attended as participants and observers, Fleet Marine Force Commanders and radiation monitor teams would attend future tests.²¹⁰

As with the Army, promotion was one of the Marine Corps’ primary motivations for participating in “live” maneuvers. The promotional value of participation to the Corp’s political goals cannot be precisely measured, but among the conditions that Marine Corps officers established for future participation was the remedying of problems they had encountered in achieving their promotional goals during “Desert Rock VI.”

The public relations aspects of the exercise began—as *Crossroads* had—well in advance of the test, on February 10, and extended afterward through the publication of a “Public Information Annex” that included a photographic array.²¹¹ The Corps complained that AEC security requirements prevented meeting all of its plans for publicity and that AEC and DOD lacked facilities for “play-back on radio tapes, as well as screen facilities for motion picture film” preventing them from securing rapid “declassification and release to news media.”²¹² Despite those limitations, the Marine Corps ensured that its participation would become news throughout the country via reports about participating soldiers. Marine Corps staff sent out 1,632 photographs with stories, 351 tape recordings, and eighteen 35mm films to the “Fleet Home Town News Center” for distribution; and,

²⁰⁹ “Report of Exercise Desert Rock VI,” VII-1, 2(d)

²¹⁰ See “Department of Defense Plan for Participation in *Upshot-Knothole*,” 2; attached to H.C. Donnelly, Colonel, Chief AFSWP to Kenneth Fields, Brigadier General, Division of Military Application, 6 February 1953, SWPOT 969.2, DNA1.941220.011. Approximately 2,100 Marines attended Desert Rock V.

²¹¹ “Report of Exercise Desert Rock VI-Marine Corps 3d Marine Corps Provisional Atomic Exercise Brigade, March ‘55’,” Sections III-12-14, VI-6. A/12441 at Technical Library of the Armed Forces Special Weapons Project, 11 May 55, DNA1.940923.027.

²¹² “Report of Exercise Desert Rock VI,” III-14, Item 8(k).

moreover, sent news stories and photos to all wire services and news media in Los Angeles and San Diego near their Camp Pendleton locale.²¹³ After the brigade arrived in Nevada, the Corps took more photographs and sent them out for distribution while one Marine Corps officer recorded a telephone interview for a radio broadcast. On the day of the shot, the Marines took additional pictures and distributed those to news services and, additionally, delivered film coverage of the maneuvers to NBC and CBS. CBS planned to use segments of the footage, while NBC planned to use all of it, scheduling the broadcast of all segments in color as well as in black and white. Marine Corps personnel also delivered additional copies of the film footage to “theatrical” and film-strip companies and to *Life*, which promised to “view the color footage” for possible use. The Marines made arrangements with the media for two different officers to provide their assessment of the shot-day operation: the Commanding General taped interviews on that day for “all” Los Angeles networks and a *Time* interviewer discussed the maneuvers with the Brigade Chief of Staff. On the day after the test, the Corps distributed more photographs and a “round-up” release.²¹⁴

Army officers used maneuvers to engage in the same sort of formal public relations outreach as the Marine Corps during “Desert Rock VI,” but also employed less formal means of spreading the Army’s views of the importance of testing, maneuvers, and the use of atomic weapons for war. Evidence for the Army’s plan to use troops participating in maneuvers as nodes of communication—points of contact to other soldiers as well as friends and families outside of the armed forces—emerges out of

²¹³ “Report of Exercise Desert Rock VI,” III-12, Item 7(a); VI-6, Item 14(a).

²¹⁴ “Report of Exercise Desert Rock VI,” VI-6, Items 14(a-h)

psychological studies the Army arranged to be performed on soldiers who participated in maneuvers. That Army officers considered this informal promotional function of maneuvers significant is evident from the attention paid to it by the social scientists the Army employed to study the participants' reactions and behavior before, during, and after the tests.

During the "Desert Rock I," the Army's troop instructions differed from those the AEC issued to the Army's participants. The AEC identified nine particular items of classified information that soldiers might learn from the tests and told them to expect that anything else they might notice could be classified, too. The AEC's ultimate recommendation, summarized by the military's psychological analysts, was a blanket admonition against saying anything: "The simplest guide is not to talk about the test and refer all questioners to the AEC Information Office."²¹⁵ In contrast, the Army's official instructions told soldiers that "everyone will want to know what you have seen" and reminded them that because the enemy might also be among them, suggested that soldiers limit their responses to the fact that they did observe an atomic test and "what results thereof looked like to you."²¹⁶ During that exercise, the Army also arranged for a press conference on the day of the blast and selected eleven soldiers to respond to questions from reporters. The Army strongly encouraged soldiers to talk about the test: "the troops

²¹⁵ See "instruction sheet" attached to Office Memorandum, from R.L. Southwick, Assistant Chief Public Information Service, U.S. AEC to Joseph E. Short, Press Secretary The White House, January 25, 1951, "Atomic Bomb and Energy, June 1950-1952," White House Central Files (Confidential Files) Box 4, Papers of Harry S. Truman, HST Library, included in record, *Prescott v. U.S.*, CIV LV-80-143, Defendant's exhibit DX21926. For the psychological implications of the AEC's instructions, see Human Resources Research Organization [HumRRO], Report, "consolidated account of psychological research done with exercise DESERT ROCK I," 8. DNA1.940920.065; NVO767823.

²¹⁶ HumRRO, "consolidated account of psychological research done with exercise DESERT ROCK I," 8, DNA1.940920.065; NVO767823.

were urged to disseminate as widely as possible those things which they observed and learned at Desert Rock.”²¹⁷ The study revealed that the briefings, indoctrination, and maneuver had little effect on soldiers aside from the short-term anxiety and excitement of the test itself and that on returning to their bases soldiers were not necessarily forthcoming about their experiences. The result was disappointing: the Army’s “correct facts” did not circulate among soldiers and did not make it into the mainstream. The study’s authors surmised that there were two likely reasons for this. One, derived from comments made by General Hull, was that soldiers were forced into the attitude of observers by regulations that kept them too far from the blast. The other was an absence of realism—soldiers did not confront an enemy, they moved in formation, and the only demonstrable measure of the bomb’s destructiveness was some damaged equipment. Because the operation did not include buildings that might be bombed during combat, and though the desert’s “sparse vegetation” burned, it was “a less spectacular target to the A-bomb than structures.”²¹⁸

One of the reasons, then, for providing a realistic experience for soldiers had nothing to do with preparing soldiers to fight an atomic battle and much to do with maximizing the promotional potential of maneuvers by coaxing soldiers into talking about their experiences and spreading the “facts” about atom bombs that were part of the soldiers’s indoctrination. Toward that end, future maneuvers were designed to impress: they were more realistic—soldiers were trenched closer to ground zero, they were given a

²¹⁷ HumRRO, Report on Desert Rock I, 8.

²¹⁸ HumRRO “consolidated account of psychological research ... Exercise DESERT ROCK I, including Hull’s comments and those of the summary’s author, 8. Defense Technical Information Center, DNA1.940920.065; NVO767823.

precise objective, more equipment was arrayed close to the detonation site, buildings were constructed to provide the dramatic examples of the bomb's destructive capacity that tanks and other military equipment did not. The Army arranged for the U.S. Department of Agriculture and the Forest Service to cooperate in erecting three stands (one with 145 trees) of Ponderosa pine trees, into concrete at various distances from ground zero.²¹⁹ The erection of civil defense "doom towns" not only helped to reinforce the military's core ambition by providing examples of destruction that generated more support for the services, but also contributed to the military's more immediate promotional goals to impress soldiers enough that they would talk about their experiences.

After realizing that it had guessed wrong about the gregariousness of soldiers who engaged in atomic maneuvers, the Army not only adjusted the way it conducted exercises but also commissioned its researchers to study soldiers before and after the exercise to learn more about what they talked about and with whom they visited. The following year, the Army's psychological study of participants in "Desert Rock IV" (May-June 1952) included as one of its four primary objectives, learning about the "extent to which participant troops disseminated information about the maneuver and the A-bomb" once they returned to their home base.²²⁰ Based on questioning of participants and non-participants who remained on base during the maneuver and did not travel to Nevada,

²¹⁹ For a summary of the realism built in to the 1955 Desert Rock VI exercise, and the CDA's Operation Cue held simultaneously, see Joseph Masco, *The Nuclear Borderlands*, 64-65. For the details on the tree stands, see U.S. Department of Energy, *Nevada Test Site Guide*, DOE/NV-715, 2001, 17.

²²⁰ HumRRO Technical Report 2, August 1953, "Desert Rock IV—Reactions of an Armored Infantry Battalion to an Atomic Bomb Maneuver," Objectives, Foreword by Director, Meredith P. Crawford. NVO751017.

researchers found that more realism and drama did not cause participants to be more outspoken than before.

Few of them reported discussing the maneuver with more than one or two soldiers who had not participated, and few of the nonparticipants expressed any great interest in learning about the maneuver. As a result, the nonparticipant troops showed no changes in attitudes or information about the A-bomb.²²¹

Undeterred, the Army continued to modify its exercises to maximize the promotional benefits of information combination between participants and non-participants.

As outlined in the Human Resources Research Office Technical Report Two of 1953, produced after studies conducted during “Desert Rock IV” the same year,

Atomic maneuvers provide experience and training for participant troops and observers. Beyond that, however they also can exert a potentially great influence on non-participants through the dissemination of facts and attitudes after the participants have returned to their home stations. The Army recognizes this potential effect by including a considerable number of observers in every atomic maneuver, as well as by officially encouraging discussion (within the limits of military security) of maneuver experiences between participants and nonparticipant troops.²²²

Additionally, the Army expected not only that soldiers engaged in a maneuver would share what they had learned about it with soldiers they were acquainted with at their home bases who had not participated in the maneuvers, but also to their families and friends. A summary of the outcome reveals that the Army’s expectations were that it would be able to circulate “correct facts”—information compiled by the Army and delivered to soldiers during instructional briefings. Through subsequent informal

²²¹ HumRRO Technical Report 2, August 1953, “Desert Rock IV—Reactions of an Armored Infantry Battalion to an Atomic Bomb Maneuver,” Objectives, Foreword by Director, Meredith P. Crawford; quote from summation, x. NVO751017.

²²² HumRRO Technical Report 2, August 1953, “DESERT ROCK IV—Reactions of an Armored Infantry Battalion to an Atomic Bomb Maneuver,” 68. NVO 751017.

discussion, those “correct facts” would spread, “influencing attitudes” among non-participants who, the Army expected, would be curious and interested in the soldiers’ experiences.²²³ Ultimately, however, soldiers were simply not good disseminators of information. They still had political value, for their very participation in nuclear maneuvers provided military officers with the opportunity to enhance their political futures with demonstrations of the role of ground troops in fighting a nuclear war.

Maneuvers gave officers an opportunity to demonstrate a versatility with nuclear weapons that did not exist. Soldiers, primarily draftees, endured increasingly dramatic nuclear exercises involving so-called tactical weapons that were not easily deployed in scenarios that were implausible with nuclear weapons, even in the opinions of the military’s top strategists.²²⁴ As the DOD’s own July-December 1949 study demonstrated, the need for shielding soldiers from radioactivity and the long term health effects made the use of atomic weapons in battle impractical.²²⁵ And yet, by monitoring soldiers participating in maneuvers to keep radiation exposures below what they expected would cause acute—and thus noticeable—injuries, they avoided negative publicity and fueled interest in tactical atomic weapons that, unlike bombs, they argued would be delivered by ground

²²³ “word-of-mouth communication between participant and non-participant troops was no more effective in disseminating correct facts than it was in influencing attitudes.” Cited in HumRRO Technical Report 2, August 1953, “Desert Rock IV-Reactions of an Armored Infantry Battalion to an Atomic Bomb Maneuver,” 72. NVO751017.

²²⁴ Based on the characteristics of five cohorts of soldiers selected during Desert Rock IV for psychological testing, approximately two-thirds of the soldiers participating in maneuvers were draftees. Percentages of draftees ranged from sixty-one percent to seventy percent. The percentage of volunteers selected ranged from twenty-seven percent to thirty-seven percent. HumRRO, Technical Report 2, Desert Rock IV, “Reactions of an Armored Infantry Battalion to an Atomic Bomb Maneuver,” August 1953, Table C-1, 211. NVO 751017.

²²⁵ “New Weapons,” 6-7. attachment to January 26, 1950 Memorandum from James S. Lay, Jr., Executive Secretary National Security Council to National Security Council, PSF: Subject File, National Security Council Atomic, Box 176, Atomic Weapons Stockpile, Papers of Harry S. Truman, HST Library.

troops. For the AEC, maneuvers translated into increased appropriations and political influence as the developer and provider of a class of weapons that commanders had yet to figure out how to use.²²⁶ The failure to address long-term hazards allowed AEC officials and military officers to package and promote nuclear weapons as if they were no more than monstrously scaled up versions of conventional weapons, creating unrealistic expectations about atomic warfare. The losers in these political exercises were soldiers who were briefed extensively about the problems of heat, blast, light, and residual radioactivity but who were provided only the most optimistic portrayal of the effects of participating in a “live” test: the possibility that they would be inhaling and ingesting radioactive dust and debris that could result in injury or disease twenty to thirty years hence.

Exposure to close-in fallout and dust stirred up by detonations was evident even to observers of the tests. During maneuvers in 1953, Lyle Borst, a professor of physics at the University of Utah, reported that despite the collapse of some protective trenches—a “serious problem” to use his phrase—soldiers managed over the course of three or four hours to make their way through a sea of dust to within 2000 yards of their goal before they had, he surmised, “taken their permissible dose of 6 r” and were removed by bus for the trip back to Camp Desert Rock for decontamination. Borst noted that the operation’s commander, General Hodge, said after the maneuver that for the future, “he saw no reason why troops could not be located one mile from the blast.”²²⁷ Presumably, putting troops closer to the trenches would have meant that they needed to cover less ground to

²²⁶ John J. Midgley, Jr., *Deadly Illusions*, 1-23, 175-176.

²²⁷ Lyle B. Borst, “Nevada Weapons Test,” *Bulletin of the Atomic Scientists* (April 1953): 73-75, quotations from 74.

achieve their objective. This cooperative arrangement could not have been more suited to the AEC/military partnership

Under Dean's Chairmanship, the AEC drew on the survivability of soldiers participating in maneuvers to support their claims that weapons tests were safe and that radioactive exposures resulting from those tests were not hazardous. The AEC misled the public and congressmen, arguing that the absence of short-term injury meant that no injuries had occurred:

Under the operating controls used in Nevada, thousands of military personnel have occupied fox holes 7,000 yards distant from detonations without casualty. Other participants and observers, with no protection other than goggles, have witnessed tests from a distance of 10 miles without injury.²²⁸

Thus, maneuvers that failed to take into account the long-term hazards of radioactive exposure benefitted both the military—who used such exercises as instruments of self-promotion—and the AEC, who used them in the absence of scientific studies to validate their claims that radioactive fallout posed no dangers to human health. As with military maneuvers, CDA exercises in Nevada were primarily promotional events.

Atomic detonations did provide information for researchers in many fields studying the effects of atomic detonations on military equipment, civilian structures, and other articles of daily life such as food and automobiles—contained in “Doom Towns” erected onsite—that generated data for the armed forces and CDA.²²⁹ And yet, as with *Crossroads*, some of this data could have been derived from laboratory experiments. Other experiments duplicated earlier ones, verifying findings or gathering information

²²⁸ “Public Safety in Continental Weapons Tests,” *Thirteenth Semi-Annual Report of the Atomic Energy Commission*, January 1953, 83.

²²⁹ See Titus, *Bombs in the Backyard*, 63-64.

that had been overlooked previously.²³⁰ Like military maneuvers, the historical and contemporary accounts use CDA exercises to point out the utility of weapons testing and the importance of the Site as a location for training of CDA officials. Because the two were often combined to maximize the publicity potential of “open” shots, it was customary for both to be combined in articles about the Site and testing. In 1953, for example, a twelve-page article in *National Geographic* portrayed military maneuvers and CDA experiments as equally valuable contributions to national defense.²³¹ Indeed, both CDA and military officers acknowledged at the time that the primary value of participating in a “live” atomic event over the simulations both routinely conducted was the opportunity it provided for promotion. An agenda item considered during a meeting of the AEC’s Advisory Committee for Biology and Medicine held in September 1955, after the CDA had taken part in several different weapons tests in Nevada billed as “civil effects tests,” illustrates that the CDA derived very little, if any, functional information from their participation. Despite all of the publicity that surrounded such tests and the supposed value of the tests to CDA efforts to inform and protect the public, the AEC failed to allow the CDA access to the information necessary to evaluate weapons effects. In a report titled “Shelters for Civil Populations,” thirty-five out of thirty-seven references concerning above-ground construction were classified and unavailable to CDA

²³⁰ See, for example, the Military Liaison Committee’s explanation of the experiments the DOD wanted performed during the *Buster-Jangle* series of tests planned for the winter of 1951. Among those citing experiments performed during the *Greenhouse* tests the previous Spring were cloud tracking (Project 6.4), blast effects on tanks (Project 3.11); among those that replicated *Crossroads* experiments were thermal effects on animals (4.2); of those that appear not to have required a detonation, was a test of water supply equipment (3.9). “Memorandum for the Chairman, Atomic Energy Commission, Subject: Operations Planned for Buster-Jangle,” August 14, 1951, attached to AEC approval “note by the Secretary” AEC 446/6, August 20, 1951. *Prescott v. U.S.*, Defendant’s Exhibit 21783.

²³¹ Samuel W. Matthews, “Nevada Learns to Live With the Atom,” *The National Geographic Magazine*, June 1953, 839-850.

officials, as were thirteen of the fourteen references to below-ground construction, as well as all of the references to earthen structures.²³² Aside from the CDA's inability to benefit in a practical way from testing, there was another fundamental difference in the value of testing for the military and the CDA: unlike the military, which derived political benefits from conducting maneuvers, the primary beneficiaries of CDA exercises were the AEC and its military partners.

After the AEC decided in 1952 to welcome unclassified civil defense officials and workers to a planned detonation, Dean relayed the CDA's enthusiasm for the decision to the White House Press Secretary James Short. Dean explained the CDA's expectation that the experience would "considerably stimulate the zeal and raise the effectiveness of ... volunteers and paid personnel."²³³ The test was "Charlie," the "open" shot that the AEC scheduled as a nationwide, televised demonstration. While at the Site, CDA officials were chiefly observers but also performed smaller versions of the types of drills that they routinely practiced in their own communities. Because those exercises were decoupled from the community resources that were the backbone of civil defense, they provided little more than opportunities to view articles of daily life demolished or irradiated by atom bombs and the chance to practice with radiation detectors. And, they were ineffective at generating federal support because Congress remained chronically

²³² Advisory Committee for Biology and Medicine, "Minutes" of 52nd meeting conducted September 9 and 10, 1955, 9. U.S. Atomic Energy Commission RG 326, Division of Biology and Medicine, Central Subject File, "Meetings-ACBM 51-55 to Meetings ACBM 76-85. NARA

²³³ Dean to Short, March 13, 1952, 2-3. Papers of Harry S. Truman, PSF: Subject File, National Security Council Atomic, File: Atomic Testing: General. The AEC's public acknowledgement of the invitation emerged on March 29, 1952, "Atom Test to be Viewed," *New York Times*, March 29, 1952, 20.

Studies of the CDA make more explicit the domestic political connection between promotion and Cold War mobilization. See Andrew Grossman, who focuses on the administrative and national implications of civil defense, *Neither Dead Nor Red: Civil Defense and American Political Development During the Early Cold War*, 27-40, 46-67; and Laura McEnaney, who investigates the social implications of military preparedness, *Civil Defense Begins at Home*, 68-86.

unwilling to provide more than minimal funding, expecting states and cities to provide the bulk of CDA funding. This surprised and angered CDA officials and backers. After CDA officials reported on their experiences at “Charlie,” their first official opportunity to participate in nuclear exercises, Truman accused congressmen of being “penny-wise and pound foolish,” reminding them that the \$535 million he requested to fund CDA programs had been stripped down to \$75 million.”²³⁴ When Truman’s outburst failed to draw results, Hanson Baldwin, the *New York Times*’ Pulitzer Prize winning military editor, compared America’s miserly funding for civil defense with that supplied by European allies after the war, decried the fact that CDA was the “stepchild” of defense, and argued that it was time the organization received a “shot in the arm.”²³⁵ The CDA’s own publicity initiative fared little better. One effort, the Alert America Convoy, was actually three separate traveling exhibits that delivered movies and three-dimensional “dioramas” emphasizing the significance of the CDA (“Learn how Civil Defense protects you and your family”) to eighty American cities.²³⁶ Despite the billing, the exhibit contained enough information about the dangers of nuclear and biological warfare that it

²³⁴ “Truman Deplores Civil Defense Lag,” *New York Times*, April 25, 1952, 10.

²³⁵ Hanson W. Baldwin, “Raid Defense Again Lags: Atom Tests Recall Lead Held by Allies and Foes in ‘Shrinking’ Globe,” *New York Times*, May 2, 1952, 59.

²³⁶ Quote from advertisement for the exhibit. Perennially underfunded, almost terminally so, the CDA funded the publicity for the exhibit in New York City on a donation from members of the Uptown Retail Guild who paid for a one-eighth-page advertisement. *New York Times*, May 13, 1952, 8. As a result of the Alert America Project, the CDA sought advice from psychologists to learn about how they might translate fears into support for the CDA. See Lori Lyn Bogle, *The Pentagon’s Battle for the American Mind* (College Station: Texas A & M University Press, 2004), 88-89; and, Grossman, *Neither Dead Nor Red*, 62-65, image of Campaign Folder on 64.

failed in its mission to channel fears into support for the remedies for survival that Civil Defense promised while stimulating defense spending.²³⁷

For its next demonstration, the CDA borrowed the military's ideas and added a dose of realism in an effort to increase its promotional value. Perhaps because of the competition for attention, the DOD objected to the emphasis on civil defense planned for the "Annie shot and appealed to the president to close the "open" shot. The DOD lost its appeal.²³⁸ Described along with a scenario of its military use by William Laurence of the *New York Times* as the "first public demonstration of a prototype of the tactical atomic bomb that may be used to annihilate armies of a would-be aggressor before they had succeeded in crossing the border of their intended enemy,"²³⁹ "Annie" was a sixteen kiloton bomb detonated from a tower. The CDA relied on donated equipment and material to photograph and later observe the effects of "Annie" on vehicles, two homes, fifty mannequins and clothing, and eight underground shelters. All three networks carried the event in a three part series, the first on Sunday—two days before the shot—with a preview of the location for the test, another on Tuesday morning with tours of the houses and material, and another for Tuesday afternoon with a recap of the test, including footage from automatic cameras positioned inside the homes.²⁴⁰ A two-page article about the test began on the front page of the *New York Times*, and dedicated only four

²³⁷ Allan M. Winkler, "A 40-year history of civil defense," *Bulletin of the Atomic Scientists* 40 (1984): 16-22, esp. 18.

²³⁸ Eisenhower agreed with the Secretary of State and the AEC, permitting *Annie* to become a media sensation. See NSC "Memorandum For Secretary of State, Secretary of Defense, The Chairman, Atomic Energy Commission, February 21, 1953. Folder: Atomic Energy-The President (May 1953-March 1956) (1), NSC Series, Subject Subseries, Box No. 1, A67-50 & A67-64, White House Office, Office of the Special Assistant for National Security Affairs: Records, 1952-61, Dwight D. Eisenhower Library.

²³⁹ William L. Laurence, "Atom Blast Today a Tactical Weapon," *New York Times*, March 17, 1953, 18.

²⁴⁰ Sidney Lohman, "News and Notes from the Studios," *New York Times*, March 15, 1953, X-13.

paragraphs to the civil defense aspect of the test while nine described the military maneuvers and the military value of tactical weapons, estimated that millions of people watched the detonation on television.²⁴¹ The house located 3,500 feet from the blast was destroyed, supplying the CDA with the now familiar image of the two-story white house imploded in the force of an atomic blast; another, at 7,500 ft from the blast, was badly damaged and demolished.²⁴² Before the shot, the CDA announced that the fully dressed mannequins would be used around the country to demonstrate the value of various types of clothing as protection during a nuclear war.²⁴³ Afterward, however, the planned utility of the mannequins as instructional models changed, and the mannequins, which rode out the blast in underground shelters and in cars, became part of the CDA's effort to drum up volunteers. The Las Vegas J. C. Penny store was among the first to host the mannequins, a display advertised in the *Las Vegas Review Journal* with a warning: "These mannequins could have been real people, in fact, they could have been you. Volunteer now for Civil Defense."²⁴⁴

The CDA gained little from "Annie." Despite all of the attention paid to the shot, it did not contribute to CDA's ability to mobilize the sort of public support necessary to attract more volunteers or congressional funding. As with the 1952 exercise, the primary benefit for CDA attendance at a nuclear detonation was the opportunity to be there.²⁴⁵

²⁴¹ William L. Laurence, "Millions on TV See Explosion that Rocks Desert Like Quake," *New York Times*, March 18, 1953, 1.

²⁴² *Nevada Test Site Guide*, 45.

²⁴³ "Autos on loan for tests," *New York Times*, March 8, 1953, 35

²⁴⁴ Cited in *Nevada Test Site Guide*, 45.

²⁴⁵ Hanson W. Baldwin decried the lack of support for civil defense in "Raid Defense Again Lags," *New York Times*, May 2, 1952

What civil defense promotions did generate was support for military programs. As Allan Winkler observed, the expectation during the 1950s was that the military would keep bombs from “getting through.”²⁴⁶ And this was an expectation nourished by the AEC and its military partners, who exploited the program, tests, and the CDA.

During the era of atmospheric weapons testing, the primary beneficiaries of publicity by and on behalf of civil defense were the AEC and their military partners. The AEC earned some kudos for helping the civil defense cause and, during Dean’s tenure, the good will of the Truman administration, too. The most significant result of civil defense participation with weapons tests was that it lent energy to expansion—a repeating loop where civil defense experiments and the circulation of film showing homes and mannequins obliterated in the wake of a bomb blast generated more support for civil defense experiments as the armed forces used their political muscle to transform the anxiety raised by the dramatic images of civil defense experiments into dollars for defense, and so on.

As the only other federal agency with the ability to authoritatively dispute Dean’s claims about the safety of atmospheric weapons testing, Dean kept the CDA at arm’s length throughout his Chairmanship. In the year before testing came to Nevada when publicity about the possibility of an atomic attack and its repercussions increased, Americans became accustomed to thinking that local civil defense officials were, perhaps, the only ones the public could turn to for advice about what to do and think about the confusing and sometimes contradictory information about nuclear bombs, radioactive health effects, and precautions. In March, the JCAE elevated the significance of the CDA when it held hearings in response to complaints from governors and mayors

²⁴⁶ See Winkler, “A 40-year history of civil defense” in *Bulletin of the Atomic Scientists*, 16-22, 18.

nationwide who did not know what to do in the event of an atomic attack. The hearings shed light on the lack of preparedness and coordination between the AEC and the CDA. Called to testify, Chairman Dean explained that the AEC was not prepared to train civil defense officials for an attack, while other AEC officials, who indicated that they were unimpressed with the CDA's mission, mentioned that they were instructing civil defense personnel in radiation monitoring to "check on radiation accidentally released" by AEC operations. Shields Warren left the CDA out of the picture altogether, testifying that the AEC was developing a simple geiger counter that people would be able to purchase for ten to fifteen dollars to measure the amount of radioactivity produced by a nuclear detonation.²⁴⁷ The hearings produced little in the way of practical advice to governors and other officials who needed it, and, except for JCAE requests that the AEC speed up its assistance to the CDA, provided no direction to the AEC or the CDA on ways to improve their working relationship. The CDA pressed on with very little help or interaction with the AEC. A month before the first test in Nevada, the CDA distributed a handbook urging that civil defense preparations begin immediately for "critical target areas," those communities with large production facilities or, like Las Vegas, with nearby military installations.²⁴⁸ What became known as the *Blue Book* recommended that CDA officials organize resources to provide first-aid and mortuary services, extend protection to industrial healthcare, stockpile medical equipment and medicine, and safeguard sanitation

²⁴⁷ William S. White, "'Reasonably Normal Life' Held Out To Survivors of Atomic Bomb Blast," *New York Times*, March 18, 1950 1, 6.

²⁴⁸ Harold B. Hinton, "Critical Target Areas Urged to Speed Civil Defense Plans: U.S. Manual Sees 17,000 Needed in First Aid if Atom Bomb Hits Average City—Tells How to Fight Germ, 'Nerve Gas' Raids," *New York Times*, December 28, 1950, 1, 4.

facilities and water supplies.²⁴⁹ It ended on an encouraging note: the organization of a “smoothly functioning team,” meant that civil defense officials could “meet even the worst disaster.”²⁵⁰ Las Vegas’ CDA official was, however, caught unawares on the Saturday morning of the first Nevada blast. When contacted by a *New York Times* reporter, he admitted knowing no more about the test than the reporter, having only learned about it from the press wires. He was willing, however, to speculate about what he did know: if the flash and blast were the result of a nuclear explosion, he supposed its radioactive particles would have “dissipated” before reaching Las Vegas. Still, he could not be sure. “If they are not spent in all that distance, then God help us all.”²⁵¹ Because of Atomic Governance, his brief prayer may have been the last time that any official with the federal government expressed publicly the dangers of testing nuclear weapons in Nevada.

²⁴⁹ For more on what was called the *Blue Book*, see Andrew Grossman, *Neither Dead Nor Red*, 41.

²⁵⁰ Hinton, “Critical Target Areas,” *New York Times*, December 28, 1950, 4.

²⁵¹ “Atomic Blast Shakes Las Vegas, Fifty Miles Away,” *New York Times*, January 28, 1951, 1.

CHAPTER NINE

SCIENTISTS AND ATOMIC SECRECY

Militarization of the peacetime atomic program was a political process that could not have occurred but for the military's ability to commandeer the expertise and authority of scientists to control what the public and elected officials learned about the atom bomb and its effects. Despite a postwar flurry of anti-military sentiment by scientists who lobbied for civilian control of the peacetime project and anti-atom bomb activism by those pushing for international control of atomic energy, the physical and theoretical scientists, chemists, biologists, health physics professionals, and medical doctors who came out of the Manhattan Project knew, as did university and laboratory administrators throughout the U.S., recognized that the deepest pockets for postwar funding would be military ones. The first element for militarization thus fell in place almost seamlessly after the war with the continuation of the Manhattan Project and the desire of all branches to continue existing contracts or forge new ones to develop military applications for atomic energy. Established scientists returned (physically or intellectually) to their routines or accepted more lucrative offers and moved. More than a few of them had ideas for using the network of relationships formed during the war to draw funding to their institutions, departments, and students. Younger unaffiliated scientists at Los Alamos, Oak Ridge, and throughout the Manhattan network of laboratories and production facilities carried on much as they had during the war in preparation for *Crossroads*. That *Operation* was the conduit for the passages of wartime practices into peacetime, practical institutional ones and manipulative, strategic ones. During the same span of months that prestigious scientists attracted public attention for political activism about the issues of

domestic and international control of atomic energy, some scientists also stepped into the limelight to oppose *Operation Crossroads*. Navy officers, committed to a dual argument that *Crossroads* was not only a national security imperative but also a scientific one and yet unable during peacetime to commandeer the authority, or even the silence, of all scientists, responded to oppositional scientists in a way that became routine as the peacetime program evolved: they denigrated the qualifications and integrity of oppositional scientists while relying on the authority of supportive scientists to achieve their political goals. For *Crossroads*, Navy officers drew on the authority of the Stafford Warren, Chief of the Manhattan Project's Medical Division, to be their Chief Medical Officer, and used him and other scientists to attest to the scientific value of the *Operation* at congressional hearings, media events, and in press releases. By January 1947, when the AEC took charge of Manhattan's resources, military officers had already begun gravitating toward those pro-military, or merely ambitious scientists and used them to help regain control over the program. As militarization continued, those scientists used their own growing authority in positions with the AEC or its affiliates and their seats on AEC advisory committees to make decisions about projects, testing, and permissible exposures that advanced military goals and subordinated civilian ones.

The second condition for militarization—Atomic Secrecy—also flowed from the Manhattan Project. Groves ensured the military's postwar control of atomic information ten days after Trinity. On July 26, 1945, he revised Manhattan's public relations program and situated himself at the top of a regime with authority over all aspects of "the principle." Truman signed off on Groves's plan before the Hiroshima bombing, giving Groves, and through him, the War Department, control over what could be known about

the bomb and its effects “now and for all time in the future.”¹ Truman surely envisioned that he was preventing the possibility that atomic technology—“the secret”—would leak out before a system to manage it was established. Groves, however, used the directive to legitimate his own position that the wartime authority he wielded under Roosevelt was still in force. It is impossible to know Groves’s intentions, but he was so forthright about his disregard of Truman’s authority that eight months after his plan achieved the force of law through Truman’s signature, the *New York Times* reported that Groves was “still bound by the security regulations handed to him by the late President Roosevelt.”² Groves extended the authority Truman gave him to protect “the secret”—a national security imperative—to justify his own self-interested claim that by virtue of his wartime service under Roosevelt he alone was entitled to authority over the program and its resources. And, he stood on that authority to conceal, from the president as well as the public, information about the program or atomic science that he was not inclined to divulge. In the year between the end of the war and the passage of the Atomic Energy Act, military officers from all branches anxious to protect the integrity of their institutions during demobilization and reorganization used appeals to national security to justify withholding information. Those officers interested in using the atomic program to secure their postwar future combined secrecy with appeals to national security as self-interestedly as Groves. After the Act passed, Groves and Nichols used their Manhattan expertise and established security protocols within the Military Establishment that, under the auspices of protecting “the secret” systematized among military officers the selective

¹ Major General Leslie R. Groves, “Memorandum to the District Engineer from Major General Groves,” July 26, 1945. TSCMED.

² “Authors Protest Atom Book Delay. Young Scientists Object to Publisher’s Insistence on Clearance by the Army,” *New York Times*, April 4, 1946, 10.

withholding of information—from the president as well as the public—to achieve the self-interested goal of recovering authority over the atomic program and its resources. Officers did more than protect “the secret” in the national interest, they concealed many in their own self-interest. Using Michel Foucault’s formulation, one can view this as an expression of “governmentality,” a force that combined totalitarianism with individuality that shaped the relationships of state actors and lent direction to state forces. Groves and officers who followed benefited from their official status as state actors and used “tactics rather than laws ... and [laws] tactics—to arrange things.”³ This was Atomic Secrecy.

By combining the opinions of pro-military scientists and Atomic Secrecy, military officers created the illusion that radioactivity produced by U.S. bombs or in production facilities was manageable. The creation of this fiction began as early as 1945 when Strauss proposed to Forrestal that the Navy experiment with atom bombs and it continued throughout the era of atmospheric testing. It was, in fact, the only way that military officers and their supporters could benefit politically from weapons tests. Atomic secrecy combined with the opinions of pro-military scientists gave officers the opportunity to create the impression that the U.S. military could successfully fight an atomic war in conventional ways while simultaneously generating support for military expansion and continued weapons testing by emphasizing the fearsomeness of an enemy’s bomb blast and the radioactive dangers and long lasting contamination that enemy blast would produce. The main reason for the illusion was to create the imaginative space for officers and their supporters to capitalize on weapons demonstrations, but its influence extended beyond the program and the corrosive effect it, and militarization, had on the ability of President Truman and congressmen to make informed decisions about nuclear weapons.

³ Michel Foucault, “Governmentality,” in *The Foucault Effect*, 95.

This was especially important with the atomic program because except for the explosion itself, discerning or measuring a success, failure, or even catastrophe, required scientific expertise.

The first section of this chapter focuses on the year following World War II and the determinative influence the Manhattan Project exerted on the peacetime program. It discusses the relationship between Truman's extension of Groves's authority over the program and Atomic Secrecy and the way the wartime experiences of scientists combined with military funding to create the conditions for the re-creation of a scientific community of atomic scientists and its effects. It uses examples from *Crossroads* to examine the exploitation of scientists and the subordination of their expertise by Navy officers interested in benefiting politically from the operation and how they used Atomic Secrecy to enforce their control over scientists and findings that would have been detrimental to the Navy's political goals. The second section examines how the military's monopolization of atomic resources and use of Atomic Secrecy marginalized the influence of precautionary minded scientists within AEC committees before and into the earliest stages of continental weapons testing. The third section follows that process into Dean's Chairmanship and the beginnings of administratively sponsored, official, deference to military desires that is the result of administrative decisions to settle disagreements between pro-military and precautionary minded scientists at the program's advisory and managerial levels. Among the by-products of pro-military advocacy by scientists and officials was the way it interfered with the establishment of federal standards for permissible radiation exposures. By preventing the adoption of internationally accepted standards, pro-military scientists influenced safety standards at

program facilities during a time of rapid expansion that dovetailed with the postwar explosion in the use of radioactive tracers in medicine and industry and the proliferation of x-ray machines from the floors of production plants to those of shoe stores.⁴ As a result, U.S. exposure levels remained higher, for a longer period of time, than those established by Great Britain, Canada, and other countries throughout the 1950s. The final section focuses on the ways that Willard Libby used militarization and pro-military scientists to advance his own professional ambitions. Libby, the developer of radiocarbon 14 dating, exploited his advisory committee authority, his position as an AEC Commissioner after 1953, and AEC sponsored fallout surveys to stifle challenges to his methodology launched by critics outside the AEC's sphere of influence.

Continental testing for political purposes depended on a cadre of pro-military scientists, ones who knew the relationship between radiogenic health effects and exposure, and who were willing to use Atomic Secrecy as the military had: to control what elected officials and the public knew about radioactive hazards. The goal for military officers, pro-military scientists, and their supporters among AEC officials and affiliates, was to capitalize on the most deadly effects of radioactivity that an enemy's nuclear attack would produce while claiming that American atmospheric detonations were safe to generate support for the maintenance and expansion of the armed forces. The strategy's success relied on creating and maintaining the artificial impression that under experimental conditions the dangers of an atomic (or nuclear) bomb explosion could be managed safety. Admiral Blandy and other Navy officers at *Crossroads* began promulgating this alternative reality in the interests of the Navy's postwar vitality, and it

⁴ For the history of shoe-fitting via x-ray and regulation of the machines, see Jacalyn Duffin and Charles R.R. Hayter, "Baring the Sole: The Rise and Fall of the Shoe-Fitting Fluoroscope," *Isis* 91 (2000): 260-282; for the growing awareness of the dangers in the U.S., see 274-278.

became a dominant theme as Groves and Nichols used the MLC and AFSWP to create the machinery and protocols within the Military Establishment that provided for the suppression of knowledge about the unpredictability of radioactive hazards while emphasizing and persistently reinforcing the notion in public and in government circles that the dangers were manageable ones. It was the scenario at the heart of the “re-education” campaign Lt. Gen. Hull started in 1948 and maintaining it had become routine for military officers by 1950 when Dean replaced Lilienthal and lent civilian authority to the military’s message. By the time Dean threw the weight of AEC officialdom into the creation of the Joint Information Office that consolidated and coordinated DOD and AEC resources for managing publicity for continental testing, the notion that radioactive hazards were manageable had achieved the status of dogma. Military officers and their supporters pulled off the feat by exploiting scientists for their expertise and authority and by using Atomic Secrecy to manipulate in self-serving ways scientific information. It was a dynamic relationship through which scientists, including those frustrated by Atomic Secrecy, generally flourished; and one that provided opportunities for some especially cooperative and ambitious scientists to exploit the program and Atomic Secrecy themselves, securing in the process influence and prestige that without militarization they might never have enjoyed.

This study provides another dimension to the postwar history of scientists and the conditions of their experiences and political activism that made them, in the words of Jessica Wang, “particularly vulnerable to anticommunist persecutions” by HUAC and anti-communists in Congress.⁵ With a focus on a lower tier of political engagement—the

⁵ Jessica Wang, “Science, Security, and the Cold War: The Case of E. U. Condon,” *Isis* 43(June, 1992): 238-269, 267. See also Wang’s *American Science in an Age of Anxiety*.

interpersonal political field of the scientific/military relationship—this chapter highlights the militarization of the program from the end of the war through 1958 as it was modulated and nurtured by scientists in positions of authority as program officials or advisors and their engagement with the military, AEC officials, and one another. It demonstrates that because of Atomic Secrecy, the authority exercised by pro-military scientists, and the tendency for them to use their influence to police the activities of their colleagues throughout the network of AEC affiliates, interpersonal political accomplishments and defeats were at least as important as those taking place on the national stage.⁶

Truman, the Censorship Directive, and the Peacetime Manhattan Project

At the end of the war, the nature of public discourse about “the secret” and the methods the government employed to keep it contributed to the public’s inability to recognize the pervasiveness of Atomic Secrecy. Though there was much discussion of secrecy at the time, the issue was whether “the secret” should be shared as part of an international atomic energy agency under the control the United Nations.⁷ Except for the scientific particulars of the bomb and its effects, people in the United States had every reason to believe that there was not much left to tell—or to hide. In fact, on the day Hiroshima was bombed—August 6, 1945,—one of the biggest stories in New Mexico was that secrecy would end: “Now They Can Be Told Aloud, Those Stoories [sic] of ‘the

⁶ Cf. Daniel J. Kevles comment about E. O. Lawrence’s “dislike of political involvement,” “Notes on the Politics of American Science: Commentary on Papers by Alice Kimball Smith and Dorothy Nelkin,” *Newsletter on Science, Technology, & Human Values* 24 (1978): 40-44, 43.

⁷ Arnold A. Offner, *Another Such Victory: President Truman and the Cold War, 1945-1953* (Stanford, 2002), n. 54.

Hill” as an excited typesetter had it for the headline of the *Santa Fe New Mexican*.⁸ And, in New York, “Atomic Bomb Held ‘Best-Kept Secret.’”⁹ Later, on August 12, President Truman approved the release of “The Smyth Report,” physicist and Chair of Princeton University’s Department of Physics Henry DeWolf Smyth’s essay on the Manhattan Project.¹⁰ Groves disapproved of the Report’s release, ostensibly because of the information it divulged but also, perhaps, because of his desire to release only his own history of Manhattan, one written by *New York Times* science reporter William Laurence, who Groves brought Laurence on board in an effort to monopolize the history of Manhattan. One day later, on August 13, the Office of Censorship issued a press release stating that censorship would end “one hour after President Truman announces victory over Japan.”¹¹ As Manhattan’s chief, General Leslie Groves, did during the war when he thwarted presidential and congressional inquiries into the operation and finances of Manhattan under the auspices of national security, he and others continue this same strategy after the war. Truman that made it possible for them to do so.

But censorship, in the form of Atomic Secrecy, did not end. Before the first atom bomb was dropped on Japan, President Truman signed security protocols devised on July 26 by Manhattan’s Groves that were, under orders from the War Department and

⁸ “Now They Can Be Told Aloud, Those Stoories [sic] of ‘the Hill’,” *Santa Fe New Mexican*, August 6, 1945, 1.

⁹ *New York Times*, August 8, 1945, 2.

¹⁰ H. D. Smyth, “A general account of the development of methods of using atomic energy for military purposes under the auspices of the United States government, 1940-1945,” later published as, *Atomic Energy for Military Purposes: The Official Report of the Development of the Atomic Bomb Under the Auspices of the United States Government, 1940-1945* (Princeton, N.J., Princeton University Press, 1945).

¹¹ “Censorship’s End is Fixed,” *Arizona Republic*, August 14, 1945. 1.

President Truman himself, kept secret from the public and from Congress.¹² The War Department circulated the new censorship directive upon the cover sheet of a document that, ironically, claimed to reveal the entire atomic story—“The Smyth Report.”

The “Censorship Directive,” attached to what became known as the Smyth Report,¹³ gave the War Department control over the domestic press and left little doubt that it intended to maintain its vitality indefinitely by retaining absolute control of atomic weaponry and science. The Directive appeared inconspicuously, as the second to last paragraph of the one-page cover sheet that offered standard requirements of release (“after 9:00 P.M. EWT, Saturday August 11, 1945,” for radio and the day following for “morning papers”):

The best interests of the United States require the utmost cooperation by all concerned in keeping secret *now and for all time in the future* all scientific and technical information not given in this report or other official releases of information by the War Department.¹⁴

A month later, the president (through the War Department) reiterated the Directive, while adding euphemistically that the action was “in the national interest and not with any idea of imposing censorship upon the press or radio,” yet emphatically advising editors that

¹² On July 26, 1945, Groves revised Manhattan’s public relations program, placing himself at the top of a pyramidal regime covering all aspects of “the principle” that was, itself, to remain secret. “Memorandum to The District Engineer from Major General Groves,” TSCMED. Truman seems to have approved Groves’s initiative at the same time he ordered the release of the Smyth report because “so many fake scientists were telling crazy tales about it.” Harry S. Truman, *Off the Record: The Private Papers of Harry S. Truman*, Robert H. Ferrell, ed. (New York, 1980), 60.

¹³ H.D. Smyth, *A General Account of the Development of Methods of using Atomic Energy for Military Purposes Under the Auspices of the United States Government 1940-1945*. Smyth was the Chairman of Princeton’s Department of Physics and worked as a consultant on the Manhattan Project.

¹⁴ Emphasis mine. “Future Release” TSCMED, [undated]. The Directive was not distinguished in any way, even though other elements of the release were underlined or placed in all capitals for emphasis.

they were not to share that information with their readers.¹⁵ The media's wartime experiences accustomed them to the routine dispatches and restrictions imposed by the War Department and the Office of Censorship, but when combined with the additional presidential authority, the proclamation could not have been received casually.¹⁶ That the nation's newspaper editors took the order not to reveal the existence of the Directive seriously seems to be borne out by the fact that its issuance was not reported.¹⁷

A simplified three-tier schematic offers a way to visualize the rudiments of a system that made room for the extra-constitutional expansion of authority that was Atomic Secrecy. At the top of the imaginary diagram were those policy initiatives established by the president, legislators, or executive-level officials. President Truman's approval of Groves's plan to protect "the secret" provides an example of an executive-level initiative. At the lowest, practical level of the diagram, unelected delegates, administrators, and officials, devise projects and otherwise go about the business of carrying out their duty to implement policy. All the public learned of each tier emerged through the middle, communicative level, where officials translated for public consumption the policies and their implementation. Ideally, the correspondence between the three is precise: policy is made and implemented according to its officially-stated purpose, and explained with as much factual integrity and accuracy as possible. Realistically, however, disjunctions of varying degrees and consequence occurred across

¹⁵ September 14, 1945. This latter caveat was prominently marked "*CONFIDENTIAL—NOT FOR PUBLICATION NOTE TO EDITORS*," TSCMED.

¹⁶ In addition to charges of treason that might have attached to anyone disobeying the directive, *habitus* played an important role in creating an atmosphere of acceptance: "The *habitus* ... ensures the active presence of past experiences which ... tend to guarantee the 'correctness' of practices and their constancy over time, more reliably than all formal rules and explicit norms." Bourdieu, *The Logic of Practice*, 54.

¹⁷ Based upon a sampling of newspapers. That is not to say, however, that mention was not made somewhere, in a newspaper or journal the identity of which I am, as yet, unaware.

the three levels, the result of simple confusion to outright deception. This highlights a paradox embedded in the system designed to protect what most believed was the nation's most valuable treasure and that has been in evidence through earlier discussions of militarization: that its machinery was so easily manipulated that those with national security authority who wished to do so could use the system to subvert official national security policies. Atomic Secrecy guarded not just one "secret," but many. It gave military officers and their supporters the tool they needed to use the program in pursuit of their own self-interested goals. In the process of selecting what would become known about the bomb, radioactive health effects, and as occurred during Dean's tenure, the realistic value of battlefield tactical weapons, they stripped the public of the opportunity to engage in any knowledgeable or meaningful way in the political process and withheld from Presidents Truman and Eisenhower, and Congress as well, the information they needed to carry out their responsibilities under the constitution and to the electorate.¹⁸

One of the first public indications that the idealized view of how the Truman administration was managing "the secret" was not operating as it should came out in April 1946 when no one could answer why McGraw-Hill insisted on submitting a graduate level textbook on applied physics to the War Department for clearance when the

¹⁸ See James C. Scott's analysis of a "dual culture" where elites, or officials, censor or employ a variety of rhetorical and ritual strategies to obscure from the view of their subordinates that which is "negatively valued" or embarrassing. Typically, political challenges result when an official fails to present a uniform and "flattering self-portrait." *Domination and the Arts of Resistance: Hidden Transcripts*, 50-55.

Scholars took an active interest in the tension between secrecy and democracy during the early cold war. Among the earliest was Columbia University law professor Walter Gellhorn who argued that continual re-evaluation of policies would provide the protection necessary to preserve important scientific secrets without impinging on either democratic rights or scientific advancement. *Security, Loyalty, and Science*, 34-75. Newspaper editor James Russell Wiggins focused more intently on the anti-democratic effects of secrecy in general and government restraint in 1956 *Freedom or Secrecy*, esp. 19-23, 98-129. Sociologist Edward A. Shils discussed the distance that security regulations created between Americans and the government and derided secrecy as a virulent form of extremism that was destructive of liberty. *The Torment of Secrecy: The Background and Consequences of American Security Policies*, 21-35, 211-234.

War Department asserted that it was not in the censorship business.¹⁹ The authors of the book, nine University of Pennsylvania instructors and researchers in chemistry and physics, refused to comply with the publisher's request that they remove some sections of the book because "two competent critics" said they contained "classified material" and also refused a request by McGraw Hill that they allow the War Department to review a final manuscript draft. A spokesman for the group took a stand in New York at the offices of the "Americans United for World Government" and argued that there was nothing in their book that had not been published before. He also pointed a finger at the Manhattan District for "exceeding their authority," and engaging in "thought censorship." In a companion article, the War Department denied knowing anything about the book and noted that it had not "insisted on censorship of atomic material" since the end of the war.²⁰ The spokesman for the War Department also pointed to Groves, but only in the limited way of mentioning his authority over the Manhattan Project and that he operated under regulations he received from President Roosevelt, and to Truman, who back in September, asked publishers "to refrain from printing material concerning the atomic bomb" without submitting it for review by "the proper authorities." Though able to say only that the War Department had not reviewed the book, the spokesman was quick to cast doubt on the integrity of the nine authors: "'there must be something wrong' with anyone who would not be willing to show a book in which the security of the nation might be compromised."²¹ The dispute disappeared from the pages of the *New York*

¹⁹ "Authors Protest Atom Book Delay: Young Scientists Object to Publisher's Insistence on Clearance by Army," *New York Times*, April 4, 1946, 10.

²⁰ "Book Not Submitted to Army," *New York Times*, April 4, 1946, 10.

²¹ "Book Not Submitted to Army," *New York Times*, April 4, 1946, 10.

Times and appears to have dissolved with the editor of the collection, William E. Stephens, at that time an assistant professor of physics, taking the lead and getting the book published by The Science Press in Lancaster, Pennsylvania.²²

The Censorship Directive relinquished the civilian executive authority of the president to a military officer during peacetime—a move that represented a revolutionary turning point in American history. The revelations that emerged because of the bombings in Japan, the Smyth Report, the War Department’s declaration heralding the end of censorship, and the imperative to keep “the secret,” all masked a profound, and clandestine, transformation. A comment Senator Brien McMahon made seven months after the Directive’s issuance captures its significance within the context of the early postwar period. During the congressional debate about whether atomic energy should be settled in civilian or military hands, McMahon railed against the possibility that the authority the military wielded during wartime might be extended into peacetime: “for the first time in peacetime history ... the military would have ‘censorship’ powers over civilians ... would destroy the basic concepts on which our government was founded.”²³ Subsequent events, including the passage of the “civilian” Atomic Energy Act and the authority that the military began flaunting in the late 1940s and 1950s, obscured the transfer of authority that took place with Truman’s Directive. Even someone as familiar with the workings of government from the administrative and congressional perspectives as Senator Daniel Patrick Moynihan, a proponent of openness and Chairman of the

²² William E. Stephens, ed., *Nuclear Fission and Atomic Energy* (Lancaster, Pennsylvania: The Science Press, 1948)

²³ Arthur H. Vandenberg, *The Private Papers of Senator Vandenberg*, 256.

Commission on Governmental Secrecy, pointed to the Soviets' 1949 atom bomb as the point in time when atomic secrecy became onerous:

Americans were used to secrecy during wartime. [But] this was wholly new. Profound aspects of the culture, even the nature of energy ... were now to be known by a few but withheld from the rest.²⁴

The Directive affected atomic science in three ways: it protected Groves and other military officers from oversight; it prevented the public and elected officials from scrutinizing the activities of Groves and other military officers in those granted authority over atomic science; and, it created a consensus-shaping narrative that channeled all authoritative discussion about the hazards of atomic weapons during the year between the end of the war and the passage of the Atomic Energy Act into political debates about domestic and international control of atomic science.

From the public's perspective, Groves's ability to withhold concrete information about the effects of the Trinity bomb combined with the supercharged political climate to cast doubt on any non-official version of the health effects of an atomic explosion. Groves's denial that radioactivity had much to do with the deaths and sickness following the Hiroshima and Nagasaki bombing made it easier for him and others to dismiss the disturbing accounts of radioactive hazards contained in the book *One World or None* as nothing more than the alarmist exaggerations of advocates for international control of atomic science. And yet, Groves wrote in his memoirs that one of the primary concerns before Trinity was to make sure that fallout would not "pass over any populated areas" until its radioactivity had "thoroughly dissipated."²⁵ When Stafford Warren investigated

²⁴ Moynihan, *Secrecy*, 141.

²⁵ Groves, *Now It Can Be Told*, 291-292.

the blast's effects, he found that the thermal effects were "several times greater than expected." As for the blast itself, it eviscerated jack rabbits more than 800 yards from the detonation and caused "extensive damage" to a farm house three miles away. If used in battle, he predicted that the bomb would have caused "severe casualties" to any personnel within two miles and severe eye damage to any within five miles, enough that it would put them "out of action several days if not permanently." Should another experiment be conducted, Warren told Groves that any weapons test of Trinity's size, 19-21 kiloton, should only be repeated in an area "free of population" for at least 150 miles.²⁶ Truman's Directive gave Groves the ability to keep Warren's report secret from the public and from elected officials. As an early expression of Atomic Secrecy, it prevented the public and congressmen from learning the sort of information that might have operated against the notion that gained momentum in the months following the war that atom bombs represented an economic alternative to the burden of maintaining a peacetime military force. It is impossible to know whether Groves withheld it because of his desire to withhold all information about atomic weapons or whether he believed that it might be used politically. Ironically, however, had Warren's report been made available to authenticate the suppositional scenarios in *One World or None*, the American public and congressmen alike might have been less inclined to consider that atom bombs could replace conventional forces and the armed forces would have been saved at least some of the energy they spent following the war toward that very end.

Politically, the Directive bought Truman political breathing room. By continuing Groves's authority, he avoided the possibility that congressmen would uncover politically

²⁶ For the report on the Trinity blast, see Stafford Warren to Groves, "Report on Test 16 July 1945," 21 July 1945, TSCMED.

damaging information about the Project's management at the same time he satisfied himself that "the secret" would be safe.²⁷ It also relieved Acheson from fulfilling promptly his obligation to the Interim Committee to channel their proposal into the hands of congressmen for legislation establishing the peacetime program and relieving Groves of his responsibility—and authority. Details about the Project's scope helped to diffuse the moral outrage that erupted after the bombings of Hiroshima and Nagasaki.²⁸ And, the controversies about domestic control and international control of atomic science allowed scientific information about the bomb and its effects to be marginalized as politically motivated.²⁹ Such political suspicions made it easier for Admiral Blandy and other military officers to invoke the same anti-scientific attitude exhibited by Groves and Truman, and to use scientists to achieve their own goals and to use scientific information only insofar as it supported those same goals. Truman turned to Groves for scientific advice and although he approved the release of "The Smyth Report," over Groves's

²⁷ For Groves's refusal to submit to a presidentially-authorized audit of Manhattan, see "Memorandum for the President from James F. Byrnes," March 3, 1945, TSCMED; "Memorandum for the Secretary of War from Groves," March 6, 1945, TSCMED; "Memo to File from Groves," April 7, 1945, TSCMED. For details about the program's lack of authorization for expended funds, see the president's concerns included in the "Memorandum from Office of the Chief of Engineers to Manhattan," July 12, 1945; the related Manhattan circular to Berkeley's "Radiation Laboratory Circular Letter No. 3867," July 12, 1945 from E. Reybold, Lieutenant General Chief of Engineers to All Concerned, EOL; and "District Circular Letter Admin. 46-1," July 16, 1945 from K.D. Nichols, Colonel, Corps of Engineers, District Engineer, EOL. For Groves's attempts to maintain his authority beyond a decision by Congress on control, see "Memorandum to Major General L. B. Groves," February 2, 1946, TSCMED.

²⁸ As Paul Boyer pointed out, such fantastic details operated to minimize the moral complexities until "the obliteration of a city seemed merely a regrettable piece of bad luck." Paul Boyer *Fallout*, 13. For the debates after the bomb's use, see: "General Opinion Seems To Turn With Horror Against Missile" *New York Times*, "Letters to the Editor" August 11, 1945; Secretary of State James Forrestal, diary entry for August 10, 1945, *The Forrestal Diaries*, 83. For internal dissenters and social responses, see Sherry, 114-119. For psychological issues, see Robert Jay Lifton, Greg Mitchell, *Hiroshima in America, passim*.

²⁹ See Bourdieu's analysis of the techniques of dispute resolution, where the state protects itself with a "quintessential form of authorized, public, official speech ... spoken in the name of and to everyone." Pierre Bourdieu "The Force of Law: Toward a Sociology of the Juridical Field" *The Hastings Law Journal* (1987) 836-838.

objections, said that he did so only because “so many fake scientists were telling crazy lies about it.”³⁰ Despite Groves’s friendship with Warren and his respect for Oppenheimer, he had a general disdain for scientists and demonstrated concern about Oppenheimer’s role in legislation for control of atomic science.³¹ During a hearing, Oppenheimer explained the scientists’ resistance to regimentation and control, asking for the atomic energy bill to be reinforced to assure that a commission would “not interfere with scientific work except when there is a national hazard involved.”³² The Directive ensured that Groves, and Admiral Blandy and other officers and AEC officials after him, had sole discretion to interfere—with science and with what elected officials, including the president, could know—and used it to reclaim authority over atomic science. The following overview analyzes the role of scientists in militarization.

Scientists: Community, Culture, Discipline

Like military officers, pro-military scientists used Atomic Secrecy and media manipulation to create an illusion of safety that few in the public sphere could, or were willing, to contest. One of the reasons for this was that scientists who worked on the program who could speak with authority about it did not launch strong public challenges during the late 1940s and through 1951 when pro-military scientists asserted their dominance. During the height of the fallout controversy after 1955, Atomic Secrecy proved insufficient to prevent oppositional opinions of notables such as Linus Pauling and Albert Schweitzer from casting doubt on the AEC’s assertions of safety. The

³⁰ Harry S. Truman, *Off the Record: The Private Papers of Harry S. Truman*, Robert H. Ferrell, ed. (New York: Harper & Row, 1980), 60.

³¹ Groves was “defensive” around scientists while boasting that his ten years of schooling after West Point gave him the equivalent of two Ph.D.’s. Stanley Goldberg, “General Groves and the Atomic West,” *The Atomic West*, Bruce Hevly and John M. Findlay, eds., 47.

³² “Oppenheimer Statement,” October 18, 1945. TSCMED.

program's pro-military scientists worked to maintain the illusion by promulgating misleading statistics in the public sphere by averaging exposures across space or population to diffuse exposure levels and offering questionable comparisons between man-made and naturally-occurring radioactivity. They reinforced these tactics with appeals to national security and used their authority to coerce and silence their colleagues who expressed doubts. However strong the support they received from AEC administrators, these pro-military scientists could not have held sway had their decisions not been met by the tacit acceptance of officials such as Shields Warren and others throughout the program who did not speak up as clearly as they might to the president, other elected officials, or to the public. This complicity allowed the AEC to manage testing in a way that hid, rather than prevented, risk. In part, their silence was the result of their dependence on the AEC's viability and its dependence on military projects. But their reluctance to air their disagreement with the scientific validity of the positions taken by their pro-military colleagues was also a product of Manhattan Project *habitus* and their membership in a community of scientists who carried their wartime experiences, cultural practices, and habits of thought into the peacetime program.

Though using the concept of a community to explain the behavior of scientists is problematic for the reason that it depersonalizes and aggregates individuals of different backgrounds, education, ideologies, and political views, it is a useful way to understand inter-personal relationships and the decision-making of those who tied their expertise and futures directly or indirectly to the peacetime atomic program.³³ While the elaborate

³³ I am mindful of Peter Buck's admonition that "community" is a symbolically laden category of social organization and appreciate the argument he makes that researchers using it to understand the political activism of scientists and their influence over public policy unavoidably imply the existence of traditional values to what was a twentieth-century phenomenon: the "most modern of intellectual enterprises." As

security precautions and compartmentalization of the Manhattan Project have received a measure of attention that the peacetime program has not, there was very little difference between the insularity and dependence of scientists on the military throughout the wartime and peacetime projects.³⁴ The peacetime continuation of the Manhattan Project meant that there was no interruption in the synergy between the program and the armed forces in the eighteen months between the end of the war and when the AEC absorbed its resources. After the AEC took on the resources and contractual obligations of the Manhattan Project, new funding streams dedicated to military research and production provided even more jobs for scientists—and even more reasons for scientists and their respective institutions to avoid alienating their benefactors. As Stuart W. Leslie points out, in the immediate postwar period, “military R & D budgets fell off only slightly from their wartime peak (itself fifty times higher than prewar levels), and then began to climb rapidly.”³⁵ The value of military funding to affiliated institutions and their scientists created the same conditions for group solidarity that the importance of securing, and then

Burk pointed out, Max Weber’s insights about the dependence of scientists on their benefactors lent understanding to the political activism or autonomy of atomic era scientists. Weber’s assessment of the early twentieth-century dilemma of scientists in America describes precisely the operational circumstances in which postwar atomic scientists found themselves. It is for that reason that this study points to the interpersonal and inter-institutional relationships of scientists working for the AEC and its affiliates to assert that “community” is a valid way to understand a group of people with common affinities, similar wartime and peacetime experiences, and related through professional expertise and pursuits. Peter Buck, “Images of the Scientific ‘Community’: Commentary on Papers by Alice Kimball Smith and Dorothy Nelkin, *Newsletter on Science, Technology, & Human Values* 24 (1978): 45-47, citing Weber, “Science as a Vocation,” *From Max Weber: Essays in Sociology*, trans. and ed. by H.H. Gerth and C. Wright Mills (New York: Oxford University Press, 1958), 131.

³⁴ For an overview of the extension of the federalism inherent in the Manhattan Project into the postwar contract system, the classic study is Don K. Price, *Government and Science*, 76-79.

³⁵ Stuart W. Leslie, “Science in Cold War America” in *The Politics of Western Science, 1640-1990*, Margaret C. Jacob, ed. (Atlantic Highlands, New Jersey: Humanities Press International, Inc., 1994), 202-203. Leslie references the statistical overview by Paul Forman, “Behind Quantum Electronics: National Security as Basis for Physical Research in the United States, 1940-1960,” *Historical Studies in the Physical and Biological Sciences* 18 (1987):153-157.

maintaining, authority over atomic program generated among the typically compulsively competitive Joint Chiefs and upper echelon. Along with the economic incentives that bound the community, the political value of atomic science to the military created additional incentives for scientists to avoid public disputes. Internal and external factors—the national security implications of their work that insulated them and their decision-making from colleagues not affiliated with the program; the government’s monopoly over atomic resources and security clearances that made them, and their institutions, entirely dependent on federal largesse; and the intrinsic value of their work, “impressed by the possibility of advancing his particular field of research”³⁶—helped the community cohere, tempering personal and institutional competitiveness and the disciplinary, professional, or philosophical differences among them.³⁷

The similarities between wartime objectives and peacetime ones contributed to the reproduction by scientists and professionals who were veterans of the Manhattan Project of wartime cultural practices and ways of thinking into the peacetime program. Newcomers modeled their behavior on that of Manhattan’s veterans and ensured its replication.³⁸ As a product of personal experience and history, this was a function of *habitus*, where

individual and collective practices [become] schemes of perception, though and action, tend[ing] to guarantee the ‘correctness’ of practices and

³⁶ Price, *Government and Science*, 79.

³⁷ For the physical rituals of scientists working in secret laboratories that acculturate and reinforce the institution’s norms, see Gusterson, *Nuclear Rites*; also n. 78 on 104 above.

³⁸ See Balogh, *Chain Reaction*, 27, citing Frank J. Newman, “The Era of Expertise: The Growth, The Spread and Ultimately the Decline of the National Commitment to the Concept of the Highly Trained Experts: 1945 to 1970,” (Ph. D. Dissertation, Stanford University, 1981), 55, 59, and Ch. 3.

their constancy over time, more reliably than all formal rules and explicit norms.³⁹

Another wartime holdover was decision-making by committee. The AEC's institutional and advisory committees replicated and reinforced Manhattan practices, where committees served practical and social functions as an intellectual forum to work through scientific and technological dilemmas, where scientists exerted whatever influence they could in the compartmentalized structure of the program, and where they shared and modulated grievances. Committees insulated atomic scientists, protecting their decision making process from review from those outside the committee. As militarization progressed, committees became the venues where pro-military scientists marginalized their more precautionary colleagues through force of numbers, coercion, or by withholding information upon which pro-military scientists based their conclusions. During a meeting of the AEC's "Special Advisory Committee on Biology & Medicine" for example, five scientists argued over the scope of a study being conducted by a sixth, Merrill Eisenbud, of Strontium 90 concentrations in a North Dakota milkshed. Eisenbud, who had been one of the few scientific professionals who worked for the program itself as director of its New York Operations Office, was at the meeting but refused to clarify his numbers despite his colleagues' confusion:

Dr. Warren: I think that in light of these points the probability is that it is closer on the average to the lower end of the range, but I think we will have to admit that there could be a possibility of an increase by a factor of ten in scattered individuals.

Dr. Failla: That is not what Eisenbud just said. He is saying for a large population it could be 25. So the individual increase will have to be added to that.

Dr. Warren: No, he is not saying for a large population. As I understand it, he is saying for scattered people in a large population.

Dr. Failla: No.

³⁹ Pierre Bourdieu, *The Logic of Practice*, 54.

Dr. Dunham: Scattered communities is what he is talking about.
Dr. Failla: No, he is saying a large population in North Dakota.
Dr. Marinelli: There is no large population in North Dakota. . . .
Mr. Eisenbud: There are relatively few numbers up there. This is very complicated.⁴⁰

Eisenbud's statement ended the discussion in a way that prevented anyone in the group from evaluating his data and did so dismissively as though the experts who shared membership on the committee with him were not qualified to understand it in the first place. The insular committee venue and the interdependence of the scientists within the program and their complete dependence on the AEC created the conditions for authoritarianism and acquiescence among scientists with the AEC. Scientists asked questions; but, as the above exchange demonstrates and as was indicative of conversations throughout the morning and afternoon sessions of the meeting, those who received incomplete answers or who entertained lingering reservations demurred.

Anti-communism also contributed to defining the boundaries of the community and coercing silence, if not obedience, from its members. Loyalty investigations, at least 400,000 performed by the AEC alone before 1953, kept scientists out and those inside it in line—a reason why membership in the Federation of Atomic Scientists dropped from 3,000 right after the war to fewer than 1,000 by 1950.⁴¹ Over the same period of time, the American Association for the Advancement of Science, an organization “militantly” opposed to loyalty oaths during the late 1940s, having formed a “Special Committee on Civil Liberties for Scientists, in 1950 demanded protection for scientists from

⁴⁰ Transcript, “Special Meeting of the Advisory Committee on Biology & Medicine to the Atomic Energy Commission,” November 26, 1956; U.S. DOE Archives, 326 U.S. Atomic Energy Commission; Collection Secretariat, Box 1271, Folder O & M-7 ACBM BP (“Transcript”), 41-42.

⁴¹ Cauter, *The Great Fear*, 465.

congressional persecution, reversed course and dropped its calls for rights for scientists and scientific openness.⁴² The revocation of Oppenheimer's security clearance and subsequent hearing pitted some of the most prestigious scientists in the community against one another while signaling to them all that their livelihoods depended on satisfying the militarist objectives of AEC officialdom.⁴³

Manhattan's institutional culture and the continuation of the interdependence of atomic scientists and the military contributed to the development of a pro-military subculture through which scientists such as Norris Bradbury in 1946, Gordon Dunning and Gioacchino Failla in 1951, and Libby beginning in 1953 flourished by reason of their support of militarization and experimentation. Scientists belonging to this sub-community gave military officers the ability to create the illusion that U.S. radioactive fallout was a manageable phenomenon, providing AEC Chairmen Dean and Strauss, along with other AEC administrators and managers the institutional and public support necessary to satisfy the individual ambitions and institutional goals of AEC administrators and military officers. This was a process with wartime origins in Manhattan and the earliest days of planning for *Operation Crossroads*.

⁴² A. G. Mezerik, *New Republic*, February 5, 1951, 12-13. For the Special Committee, see Jessica Wang, "The Case of E. U. Condon." Wang points out, however, that organizations such as the AAAS and FAS proceeded cautiously, and were "conservative in character." "The Case of E. U. Condon," 250.

⁴³ Indicating that scientists at Los Alamos believed that the Oppenheimer transcript demonstrated that "dissent" was apparently enough to cause the revocation of security clearances, the Los Alamos Branch of the Federation of American Scientists and its Committee for Special Study of Personnel Security Program asked ("We respectfully request...") the AEC to support their request that President Eisenhower revise Executive Order 10450 to clarify its existing provisions and to limit the evidence that could be used in a security investigation by including a "statute of limitations." William C. Dickinson, Frederick Reins, to Admiral Lewis L. Strauss, July 15, 1954. Personally given to Strauss at Los Alamos Laboratory. See Press Release, July 16, 1954, "Comments on Interview of F.A.S. Committee with Lewis L. Strauss, Chairman, A.E.C." Office of the General Manager, Atomic Energy Commission, received September 20, 1954. Original in Herbert Hoover Presidential Library, Strauss Papers, AEC, Oppenheimer, J. Robert.

Although Strauss's original proposal to Forrestal was what breathed life into *Operation Crossroads*, it was Truman's Directive that made it possible for Navy officers to count on scientists with Manhattan to help them get approval for the *Operation* and to manipulate perceptions in such a way that allowed Navy officers to promote the notion that radioactivity was a manageable phenomenon—at least by the U.S. Navy—and after the maneuver to prevent the publication of any scientific findings that did not support that fiction. The significance of *Crossroads* as the first political use of atom bombs was discussed earlier. The examination of the *Operation* in this chapter illustrates how Navy officers exploited Manhattan scientific expertise and resources and Atomic Secrecy for political purposes. It reinforces the points made earlier about the significance of Manhattan to the peacetime program. It also demonstrates the significance of the *Operation* for the peacetime program at a point in this analysis where the similarities between Navy's political use of demonstrations and those conducted in Nevada through the AEC/DOD partnership are evident. *Crossroads* established a peacetime model for officers interested in using the program and tests to achieve their own self-interested political ambitions. And at a time when the political activism of atomic scientists was in its infancy, the Navy's practice of denigrating not only the positions but the abilities of oppositional scientists contributed to the reluctance of some scientists to speak out on a national plane as the program matured.⁴⁴ As Robert K. Merton pointed out before World War II, scientists were not able to separate their "human," personal interests from their

⁴⁴ On the ideological differences that arose because of the activism of scientists, see Walter McDougall, "Commentary: The Cold War Incursion of Science," *Diplomatic History* 24 (2000), 119. Balogh extends the history of this early postwar era to argue that nuclear expert authority declined over time with the proliferation of experts representing different disciplines and agencies. *Chain Reaction*, 221-301, esp. 235-251 for the transitional phase where AEC experts lost their monopoly over information. For example, see "Vandenberg is criticized," *New York Times*, March 3, 1946, and *New York Times* March 21, 1946, 3; "Veteran Favors Ban on Atom Bomb Test," April 4, 1946, 10.

work, and atomic scientists were as interested in their futures as anyone else during the early postwar period.⁴⁵ It is difficult, however, not to see the decline of scientific activism as a lost opportunity to temper the enthusiasm for nuclear weapons early in the peacetime program's history.⁴⁶ There is, perhaps, no better indication of how thoroughly militarization and the insularity of the scientific community influenced the ideas about nuclear weapons, warfare, and the effects of fallout than the emergence of a climate by 1958 where advocating for a peaceful solution to the arms race could make one of the nation's premier scientists a subject of ridicule and the reasons for the denial of a grant to fund his institution. In May 1958 well after the fallout debate had brought calls from the international community for the U.S. and the U.S.S.R. to stop testing atmospheric weapons, Linus Pauling, Chairman of California Institute of Technology's Division of Chemistry and Chemical Engineering, joined them. Lee DuBridge, CIT's president, called Pauling into his office to tell him to stop his public support for peace. Pauling's notes indicate that DuBridge told Pauling that he had become a "laughing stock," that the Board of Regents wanted him fired, and that his anti-testing position was the reason why CIT's Development Program had lost out to Harvey Mudd College on a \$16 million dollar grant.⁴⁷ DuBridge's quarrel with Pauling was surely influenced by the lost grant, but his actions do reflect on the changes that had taken place not only in his own thinking but socially and culturally since 1947 when, even then CIT president, found activism a

⁴⁵ Merton, "The Reward System of Science," *The Sociology of Science: Theoretical and Empirical Investigations*, Norman W. Soter, ed. (Chicago and London: University of Chicago Press, 1973), 326-327.

⁴⁶ See Wang, "for a brief, exciting, tumultuous period, atomic scientists moved to the center of American politics." *American Science in an Age of Anxiety*, 9.

⁴⁷ Linus Pauling, Notes by Linus Pauling re: Communications with Lee DuBridge concerning Pauling's peace activities, May 21, 1958. Collection: Linus Pauling and the International Peace Movement. Oregon State Special Collections. Online at <http://library.oregonstate.edu/specialcollections/coll/pauling/peace>

virtue, and singled out peace activism especially. Scientists should take an interest in the political affairs around them, “including joining hands with other citizens when called to tasks of peace.”⁴⁸ And, DuBridge was among those who took a stand against *Operation Crossroads* and spoke out publicly at least three times against the Navy’s claims that *Crossroads* was necessary to advance scientific understanding.⁴⁹

Navy officers attacked oppositional scientists in the press and used scientists already affiliated with the project to argue for the *Operation*’s scientific value. Their aggressive defense of *Crossroads* as a scientific experiment was explained by the precariousness of the Navy’s future after the bombings of Japan. The notion that ships were obsolete was one that arose immediately. U.S. commentators even questioned imprisoned Nazi officers for their opinion about the Navy’s future. Hermann Goering expressed sympathy, mentioning that it appeared that the atom bomb made “battleships impractical,” but added optimistically that technology had always come up with a defense.⁵⁰ The optimistic line was one touted by the Navy’s upper echelon ahead of *Crossroads*. Admiral Chester Nimitz discounted the possibility that navies were obsolete, and the *Operation* was the way he expected to prove that point: “Let the ‘false prophets’ prepare the headlines in advance, such as ‘atomic bombs sink ships in test’ or ‘navy is doomed’ but don’t take them seriously.”⁵¹ Nimitz took issue with the positions of those

⁴⁸ Lee A. DuBridge, “The Responsibility of the Scientist,” *California Institute Forum* (1) (1947): 1-8. Included in “Lee Dubridge—Key Participants—Linus Pauling and the International Peace Movement.” Special Collections, Oregon State University. Online at [http://osulibrary.oregonstate.edu/specialcollections/coll/pauling peace](http://osulibrary.oregonstate.edu/specialcollections/coll/pauling%20peace).

⁴⁹ L. A. Dubridge, “Atomic Tests Queried” in Letters to the Times, *New York Times*, May 5, 1946; “Doubts Value of Tests,” *New York Times*, May 15, 1946, 8; *Bulletin of the Atomic Scientists*, May 15, 1946, 14.

⁵⁰ *New York Times*, August 9, 1945, 17.

⁵¹ Admiral Chester Nimitz, *New York Times*, February 13, 1946, 13.

he called “false prophets.” In fact, the most prevalent arguments by scientists and other experts were not that atom bombs would sink ships, which were resilient and designed to withstand blast damage, but, that radioactivity would cause the most damage, the effects of which could be determined under laboratory conditions.⁵² The Navy’s problem was not keeping their ships afloat after a bombing but that the Navy was not equipped to deliver an attack. By twisting the argument of the *Operation*’s detractors, Navy officers avoided confronting the problem that ships, even carriers, had no role to play in a war pursued with air-delivered atom bombs. The Navy was at a crossroads and it bargained its future on the survivability of ships at Bikini. The only way to carry out that plan was to secure approval for the *Operation*; and, the only way to overcome the notion that intraservice rivalry was the reason for the maneuver was to position it as an experiment: a contribution to mankind.⁵³

The Navy began its plan by signing Stafford Warren, Manhattan’s Chief Medical Officer, to organize the experiment(s) and the institutions and scientists who would participate. Warren had not only demonstrated that he could abide military authority under Groves, but the organizational acumen he demonstrated in mobilizing medical personnel and technicians to provide for health and safety across the Project’s facilities continued as he led the first medical teams into Hiroshima and Nagasaki, prepared the

⁵² For examples, see the testimony of retiring General “Hap” Arnold, *New York Times*, February 14, 1946, 1; Hanson Baldwin, “US Defense Held in Peril,” *New York Times*, February 17, 1946, 32; for radiation damage, see H. S. Uhler, Professor Emeritus of Physics at Yale University, “Bikini Explosions Might Project Disastrous Repercussions,” *New York Times*, April 7, 1946, 10E. for laboratory alternatives, see *Bulletin of the Atomic Scientists*, February 15, 1946, 1, 11; Hanson Baldwin, *New York Times*, February 20, 1946; on expense, see James Forrestal, *Diaries*, March 22, 1946.

⁵³ For an example how interservice rivalries entered the debate, see “Urey Scores Army on Atomic Power: No Real Defenses Against the Bomb,” *New York Times*, March 3, 1946.

assessments of bomb and radiation damage, and continued to direct the survivor studies.⁵⁴ The Navy could have found no more authoritative scientist to satisfy detractors. Not only was he the best one to carry out the scientific experiment officers envisioned for the *Operation*, but he was also the best equipped to guarantee that although the maneuvers would be risky, the *Operation* would be carried out safely. The Navy used Warren to mobilize scientific expertise for the *Operation* and to convince the public and elected officials that *Crossroads* was primarily about scientific discovery, thereby helping to secure permission from Congress and President Truman for the maneuver.⁵⁵ And, it was Warren who helped the Navy build confidence in the elaborate scientific experiment by devising plans for transportation, security, housing for people and thousands of animals, and strategies for evacuation of researchers and reporters. The completeness of the effort so impressed reporters that one headlined his story of the operational plans as “ABC of the Bikini Test, Milestone of Our Age” and pointed to the machine-like quality of an operation that, at the time, seemed to be one that would be followed to the letter: “Bikini Gears Mesh in Vast Test Plan.”⁵⁶ As with the emphasis AEC officials put on test planning and maneuvers in Nevada during their orientations for reporters at the Nevada Test Site, military officers and their AEC partners did not always follow those plans and they sometimes represented little more than stage props that provided an illusion of attention to safety with little intention of following through.

⁵⁴ Stafford Warren, Letter to Dr. George F. Lull, December 5, 1946. Warren MSS, UCLA, Box 73, 74.

⁵⁵ For examples, see Stafford Warren and DeSeversky in Harold B. Hinton, “Atom Bomb Force in Big City Argued. DeSeversky, Disputing Army’s Scientists, Minimizes Effect as Compared to TNT,” *New York Times*, February 16, 1946.

⁵⁶ Sidney Shalett, “ABC of the Bikini Test, Milestone of Our Age,” *New York Times*, June 23, 1945, 10E; “Bikini Gears Mesh in Vast Test Plan,” *New York Times*, June 26, 1945, 1.

In 1945-46 the Navy's claim that *Crossroads* would advance the understanding of the effect of radiation on a broad range of systems, while useful as a way to justify the operation to elected officials, drew attention away from the disregard for scientific opinion the Navy exhibited in the planning and execution of *Crossroads* after Lee DuBridge voiced the warnings of many prominent scientists in May that the radioactive spray would be unpredictable at best and potentially lethal.⁵⁷ Navy representatives dismissed those concerns, saying simply that the scientists "had been wrong before."⁵⁸ Because of statements such as these, Navy officers not only betrayed their disregard for the claims they made to get approval for the *Operation*, they underscored the divisions within the scientific community and opened avenues for the marginalization of science and scientists. Again, this heralded a practice that would be repeated by pro-military scientists with the AEC to silence the program's detractors, especially after the fallout controversy increased their numbers. Recall that in June 1946 Rear Admiral Albert C. Read had already adopted an anti-scientific rationale. Then, Read not only discredited scientists, but did so in a way that suggested he had little regard for either scientific information or for scientists who—if his words were taken literally—something less than "man":

Scientists have their theories and they say this and thus can be done. But don't ever overlook the capabilities of man. He can do great things and undoubtedly he can defend himself against the A-bomb, theories or no theories.⁵⁹

⁵⁷ For Slotin see Miller *Under the Cloud*, 68. Lee DuBridge, *Bulletin of the Atomic Scientists* May 15, 1946, 14.

⁵⁸ Weisgall, *Operation Crossroads*, 88.

⁵⁹ Rear Admiral Albert C. Read, Sr., Associated Press, *Arizona Republic*, June 10, 1946, p. 4.

Read expressed disregard for scientists who used their expertise to challenge his opinion of the Navy's ability to weather an atomic attack. Among the "theories" that Read disdained were scientific opinions about the dangers of radioactive exposure. Whether because the danger was invisible or inexplicable, Warren learned at *Crossroads* that radioactive exposure was something that officers easily dismissed. T

With the first test, "Able," Warren found that his authority and those of the scientists under him charged with monitoring radioactivity and safeguarding sailors compromised by officers and their crews. For him, this was not a new experience. During Manhattan, for example, he found that despite his sternest warnings, he had to guard against the tendency of workers to ignore precautions that were inconvenient. In Hiroshima, he expressed dismay at the methods of occupying military officers who failed to understand the value of science. In December 1945 Warren learned from Japanese scientists that that the circumstances of military occupation prevented them from studying the effects of the detonation on breeding rabbits in a research facility because they "had to be killed for food before the young were born."⁶⁰ After the first bomb, officers ignored the safety plan, which was dominated by a concept of "radiation safety" and a meticulous precautionary protocol of graduated radiation monitoring, to coordinate crew deployments and the orders of Warren and the warnings of his crew of safety officers.⁶¹ Officers and sailors boarded the still hot and crippled submarine *Skate* to sail it around the lagoon, demonstrating for the benefit of reporters assembled to witness and issue stories about the resilience of the Navy's fleet and its sailors invulnerability to

⁶⁰ "Report No. 4, 16-22 December 1946; 1400 Tuesday, 17 December" Atomic Bomb Casualty Commission, Box 84, Stafford Warren mss.

⁶¹ "Safety Measures Elaborate for Test" *New York Times*, April 15, 1946, 28.

radiation a salute by Admiral Blandy and his flagship.⁶² Such a spectacle no doubt influenced the desire of Lt. Gen. Hull to conduct Army maneuvers—for political reasons identical to those of the Navy’s upper echelon—before an admiring audience of reporters, and to do so within the continental U.S. where the Army would not have to bear the cost of transporting reporters, as the Navy had done, to Bikini.

The second test, “Baker,” was an underwater detonation and provided an even more impressive explosion, throwing so much salt water into the air that the watery fallout caused such extreme contamination that even Navy brass had to admit that its surveys of damage would be delayed.⁶³ Warren ordered the entire area sealed for four days—orders that Navy officers promptly disregarded. With no apparent injuries from their disregard of Warren’s warnings after “Able,” officers soon lost patience with Warren’s work time and decontamination regulations and began to disregard them as they had before.⁶⁴ The officers’ rebellion caused overexposures among sailors sent in to work on recovering ships and contamination throughout the fleet of support ships. This meant that sailors had no escape from radioactive exposure—whether at work on the target ships or in their own bunks. Disregard for Warren’s authority extended from the officers and sailors in Bikini’s lagoon to Admiral Blandy in Washington, D. C., who failed to respond to Warren’s telegrams asking him to order his officers to listen to Warren and the

⁶² Weisgall, *Operation Crossroads*, 195-196.

⁶³ Hanson Baldwin, “Radioactivity Bar to Bikini Surveys,” *New York Times*, July 28, 1946, 31.

⁶⁴ “Memorandum” July 29, 1946, “Radioactive Safety Section to Admiral T. A. Solberg,” S. L. Warren MSS, Box 75, 76.

medical personnel.⁶⁵ Blandy did come to Bikini and after listening to Warren's explanations about radioactivity decided to leave without stopping the maneuvers as Warren requested. He relented only after Warren provided a visual demonstration of radioactive phenomena—the self reproduction of a fish scale onto a piece of photographic paper.⁶⁶ Warren was only able to convince Blandy to cancel a third, deep water, test by telling him that additional contamination would result in casualties.⁶⁷ Military officers at *Crossroads* expressed the same disdain for scientific authority as Groves had during the war and as Hull and others did during continental testing. Blandy's goal may have been merely to portray an illusion of danger while avoiding it. But the comments he made before *Crossroads* suggest that he paid attention to at least some of the effects. About the third shot that Warren convinced him to cancel, Blandy said it might “set up an endless chain reaction ... or radioactivize the water over large areas.”⁶⁸

The president's Directive and the Navy's use of Atomic Secrecy prevented the public, Congress, and for a time even the president, how vulnerable ships were, though less affected by blast effects than fixed military targets, to radioactivity.⁶⁹ *Crossroads* received more media attention than any other story of 1946, yet it would be decades before declassification revealed the many facts kept from reporters about what the bomb “could do” to men and equipment. That the Navy perpetrated this elaborate charade in the

⁶⁵ Warren to Viola, July 30, 1946. Viola Warren mss, Box 5; “Memorandum from Stafford L. Warren, Radiological Safety Advisor to Admiral Blandy, Commander Joint Task Force One,” August 3, 1946, Stafford Warren mss, Box 75-76

⁶⁶ Warren to Viola Warren, August 11, 1946. Viola Warren mss, Box 5.

⁶⁷ “Memorandum, Warren to Commander, 13 August 1946,” TG 1.2, JTF-1, Stafford Warren mss.

⁶⁸ Blandy, “Atomic Test Case,” cited in Weisgall, *Operation Crossroads*, 117.

⁶⁹ Lilienthal, August 5, 1947, *The Atomic Energy Years*, 233-234.

presence of 168 of the nation's most prominent reporters is testament to the ease with which Navy officers employed Atomic Secrecy and the enthusiasm of reporters to witness. With only a year between the end of the war and the *Operation*, reporters—selected by the Navy as the most senior and influential in the business—easily fell back into conditions that required them to report only what the Navy allowed them to see and to report. As a result, reporters at *Crossroads* made little effort to establish what the extent or effect of the radioactive contamination of ships might have been. Only after the Evaluation Report of *Operation Crossroads* made it to Truman's desk and some of its contents circulated through leaks did some government officials and congressmen begin to learn how devastating "Baker" had been. That, in turn, caused military officers to insert language in reports and in training materials for soldiers participating in Nevada tests, that radioactivity had caused no ships to be sunk.

In 1947 officers refused to allow Warren to publish the results of some experiments he conducted there. Warren, then Dean of UCLA's medical school, analyzed fallout data and found that radioactivity did not demonstrate uniform distribution. Instead, it tended to aggregate in hot spots. Warren had been careful to avoid revealing any classified information. As a result, he became frustrated when he learned that he would not be allowed to submit his article for publication. Warren wrote home to his wife that the government refused to allow him to publish his data since it was "too scary ... to put out without causing mass hysteria."⁷⁰ Perhaps conceding that if the possibility of causing alarm was the reason that he was refused permission to publish, then nothing he could write—at least then—about the tests would be cleared, Warren spent time sharing

⁷⁰ Warren to [his wife] Viola Warren, June 14, 1947, Box 1, Viola Warren mss.

what he knew, and what he could share, during talks he gave to gatherings of medical students, social clubs, veterans, mayors, and others. In small venues, he worked to emphasize what militarization prevented him from sharing with his colleagues in the usual way or with the public at large on a national scale. The texts of those talks provide an opportunity to understand the importance of the types of information that the military prevented from circulating under Atomic Secrecy.

In 1947 Stafford Warren asked an audience of Legionnaires at an Optimus Club meeting to imagine how insidiously lethal radioactivity could be. In advance of showing some film footage he recovered from the military's cutting room floor of the "Able" and "Baker" bombs from *Operation Crossroads*, he explained to them that when radioactive particles were released, they penetrated and then anchored in non-living material and living organisms alike. Using the history of the radium dial painters, he pointed out that only one microgram of radium lodged for years in the jaws of two of the young women later caused them to contract a "rapidly fatal" cancer and die.⁷¹ Then Warren struck a match while explaining that in only three seconds of burning, it had produced ten to twenty-five micrograms of smoke. If that smoke had been radioactive, he continued, its dangers would be inescapable: when stored in "your body," it would threaten "you not today or tomorrow, but sometime between now and the next 25 years of life;" it would become part of the surroundings, "in this room, it would be in the carpet, be in all the crevices, and you can't get it out."⁷² Once contaminated, the area "couldn't be cleaned."

Environmentally, soil and water would remain radioactive for generations, making

⁷¹ Stafford L. Warren, M.D., "Address given before Optimus Club at Biltmore Hotel," May 29, 1947, 16. Box 285, Folder 2, Stafford Warren mss.

⁷² Warren, "Address," 16-17.

breathing, eating, drinking—the most fundamental aspects of human existence—so hazardous that the only recourse would be to use Geiger counters to “measure everything that you put in you—milk and water and everything else.” Warren portrayed the futility of trying to avoid the hazards of radioactive substances as an unwinnable fight with a deadly beast: “This darn thing is just like a bear that you’ve got hold of by the tail and the tail gets shorter and shorter.”⁷³ As this incident illustrates, by 1947 Warren and his colleagues had acquired a rough set of guidelines about radioactive health effects from the history of radioactive medicine and the radium dial painters, experience on the Manhattan Project and studies of Hiroshima, Nagasaki, and *Crossroads*.

These criteria were the ones Dean, AEC administrators, and military officers used throughout the era of atmospheric testing to gauge the size and type of weapons detonated in Nevada. They selected for continental detonations those types of weapons tests that they expected would not result in acute radiation injury but that they believed would lead to disease in the long term. In this way, they avoided negative publicity and maintained for the benefit of elected officials and the public the illusion that the tests they conducted were harmless. It was thus not scientific ignorance, but knowledge, of radioactive health effects that gave Dean and his military partners the rough set of guidelines to gauge the size and types of weapons detonated to avoid acute radiation injury use the continental test site for domestic political purposes.⁷⁴ Military officers and

⁷³ Warren, “Address,” 17.

⁷⁴ Cf. Sue Rabbitt Roff, “Puff the magic dragon: How our understanding of fallout, residual and induced radiation evolved over fifty years of nuclear weapons testing,” *Medicine, Conflict and Survival* 14 (1998): 106-119. For examples of how the AEC/DOD’s use of Atomic Secrecy corrupted the record of information about fallout hazards and the way that has influenced contemporary findings, see especially 109, 112.

AEC officials who exploited the program and testing for self-interested political purposes calculatingly used atomic science and weapons testing to foster fears of nuclear war and enemy borne fallout while creating the impression that Nevada weapons tests and the fallout they produced were safe. In their alternative reality, the clawed and grasping full-grown grizzly of Warren's imagination became a tame and predictable cub. As John Bugher, who collaborated with Dean ahead of the first continental tests in Nevada on the skin burns and other injuries that might occur in advance of the first continental tests and who succeeded Shields Warren as Director of the Division of Biology and Medicine included in an AEC pamphlet that "low-level exposure could be continued indefinitely without any detectable bodily change."⁷⁵

Pro-Military Scientists and Administrative Sanction

Scientists who participated in the charade wielded much of their authority through the committee process. Bugher's successor, Charles Dunham, was the one who signaled to Dean before testing began that he was willing to set aside his responsibilities to help the AEC/DOD achieve its testing objectives, assuring Dean that radioactive fallout from the planned tests could cause "minor skin burns."⁷⁶ Dunham rose to become Director of the Division of Biology and Medicine in 1955, a position he held for more than ten years before leaving to join the National Academy of Sciences. While Bugher, Dunham, and their like-minded colleagues provided public cover for the AEC to conduct dangerous tests, other AEC and affiliate scientists worked from inside the AEC to shape decision-making at the advisory, committee, and managerial levels. Gioacchino Failla, Chairman of the Advisory Committee for Biology and Medicine, and Merrill Eisenbud, a committee

⁷⁵ Cited by Caufield, *Multiple Exposures*, 120.

⁷⁶ Dean diary entry, January 9, 1951, *Forging the Atomic Shield*, 97.

member who was the AEC's first Health and Safety expert, housed at its New York office, and who became the first head of New York City's Environmental Protection Agency, aligned their decision-making with the AEC/DOD's pro-military, pro-weapons-testing, objectives and wielded their influence over more conservative colleagues. As they gained ground during the first year of continental testing, precautionary-minded scientists such as Shields Warren who opposed their decisions were overruled up the ladder of AEC administrators and the impulses to protect participants and civilian downwinders that existed under Lilienthal's Chairmanship steadily diminished.

The significance of these pro-military scientists and of committees as a venue for policymaking is illustrated by the fact that it was one such scientist who made—as no elected official had—an appeal to national security to gain committee approval for a test that AFSWP wanted to conduct in Nevada that was certain to cause hazardous levels of radioactive fallout. On May 21-22, 1951, following the Ranger series of tests, a group of AEC officials and advisors debated whether to approve a Nevada detonation of a sub-surface weapons test they expected to produce high levels of radioactive fallout. Army officers initially planned for Amchitka, a location chosen by upper echelon officers because of the large amount of radioactive material that would be lifted out of the bomb's crater—and that they expected to follow and measure after the test—would fall away from populated areas. In fact, the upper echelon still expected to hold the cratering test on Amchitka: on the same day that the AEC group—the Committee to Consider the Feasibility and Conditions for a Preliminary Radiological Safety Shot for Operation 'Windsquall'—began their meeting, Secretary of Defense George Marshall submitted a memorandum for approval of the Amchitka shot to the NSC; and on June 4 his

recommendation for that remote test moved to the president's desk.⁷⁷ Back at the Committee meeting, Gioacchino Failla of Columbia University cited national security imperatives as a reason to approve the test that AFSWP officers decided could be conducted in Nevada instead of Amchitka—the location where General Marshal expected to satisfy the national security requirements for the test. Failla was sixty and already something of an institution in himself. Born in Sicily in 1891, he arrived in New York with his mother in 1906. In 1915, he used the Electrical Engineering degree he received from Columbia to begin work at Memorial Hospital as a physicist and began pursuing an M.A. degree at Columbia University while studying art at the Cooper Union School of Art in Rochester. He later received an honorary doctorate from Rochester University for the contribution he made to radiological research as a founder of the Radiological Society of North America and taught radiology at Columbia.⁷⁸ Failla argued that the test should be conducted in Nevada and gained committee support by combining the military's appeal to national security with an appeal to science. In doing so, he persuaded the committee to make a decision that no elected official had yet made, or would make, during the era of atmospheric testing:

The time has come when we should take some risk and get some information for the future situation. In other words, we are faced with a war in which atomic weapons will undoubtedly be used, and we have to have some information about these things. With a lot of monitoring, the end instrumentation will give us the information we want; if we look for perfect safety, we will never make these tests.⁷⁹

⁷⁷ 21 May 1951, George C. Marshall, Secretary of Defense, "Memorandum for the Executive Secretary, National Security Council, Subject: Operation WINDSTORM," attachment to NSC (Lay) to Truman, June 4, 1951, PSF Subject File, Box 175, Atomic Testing Windstorm, HST Library.

⁷⁸ Hymer L. Friedell, "Obituary," *Radiation Research* 16 (1962): 619. Failla died in 1961.

⁷⁹ See Failla, "Notes on the Meeting of a Committee to Consider the Feasibility and Conditions for a Preliminary Radiological Safety Shot for Operation 'Windsquall'," May 32-22, 1951, 40, Los Alamos Scientific Laboratory, May 21 and 22, 1951. *Prescott v. U.S.*, Defendant's exhibit DX390241. Also cited

Failla's support for AFSWP's test aligned with Dean's vision of the Site as a place where the AEC's military partners could conduct tests. The support for military tests that Failla and Dean shared, however, were antithetical to other scientists, particularly those at Los Alamos, who expected to use the Site for their own developmental experiments.

By citing scientific necessity as the primary reason for the Site's creation and then subordinating scientific uses to military ones, Dean rejuvenated the tension that had existed between scientists and the military during the Manhattan Project. Dean may have been honest about his plans with military officers, but he allowed Los Alamos scientists to believe that the Site had been created to help them achieve their goals. His sleight of hand gave the military carte blanche and frustrated the scientists. In 1953, after the meeting of a committee to decide the Site's future, Norris Bradbury, the Director of Los Alamos, wrote the AEC clarifying what he had been led to believe about why the Site was created and how it should be used:

In view of the primary purpose of the entire NPG setup, I am inclined to feel that medical and public relations problems are somewhat overemphasized and that the reason for the establishment of the proving ground may be overlooked.

With regard to the "requirements and reasons" for establishing a continental test site, I do not believe that these have changed at all from the point of view of the LASL [Los Alamos Scientific Laboratory]. I do believe, however, that the picture has changed enormously from the

by ACHRE staff as part of a "calculated gamble" and one that committee members believed could cost the AEC the use of the Test Site "Memorandum to the Members of the Advisory Committee on Human Radiation Experiments" March 8, 1995, Meeting 12, Briefing 12, Tab H, 2. Memorandum online at <http://www.gwu.edu/>.

"Sugar" and "Uncle," surface and sub-surface shots conducted November 19 and 29, 1951, respectively, were the direct result of the Committee's decision to approve moving Operation Windsquall to the Site. Fallout from "Sugar" contained the second highest percentage of Strontium 90 of all the continental atmospheric weapons tests and most affected the cities of Clearwater, Valley, and Boise, Idaho. "Uncle," detonated seventeen feet below ground, was responsible for the second highest amount of U-237 recorded in fallout from continental testing, with the highest levels falling in White Pine County and other areas of Northeastern Nevada. Miller, *The U.S. Atlas of Nuclear Fallout*, 86-91.

military point of view, and that the AEC has, in fact, accepted a changed concept. I regard the tendency to use the NPG for the purpose of weapon system tests (the forthcoming gun shot), for civil defense effects tests, for troop indoctrination and maneuvers, and for the reportorial press as quite outside the original concept of this site. Indeed, this trend, if continued, can force us to abandon this site for no other reason than that the military have taken it over. Even now the use of the site by other agencies is reaching such a level that it may sometime be necessary to recall that this area was actually established at the specific request of the LASL for its own needs.⁸⁰

Bradbury's second-in-command, Darol Froman, also complained about the military takeover and reiterated that the Site had been, despite subsequent assertions, created for scientific purposes. Froman, a Division Leader at Los Alamos during the war, Scientific Director for the *Sandstone* series, Assistant Director for Weapons Development from 1949-1951, and afterward, Los Alamos's Deputy, or Assistant, Director, waited until after the meeting to record his objections to the subordination of what he understood to be the Site's scientific mission. He took aim at the re-naming of the Site and argued against any characterization or use of the Site that set it apart as a military facility and that interfered with scientific goals. Nomenclature mattered, and for Froman, "Nevada Proving Grounds" represented a mischaracterization of the Site:

The Nevada facility should not be, and was never intended by the AEC to be, a proving ground. ... The original concept as well as the apparent feeling of the Committee is that the facility is a test site similar in concept, although of a completely different magnitude, to R Site [where small nuclear experiments were conducted] at Los Alamos.⁸¹

⁸⁰ Norris E. Bradbury, January 5, 1953, Communication to "Carroll" in advance of meeting of Committee to Study the Operational Future of the Nevada Proving Ground, attached to Summary of Minutes, Committee on Operational Future, NPG." U.S. Department of Energy, Historical Archives.

⁸¹ Darol Froman, February 3, 1953, "Comments on Draft Report of Minutes of the Committee to Study the Operational Future of the Nevada Proving Ground, TAD-1124", attached to "Summary of Minutes, Committee on Operational Future, NPG." U.S. Department of Energy, Historical Archives.

In response, Dr. John C. Bugher, then the AEC's Director of the Division of Biology and Medicine, re-wrote history, covering for Dean and the ulterior motives that he had used to garner congressional and presidential approval for the continental weapons tests. In November 1950 Dean told the JCAE the same thing that he told Truman, that Los Alamos needed a nearby location to "go out, make an experiment, shoot it," and then "come right back."⁸² Despite this, Bugher claimed that the Los Alamos officials were mistaken in thinking that the Site had been developed for scientific purposes. Just as Dean's diary entries revealed his double-dealing among Truman's advisors, Bugher's response to Bradbury and Froman's consternation illustrates the way such operational double dealing flowed down the administrative ladder. Bugher did not dispute the point made by LASL officials that the Site came into being as a result of their need for a place to perform rudimentary nuclear experiments. Instead, and in an example of the type of authority he and other AEC officials claimed for themselves and the way that they—during the early years of testing—disguised their abuses of authority by mischaracterizing a historical event, argued that the scientists' original request was unrealistic from the beginning:

I would like to have it a matter of record that the oversimplified concept which was entertained originally by the Los Alamos Laboratory concerning the NPG as a backyard quick-testing area was never realistic, and actual operations promptly disproved the soundness of the concept. The costs involved, and the magnitude of the issues concerned, give to such operations a character that involves far more than the details of weapons development. The principle of obtaining the maximum of necessary information from each detonation is unquestionably sound, and this principle should not be abandoned for reasons of convenience. The

⁸² See Dean's testimony before JCAE, Meeting Thursday, November 30, 1950, 44. As declassified: 881022/416.

principle, re-expressed implies that effects testing, save under the most unusual circumstances, will be keyed to the developmental program.⁸³

And yet, in official releases, in reports to Congress, and in comments made in connection with requests for more funding, the AEC depended on and reiterated Los Alamos's conceptualization of the site. Following a request for supplemental appropriations in 1951 and after plans for military maneuvers at the Nevada site were already underway, an AEC "spokesman" emphasized the Site's contribution to nuclear development and reinforced the notion that it was nothing more than an out-of-doors scientific laboratory:

[At] the Nevada continental site, where we can run out the backdoor of the laboratory every two or three months to test all kinds of gadgets, has accelerated the weapons program more than anything else.⁸⁴

In 1953, after twenty detonations had taken place at the Nevada Site, and in the same month that Bugher scolded Los Alamos officials for "oversimplification," AEC officials used the same language in their *Thirteenth Semi-Annual Report to Congress* to the scientific nature of the testing and minimizing the extent to which the Site had become a military facility.⁸⁵ In ten short contiguous paragraphs spanning several sections, the AEC characterized the Nevada Site as a "'backyard' test site," (first paragraph, "Increasing Need for Continental Site"); as "backyard workshop," (first paragraph, "Value of the Nevada Proving Ground"); and, after pointing out the cost savings over testing in the Pacific, noted that "military field units" had benefited from participation in

⁸³ Bugher, "communication following distribution of the draft of minutes...with regard to the original concept," inserted as footnote, "Summary of Minutes Committee on Operational Future, NPG" Meeting held at Santa Fe Operations Office, January, 14, 1953, 6.

⁸⁴ Anthony Leviero, "Nevada Test Site Speeds Work on 'Smaller' Weapons, the Commission Reports; Truman Asks Funds Rise, requests that \$233,000,000 be added to \$1,200,000,000 1952 appropriation," *New York Times*, August 1, 1951; 1, 4. Quote from 4.

⁸⁵ *Thirteenth Semi-Annual Report of the Atomic Energy Commission*, United States Government Printing Office, January 1953, 81-82.

“developmental and effects tests.” Only after the AEC created the impression that the Site was primarily a place for scientific tinkering and pointed out that the Site had resulted in considerable savings over Pacific experiments, did the AEC mention that the military had benefitted too: the scientists’ experiments provided explosions that military officers could use for training purposes. As late as 1957, the AEC characterized the Site as a “backyard workshop.”⁸⁶

Army officers began planning for *Buster-Jangle* immediately after the first series and the process to gain approval resulted in a turning point in the management of continental weapons tests. Securing approval for a plan that AEC officials opposed signaled throughout the organization that AEC administrators would defer to military requests. As had been the case during *Crossroads*, animal experiments were more controversial than human exposures, and were expected to draw the most negative public reaction because the public had every reason to believe, particularly during the early years of weapons testing and later from repeated assurances from official sources, that human health was protected and would not be jeopardized. During planning for *Buster-Jangle*, the AEC’s Test Director objected to the Army’s plan to use thirty-two dogs and twenty-six sheep in thermal burn experiments and to perform “bio-medical” experiments on fifteen dogs and “some rats,” arguing that it would result in negative publicity and, in any event, would only duplicate data received from previous experiments.⁸⁷ Though identified in the AEC Operations Report as a “difference of opinion,” the issue was one

⁸⁶ Nevada Test Organization, Mercury, Nevada, Office of Test Information, “Background Information on Nevada Nuclear Tests,” 11.

⁸⁷ Information about this issue was drawn from “Atomic Energy Commission Operations Planned for Buster-Jangle” and attached “Report by the Director of Military Application,” September 5, 1951, U.S. DOE Archives, 326 U.S. Atomic Energy Commission, Collection 1951-1958 Secretariat, Box 1261, Folder MR & A-9 Buster-Jangle, Vol. 1.

that went to the heart of the AEC's mission, "one of concept of responsibility and authority of the Test Director." The Department of Defense told the AEC that "military requirements are not matters for decision by either the commission or its test organization." The dispute was settled when the AEC refused to support its Test Director's recommendations and deferred to the military. The Army's animal experiments remained features of the *Buster* and *Jangle* series. The incident was significant because it illustrated not only the military's autonomous control over atomic experimentation, but also because it established a pattern whereby the AEC undertook responsibility for managing the public relations problems that military experimentation posed. As testing continued, it was not animal experimentation that aroused public outcry, but fallout. Using the media to disseminate deceptively reassuring information about the safety of radioactive fallout from the military's weapons testing became part standard operating procedure for the AEC and its managers at the Nevada Test Site and elsewhere. Embedded as a reproducible institutional characteristic, test site officials, military and civilian, spent energy diffusing public outcry without seeking ways to prevent it in the first place.

The second controversial issue of *Buster-Jangle* involved the overexposure of troops. In a 1951 request from the MLC to use experiments to indoctrinate troops, the AEC had backed Shields Warren's requirement that troop participation be limited to one shot and that soldiers remain at least five and one-half miles from ground zero.⁸⁸

Disappointed with the results of that conditional exposure, the Army argued that the

⁸⁸ The request argued that "Indoctrination in essential physical protective measures under simulated combat conditions, and observation of the psychological effects of an atomic explosion are reasons for this desired participation." Memorandum from Military Liaison Committee to Chairman, Atomic Energy Commission, July 16, 1951.

AEC's 3.9r exposure limit was "unrealistic" and planned more extensive maneuvers for the 1952 series. When AEC officials turned the issue of maximum exposure limits over to the Test Director, Carroll Tyler, Warren made it clear to Tyler that, from his perspective, the limit was not negotiable. Conceding in a letter to the Santa Fe Operations office on October 11, 1951, that ultimate authority over the military's request rested with the Test Director, Warren warned Tyler that he would be expected to explain any overexposures: "This Division does not look lightly upon radiation excesses. Only true emergencies should be granted special privileges" and, should any such emergency arise, Tyler would have to provide extensive documentation, including

[a] full explanation as to why the job cannot be performed in another matter, how many people are to be over-exposed, how much over-exposure, and ... the recent exposure history of the individuals and what is planned to enable them to pay off the over-exposure.⁸⁹

Warren explained to Tyler that the military should be able to accommodate the requirements with only minimal inconvenience and that "compliance with the permissible limit should become a mark of distinction in the exercise of ingenuity, rather than a concession to be avoided upon pretext." In a twist on the Army's appeal to the importance of indoctrinating troops to atomic detonations, Warren added that the AEC consider some "indoctrination" of its own: "Indoctrination of this attitude early in this series may save U.S. much trouble, and possible radiation injuries, in the several series to come." In October 1951 officers requested permission to over-expose troops by stationing them within one mile of ground zero. Warren again recommended that the

⁸⁹ Warren's letter was included in the "Minutes" of the Advisory Committee for Biology and Medicine, September 12 and 13, 1952. U.S. DOE Archives, 326 U.S. Atomic Energy Commission, Collection Secretariat, Box 1271, Folder B & M7, Biology & Medicine adv. CMTE, vol. 1. (The meeting was held after Warren left his position as Director of the Division.)

AEC refuse the request. Rather than confront the Army itself, the Commission turned the matter over to Tyler. Warren contacted Tyler to warn him that overexposures of servicemen were unacceptable and that Tyler himself—and not the Army—would have to explain any non-emergency instances of overexposure. Warren suggested that Tyler encourage the Army to comply by employing a little “ingenuity” rather than needlessly risk lives. Warren recommended a seven-mile limit—a distance that would provide troops with a realistic experience without endangering them. Tyler ignored that suggestion and granted the Army permission to deploy at five and one-half miles.⁹⁰ Despite what must have been his obvious frustration, Warren’s October recommendation illustrated the autonomy over experimentation that the military commanded under Dean’s leadership. Warren ultimately deferred, writing that “the Division of Biology and Medicine recognizes that it is not its function to set standards for the military nor to impede the operations of the Department of Defense.” At the same time, Warren reminded the AEC of its legislative mission by taking note of the apparent collusion between the AEC and the military over the issue and the harm it might cause to the AEC’s reputation. The AEC, he wrote, and not the military, was the *only* responsible entity—“both in fact and in the public mind.”⁹¹ As Warren made clear, the military had successfully undermined the authority of the intermediate AEC official in charge of program safety and had also successfully insinuated itself between the public and the only possible guardian of public health issues related to atomic testing, effectively

⁹⁰ Warren to Carroll Tyler, Santa Fe Operations Office, October 11, 1951. Included in the minutes of Advisory Committee for Biology and Medicine, September 12 and 13, 1952, U.S. DOE Archives, 326 U.S. Atomic Energy Commission, Collection Secretariat, Box 1271, Folder B & M7, Biology & Medicine adv. CMTE, vol. 1.

⁹¹ Warren to Tyler, October 11, 1951. (as above)

disabling the statutory responsibilities of the AEC. For Dean's part, he appears to have been relatively unconcerned about the types of safety problems that had plagued his predecessor.

Warren's written objections to the military's 1952 proposals differed in emphasis from those he made in February 1951 to tower shots. By 1952, Warren seems to have come to the conclusion that achieving the level of safety that he considered necessary for continental testing might best be achieved by appealing not to health hazards but to the concern with public relations expressed by his superiors and other AEC officials. In a letter Warren wrote to the AEC's Division of Military Applications in March 1952 he privileged public relations over his concern with safety:

The Division of Biology and Medicine recommends against permitting troops to be closer to ground zero than the seven miles used in the Desert Rock [1951] operation for the following reasons. 1. The Continental Proving Ground is of great value to the program of the Atomic Energy Commission and has been accepted by the public as safe. 2. Accidents occurring at the time and place of an atomic explosion are magnified by the press out of all proportion to their importance, and any injury or death during the operation might well have serious side effects. 3. The explosion is experimental in type and its yield cannot be predicted with accuracy.⁹²

Though initially supportive of Warren's recommendation and reluctant to allow the military to station troops closer than the seven mile limit, the AEC's resistance broke down under a military letter writing campaign that asserted that Warren's limit was "tactically unrealistic." Warren still considered the Army's request to station troops less than four miles from the site of the explosion ludicrous.⁹³ His primary concern was not

⁹² Warren to Brigadier General K. E. Fields, Director, AEC Division of Military Applications, March 25, 1952.

⁹³ Warren to Brigadier General K. E. Fields, Director, AEC Division of Military Applications, March 25, 1952.

the initial burst of radiation, but thermal energy of a blast that he calculated would scorch “most anything” within two and one-half miles.⁹⁴ And yet, the AEC found a way to accommodate the military’s request.

Acting on a suggestion from the AEC’s Los Alamos manager that the AEC simply relieve itself of responsibility, the Commission did just that. Devolving authority over safety to the Test Director, the AEC made a superficial gesture toward the importance of safety by suggesting that the military prepare and submit a safety plan to the Test Director for his approval but simultaneously negated that condition, as well as the authority of the Test Director, by noting that if officers wished, they could disregard it entirely. Should “officials of the Department of Defense ... still feel that a military requirement justifies the maneuver, the commission would enter no objection.”⁹⁵

Additional text drawn from the AEC’s official designation of authority to the Test Director, when considered in tandem with the AEC’s admission that it would not object to any military demands, illustrates that it was not so much a grant of authority to the Test Director as it was an abrogation of AEC authority and veiled concession to military autonomy:

The Commission has approved the attendance of a military combat unit ... for the purpose of indoctrination and training of individuals and organizations. ... No responsibility was accepted for this administrative movement, security control or support of this personnel but the authority to impose necessary operational restrictions on their participation was reserved. You will set the criteria of time, place, radiological safety and security necessary.⁹⁶

⁹⁴ Miller, *Under the Cloud*, 139.

⁹⁵ “Designation of Authority as AEC Test Director for Buster-Jangle,” U.S. DOE Archives, 326 U.S. Atomic Energy Commission, Collection 1951-1958, Secretariat Files, Box 1261, Folder MP & A-7 Buster Jangle, Vol. 1. See also Miller, *Under the Cloud*, 142.

⁹⁶ See “Designation” above.

The military ultimately stationed troops within 7,000 yards of ground zero in deep trenches. Though the AEC maintained its limits for civilian participants, it condoned the military's decision, admitting that there was "the necessity for realistic training by the military in all fields, often accompanied by serious injuries, and that such training was also necessary in the field of atomic weapons."⁹⁷

The AEC's reluctance to interfere with the military's desires and the solution it ultimately reached to avoid the problem altogether set a precedent for dealing with military requests to exceed established safety guidelines. In 1955, the National Committee on Radiation Protection (NCRP) sidestepped an Air Force request that the maximum occupational standards be relaxed because of the problems the Air Force had in meeting those standards for the decontamination of planes that were flown through radioactive debris from atmospheric weapons tests. In that incident, the NCRP decided not to change the occupational standard or to create a new one that dealt specifically with the Air Force's problem. Nonetheless, it opened the door for the Air Force to work out its own solution. The Committee noted that the Air Force's problem was different than the laboratory-type conditions for which the standard was set and invited the Air Force to use its own devices to arrange for a solution to the decontamination/exposure problem: "it is suggested that expert consultation be obtained for a realistic appraisal of their problem."⁹⁸

Pro-military scientists used the committee process to influence the establishment of radiation standards. When testing began in Nevada, the AEC and its military partners

⁹⁷ Cited by Favish, "Radiation Injury and the Atomic Veteran," *Hastings Law Review*, 945, n. 39.

⁹⁸ "Minutes of Executive Committee, NCRP December 15, 1955" 8-032, cited by Gilbert F. Wittemore, "The National Committee on Radiation Protection 1928-1960: From Professional Guidelines to Government Regulation," 515-517.

relied on program scientists to explain that experiments were conducted well within margins of safety. And yet, the claim at that time was misleading: no standards for permissible exposure levels had yet been established for non-occupational exposures to radioactive material from nuclear experiments.⁹⁹ As one of the government's historians put it, "the whole question of radiation exposure was undergoing critical review during the early 1950s."¹⁰⁰ This is one reason historians and others are able to point with some measure of confidence that AEC officials were unaware of the dangers testing posed and thus whatever harm that resulted was inadvertent. But during the era of atmospheric weapons testing, there was more to the question than whether radioactivity caused harm and at what level it did so. In fact, much was known about the hazards of radioactive exposure and, in the broadest sense, standards for radiation dose had been reduced, becoming more cautious, over time. The history of radiation protection and exposure, including data derived from laboratory experiments, exposure-related illness, the deaths of the radium dial painters proven by 1927 to have been caused by their occupational overexposures, had all contributed to the National Bureau of Standards establishing occupational limits for radon and radium exposure. Studies conducted in Nagasaki and Hiroshima provided enough additional information by 1946 for the National Committee on Radiation Protection and Measurements to recommend that occupational exposures be limited to no more than 0.3 rem per week. By 1948, it had issued a finding that there was no level below which radiation could be considered harmless.¹⁰¹ But by then, radioactive

⁹⁹ Raytheon Services Nevada, *A Perspective on Atmospheric Nuclear Tests in Nevada, Fact Book*, 15

¹⁰⁰ Raytheon Services Nevada, *A Perspective on Atmospheric Nuclear Tests in Nevada, Fact Book*, 15.

¹⁰¹ Caufield, *Multiple Exposures*, 120. For Caufield's examination of how the AEC's programs influenced standards, and how the AEC subverted widely accepted standards, see 116-138.

substances had already become so common that a no-tolerance dose standard would place what advisors viewed as an intolerable burden on industry, medicine, and even shopkeepers who were fitting shoes with fluoroscopes. By 1948 the notion that expert advisors could scientifically and collectively compile occupational and non-occupational, naturally occurring radiation, standards to arrive with some objectivity at a set of uniform standards had already become an impossible ideal. The remaining possibility—that the group could agree on a set of standards that balanced technology with worker and public safety—was hamstrung by multiple internal and external pressures, not the least of which was the interconnectivity between AEC officials, their affiliates, and the advisory committees established to set national standards.¹⁰² By 1949, California was poised to adopt radiation exposure standards that were so low that, in the opinion of the NCRP and AEC officials, they would disable one of the AEC’s primary contractors and might leave the NCRP and the AEC shamefaced. If adopted, NCRP Chairman Lauriston Taylor wrote that it would “put the University of California out of commission,” while Shields Warren noted that it “might be a very embarrassing one.”¹⁰³

The problem was additionally complicated because even close associates sometimes contrasted sharply in the way they personally dealt with their own exposures. At Ernest Lawrence’s Radiation Laboratory at Berkeley, for example, some scientists expressed what Gregg Herken called a “disdaining bravado” about the well-known dangers of exposure to radiation while, at the other end of the spectrum was Ernest Lawrence himself, who championed the H-bomb and dismissed those who argued that

¹⁰² See Gilbert F. Wittemore, “The National Committee on Radiation Protection 1928-1960: From Professional Guidelines to Government Regulation.”

¹⁰³ Lauriston Taylor and Shields Warren, cited by Wittemore, “The National Committee on Radiation Protection 1928-1960: From Professional Guidelines to Government Regulation,” 486-487.

radioactive fallout was hazardous, but who was so leery of exposure and the cancer it might produce that he refused routine and diagnostic x-rays.¹⁰⁴

Moreover, the chances that a permissible dose standard could be arrived at through the building of a coalition of like-minded advisors was made less likely by the fact that the collision of ethical and professional standards created conditions for the formation of an unusual alliance between the most pessimistic and most optimistic advisors in what might be called the “wait-and-see” camp. Sharing the position that no levels for permissible exposures should be set until enough data had been collected that safe/unsafe boundaries could be asserted with a measure of confidence, the two groups were equally resistant to the setting of exposure standards. For example, Stafford Warren, who worried about long-term health effects and who leaned toward adopting a conservative approach to radioactive exposure argued as stridently against the setting of what he viewed as a premature standard as Gioacchino Failla, who was primarily concerned with acute-level exposures and who used his advisory positions with the AEC and the NCRP to stall the acceptance of standards that would have resulted in higher operational costs or that would have restricted continental weapons testing.¹⁰⁵ A final complication was the possible consequences of exposure to man-made sources of radioactivity over the course of generations—a genetic effect. Taken together, this meant

¹⁰⁴ Lawrence’s refusal to be x-rayed may have ultimately contributed to his death from colitis. Gregg Herken, *Brotherhood of the Bomb*, 18, 326-328.

¹⁰⁵ See Warren’s comments to Admiral Parsons, 18 January 1947, Warren MSS, Box 77. Warren refused Parsons’s request to suggest some standard for radiation exposure because even a tentatively adopted, general, figure for safety would inevitably make its way into planning and could be used later to dispute subsequent scientific findings with which it might conflict. For Failla, see the discussion in this chapter and Gilbert F. Wittemore, “The National Committee on Radiation Protection 1928-1960: From Professional Guidelines to Government Regulation,” 515-517, 480-490. Failla’s responsibility for drafting a report about exposure standards meant a delay of six years to Lauriston Taylor, Chairman of the NCRP. Wittemore, 490.

that it was not only difficult for people in the field to determine what an acceptable guideline might be or who they might turn to in an effort to find out, but that a “permissible dose” was a malleable concept, dependent on the type and duration of radiation exposure as well as whether one was concerned primarily with short-term effects, long-term effects, or effects that spanned generations.

The AEC’s operational priorities, including limiting costs and positive public relations bore directly on the reception of internationally-derived standards in the United States. After the Tri-Partite Permissible Dose Conference in Chalk River, Canada, for example, where experts from the U.S., including officials and scientists with the AEC, the UK and Canada discussed and established exposure standards for radioactive isotopes, officials from Los Alamos feared that the adoption of those standards would be too costly. They elicited opinions from other AEC scientists who disagreed with the Chalk River methodology and values and lobbied Shields Warren (AEC’s Director of Biology and Medicine) to re-evaluate the dose values to “make certain” that they were not “unnecessarily conservative,” arguing that their adoption would “have a drastic effect” on operations, would “force” present and future alterations to facilities, and would add “millions” to the laboratory’s building program. Los Alamos wanted, instead, standards that would provide for “reasonable and sensible protection of personnel.”¹⁰⁶

Following the Los Alamos request, Warren authorized a five-fold increase in the Chalk

¹⁰⁶ Wright Langham, Los Alamos to Dr. Shields Warren, Director Division of Biology and Medicine, January 20, 1950. LANL/RC, Collection TR 6704, Book 236, G-3, Folder 39. Facsimile of letter with attachments available on the world wide web at http://gwu.edu/nsarchiv/radiation/dir/mstreet/commeet/meet11/brief11/tab_g/br11glu.txt. Portions of this letter also cited by President’s Advisory Committee, *The Human Radiation Experiments*, 141-142. For a brief discussion of the Chalk River Conference, but that omits Los Alamos’s intervention in the adoption of Chalk River dose values, see William C. Inkret, Charles B. Meinhold, and John C. Taschner, “A Brief History of Radiation” *Los Alamos Science* 23 (Los Alamos National Laboratory 1995): 119.

River standard for plutonium—from 0.1 microgram to 0.5 microgram.¹⁰⁷ Thereafter, the Subcommittee on Permissible Internal Dose of the National Committee on Radiation Protection (NCRP) met to discuss a variety of Chalk River values. The attendees were AEC advisors who had also participated in the Chalk River Conference. During the discussion, one point of contention was the Chalk River recommendation that different permissible levels be assigned for occupational and non-occupational exposures. The Chairman of the Subcommittee, Karl Z. Morgan, argued that in the absence of studies about “selective absorption” of a variety of radioactive materials, it was appropriate to have two different values. Workers, he noted, assumed the special risks of their chosen occupation while it was “not right or safe for each member of a large population to be subjected to the sum of all ... hazards.”¹⁰⁸ Disagreeing with Morgan was Failla, who believed Morgan’s position was not a publicly supportable, because “such a practice ... seemed to be influenced by the probabilities of damage being detected rather than on the probabilities of causing damage.” Failla argued that the Subcommittee needed to decide what was safe and apply it across the board. “We shouldn’t broadcast two different standards, one for people inside the plant and one for people outside.”¹⁰⁹ Though Failla’s solution to decide what was safe and stick to it was logically appealing and, for those

¹⁰⁷ *Human Radiation Experiments*, 142, fn. e.

¹⁰⁸ Memorandum from Karl Z. Morgan, Chairman to Members of the Subcommittee on Permissible Internal Dose, March 7, 1950; Summary, Minutes of the Subcommittee on Permissible Internal Dose of the National Radiation Protection Committee, February 9-10, 1950, 20. Human Studies Project Document No A-00394; ACHRE 1148037-1148054; Repository MMES/x-10 [Martin Marietta Energy Systems under contract at Oak Ridge for the DOE], Collection Health Sci. Research Div., Box No. 4500N, A214, Folder Box 536.

¹⁰⁹ Summary, Minutes of the Subcommittee on Permissible Internal Dose, 16.

who would receive the “broadcasts” that Failla imaged, theoretically sound, it ultimately compromised radiation safety.

The real-world implication of the AEC’s adoption of Failla’s reasoning was the sacrifice of public health to operational expediency. Because the AEC ultimately decided on a higher set of values for occupational exposures at its facilities than those recommended at Chalk River, the maximum permissible dosages established for the public were the same as those that the AEC had increased in the interest of expediency. The upshot of the AEC’s decision to factor cost into the equation was that the AEC and the NCRP established different standards for non-occupational exposures. Under increasing pressure to acknowledge and act on the information that was building about the hazards of radiation exposure, AEC officials reduced from 15 r. to 3.9 r. the AEC’s acceptable boundary for public exposures, though it still exceeded the NCRP standard.¹¹⁰

After Lilienthal’s departure, the NCRP considered his philosophy of minimizing exposures altogether but discarded it for the reason that it would be operationally expensive and inconvenient. As was the case in 1950, when Los Alamos administrators and other affiliates of the AEC successfully argued against the adoption of a set of radiation exposure standards that emerged from the international Chalk River Conference and that were significantly lower than the guidelines that the AEC and its affiliates had been following, the bar that Lilienthal set was believed to be too costly.¹¹¹ In 1954, the

¹¹⁰ Caufield, *Multiple Exposures*, 121.

¹¹¹ Wright Langham, Los Alamos to Dr. Shields Warren, Director Division of Biology and Medicine, January 20, 1950. LANL/RC, Collection TR 6704, Book 236, G-3, Folder 39. Facsimile of letter with attachments available on the world wide web at http://gwu.edu/nsarchiv/radiation/dir/mstreet/commeet/meet11/brief11/tab_g/br11glu.txt. Portions of this letter also cited by President’s Advisory Committee, *The Human Radiation Experiments*, 141-142. No mention is made of Langham’s intervention in the matter of establishing dose in a Los Alamos recapitulation of the Chalk

Council, composed of scientists who also worked on AEC programs and served on its advisory committees, rejected “all feasible precautions” standard Lilienthal believed necessary and moved away from the lowering of exposures that was the trend internationally and began working toward a concept for precautionary measures based on what laboratory administrators and industry officials (in coordination with the militarized AEC) deemed “reasonable.”

The elevation of the status of an operationally efficient approach to radiation protection standards into the philosophy of a national committee charged with establishing what were expected to be “safe” boundaries was significant in several ways. First, it illustrates how thoroughly Dean’s pro-military—and with it pro-experimentation and pro-expansion—ethos penetrated the institutional tiers of the program. Second, the speed of the shift in priorities that occurred with Dean’s chairmanship reflects the latency of Manhattan-style wartime culture among program and affiliate managers and advisors during Lilienthal’s tenure. Third, the marginalization of temperate, precautionary, advisors within the program’s administration and within its advisory-level committees resulted in a standard considered safe by a consensus of scientific opinion reached in national and international forums with one anchored to what AEC affiliated advisors who supported and benefited from the program’s militarization considered operationally reasonable. The shift set the stage for (a) the upward adjustment of permissible exposure from that recommended during the 1949 Chalk River Conference and an institutional disregard for new findings about permissible exposure, (b) the adoption of an industry-wide standard in America that prioritized industry (and AEC) convenience and

River Conference. See William C. Inkret, Charles B. Meinhold, and John C. Taschner, “A Brief History of Radiation” *Los Alamos Science* 23 (Los Alamos National Laboratory 1995):119.

productivity over human health, and (c) the ultimate establishment of a maximum permissible dose at a level decided to be “as low as reasonably achievable,” a concept that became known as ALARA.¹¹²

The controversy about exposure standards provided a conceptual corpus of “scientific” belief that was so malleable that it could be pressed into service to satisfy a wide range of foreign and domestic policy goals. In one instance, for example, the State Department pressured the delegates to the U.N.’s World Health Organization to reach an agreement on a “low” safe threshold to protect America’s experimental testing program only to reverse course several months later and insist on a “no” safe threshold standard to exert diplomatic pressure against the U.S.S.R. and its weapons testing program.¹¹³

Shields Warren’s ability to use his expertise and authority to prevent hazardous testing practices withered under Dean’s Chairmanship as continental weapons testing became routine and production of materials and weapons increased. In 1949, for example, Warren had established a Biomedical Test Planning and Screening Committee as a nexus for experiments carried out in conjunction with nuclear tests. The Committee’s purpose was to establish priorities and criteria for experiments; to provide special facilities for experimentation purposes; to coordinate the activities of the many groups proposing experiments; and to monitor ongoing experiments to streamline information

¹¹² Richard F. Mould, *A Century of X-Rays and Radioactivity in Medicine: with emphasis on photographic records of the early years* (Bristol; Philadelphia; PA: Institute of Physics Pub., 1993), especially Ch. 13, 83. The International Committee on Radiation Protection formally adopted the standard in 1959.

¹¹³ For the instrumentality of this debate as a diplomatic wedge for the State Department and the direction they gave the U.S. delegation to the UN’s World Health Organization to with the U.S. delegation to the UN’s World Health Organization, see Henry Van Zile’s oral history interview (July 24, 1975). As the Health Assembly was moving toward a finding that there was no safe (above background) level of radiation, an Assistant Secretary of State pressured the delegation to secure enough votes to allow for a ‘low’ threshold standard to protect testing. Within a couple of months, according to Hyde, the State Department asked the delegation to reverse course and to seek agreement for a no safe threshold finding. Oral History Interview, HST Library.

gathering.¹¹⁴ The value of the committee, however, evaporated during Dean's Chairmanship when MLC Chairman Robert Le Baron refused to allow the military to cooperate with the committee in the planning of its experiments.¹¹⁵ The use of towers to control both detonation and yield of atom bombs provides one example of a conflict between what officers desired and the procedures Warren believed were necessary to minimize the hazards attendant to continental experimentation. Despite the unrealistic nature of tower shots, the military preferred them because they offered greater control over both detonation and bomb yield measurement.¹¹⁶ But there was a tradeoff to such convenience. Because bomb detonations occurred close to the ground's surface, there was more cratering, more radioactivised material drawn up into the mushroom cloud, and a resultant increase in the amount of radioactive fallout and the fissionable products in that fallout over compared to that caused by a bomb dropped from an airplane and detonated at a higher elevation. Discussing his opposition to a military request for tower shots during *Buster-Jangle*, conducted during October and November 1951, Warren recommended choosing a site somewhere other than the desert if tower shots were necessary. In doing so, he referenced a "conclusion" reached prior to the 1951 testing series that tower shots should not be conducted in desert areas because the aridity caused a larger amount of fallout and, additionally, that tower testing in the desert would pose a persistent inhalation hazard because radioactivised dust would be constantly stirred up by

¹¹⁴ See W.D. Armstrong, et al, to Shields Warren, June 10, 1949, with attachments. DOE Accession No. NV404073.

¹¹⁵ According to Thomas Shipman. Thomas Shipman [LANL] to Charles Dunham, June 9, 1996, ACHRE Documents, Attachment 10 to Briefing Documents, Meeting 12, online at http://www2.gwu.edu/~nsarchiv/radiation/dir/mstreet/commeet/meet12/brief12/tab_h/br12h2j.txt

¹¹⁶ Alvin C. Graves, "AEC Information Plan and Materials for Shot 3, Tumbler-Snapper Test Series" April 15, 1952, 20. AEC 505/25 Defendant's Exhibit DX 21949, *Prescott v. U.S.*

activity or winds. Warren suggested that an island testing facility—the PPG—would be ideal because the ocean would absorb the fallout and limit the risk.¹¹⁷ An unnamed committee subsequently overruled Warren, approving a test that would lift an approximately “50,000 cubic yards” of radioactive material from a bomb crater.¹¹⁸

In deciding whether to take Warren’s recommendations, Dean and other members of the AEC adopted standards that protected Test Site officials and participants while endangering those not affiliated with the program. They did, for example, choose caution over convenience when there was a danger that radioactive material for a planned shot would not head aloft and become trapped in wind currents to be dispersed elsewhere, but would be localized, settling within the area of the shot. Because of this, the AEC provided on-site personnel with a greater amount of protection from radioactive exposures than it did the unwitting public outside the boundaries of the Site. In 1951, for example, after overriding Warren’s objections to tower shots and approving ones that would result in contamination off site, the AEC took Warren’s advice and refused to approve a “deep sub-surface shot” designed to produce a “low cloud” that would have localized a considerable amount of radioactive debris.¹¹⁹ The intermediate level administrative decision-making that precipitated that decision reveals an organization in flux. The marginalization of Shields Warren, the AEC’s own top expert in the health

¹¹⁷ Office Memorandum to General James McCormack, Jr., Director Division of Military Applications from Shields Warren, M.D., Director Division of Biology and Medicine, February 21, 1951. U.S. DOE Archives, Collection DMA, Box 3783, Folder MRS 7.

¹¹⁸“Meeting of a Committee to Consider the Feasibility and Conditions for a Preliminary Radiologic Safety Shot for Jangle,” Los Alamos Scientific Laboratory, May 21 and 22, 1951. *Prescott v. U.S.*, Defendant’s exhibit DX390241. Based on the size of the committee, there seems to have been a lot of interest in a detonation that would send so much radioactive earth airborne. It was attended by 20 military, university, laboratory, and AEC officials, all listed above a note that mentioned “and a few more.”

¹¹⁹ AEC Meeting No. 584, July 27, 1951. U.S. DOE Archives, 326 U.S. Atomic Energy Commission, Collection 1951-48, Secretary Files, Box 1261, Folder MA& A-7, Buster-Jangle, Vol. 1.

effects of radioactive exposure, in the wake of the climate of military urgency and necessity that Dean fostered seems to have operated as an object lesson, generating an unhealthy wariness to speak out about risky testing practices.

At the administrative level, program officials and those affiliated with the program were conscious of the fact that the radiological safety criteria they were establishing was not determined by “safety,” but rather through a process that identified which effects they would avoid and which they would accept. As Gaelen Felt from Los Alamos’s J-Division put it when explaining the criteria he used to predict and compare radiation exposures at various distances from ground zero for a sub-surface and surface shots, inhalation of radioactive particles should not be ignored:

Our lack of knowledge of the effects of retention of a given number of active particles in the lungs does not permit a dividing line to be set up between a harmful and a harmless concentration. We are sure only that a zero concentration is harmless.¹²⁰

Felt’s calculations of the possible exposure levels from a subsurface shot, based in part on Stafford Warren’s Trinity study, caused him to recommend that the series begin with a surface shot and that a sub-surface shot be tentatively planned after the results of the surface shot were known. Problem studies of proposed tests such as Felt’s might be expected to have been conducted as a matter of course by an organization such as the AEC with authority over test administration and safety. Yet, it appears from the cover letter transmitting Felt’s findings that such expertise was already in danger of being considered superfluous to the process of test planning by AEC officials, especially when the issue involved military tests, as was the case with *Jangle*. As if to absolve himself

¹²⁰ Gaelen Felt, J-Division, to A.C. Graves, J-Division, “Jangle Fallout Problems,” June 28, 1951, (Item 7) 3. Attached to meeting notes, “Meeting of Jangle Feasibility Committee,” July 13, 1951, USDOE Archives, 326 U.S. Atomic Energy Commission, RG DOE Historian (DBM), Collection 1132, Box 3362, Folder #4, DOE Accession NV0404708.

from any activity that might be construed as an interjection into the planning of *Jangle*, Los Alamos's Director Norris E. Bradbury explained to then-Director of the Division of Biology and Medicine, Shields Warren, that Felt's report was an "informal" one but that it had produced some "startlingly different" conclusions about the safety of sub-surface shots than had been assumed during the planning process. Though Bradbury wanted to make Warren aware of Felt's study, he was at least equally interested in making sure that he would not be perceived as interfering in test planning, mentioning that he was "not yet prepared to make any formal statement" from the laboratory about Felt's study, and added parenthetically, "nor is it clear that I am supposed to do so".¹²¹ Since Bradbury was unwilling to press the issue of the safety of the sub-surface test, Los Alamos's Health Division Leader, Thomas L. Shipman, M.D., lobbied another of his colleagues to argue against the shot at an upcoming meeting about the test.¹²² Deriding the plan in the reference line of his memo as "Operation Bungle" and concluding that the test was neither scientifically nor militarily essential, Shipman urged that Felt's findings be taken seriously. Shipman linked the proposal for the test with the military's disregard for fallout hazards, mentioning the overexposures at *Greenhouse* that were "handled by studiously looking the other way" and expressing his dissatisfaction with the military's desire to flaunt exposure standards: they [military groups] may not necessarily be bound by the same permissible exposure levels as will be used for other workers" and felt they could

¹²¹ N.E. Bradbury, Director of Los Alamos Scientific Laboratory, to Dr. Shields Warren, Director, Division of Biology and Medicine, 7 July 1951, attached to "Meeting of Jangle Feasibility Committee," July 13, 1951, USDOE Archives, 326 U.S. Atomic Energy Commission, RG DOE Historian (DBM), Collection 1132, Box 3362, Folder #4, DOE Accession NV0404708.

¹²² T.L. Shipman, M.D., Health Division Leader to John C. Clark, July 11, 1951, attached to "Meeting of Jangle Feasibility Committee," July 13, 1951, reference on 1, conclusion, 3. USDOE Archives, 326 U.S. Atomic Energy Commission, RG DOE Historian (DBM), Collection 1132, Box 3362, Folder #4, DOE Accession NV0404708.

“get higher exposures if they wish.”¹²³ Shipman argued that the assumptions that the test would be safe were not borne out by experience—his and others—and put a sharper point on his argument that approval for the test should be withdrawn by translating Felt’s findings into real-world consequences:

the deep underground shot would probably be the most dangerous of the three, and that it could under proper conditions deposit dangerous amounts of activity in populated areas.

I realize perfectly well that such an opinion cannot be proven beyond doubt by any calculations ... but I feel strongly that firing the deep underground shot represents a possible risk to surrounding population and livestock; and that should things go wrong, it could jeopardize the entire future of the Nevada Test Site.¹²⁴

In the event, the deep underground shot was not approved. But the gains that the military had made, and the deference of scientists in opposing military tests, increased as testing continued.

During one meeting of the Advisory Committee for Biology and Medicine (ACBM) in 1953, for example, Warren moved to adopt standards prepared by the AEC’s Biophysical Branch to set guidelines for the release of radioactive materials from power plants, suggesting at the same time that they be accepted on the condition that they could be revised should findings from the National Committee on Radiation Standards warrant.¹²⁵ After his motion died for want of a second, the discussion of establishing guidelines for radioactive releases shifted to the cost of implementing them. An intervening motion to maintain enough flexibility in the standards that they could be reduced should studies into long-term effects warrant a change passed quickly.

¹²³ Shipman to Clark, July 11, 1951, as above, 2.

¹²⁴ Shipman to Clark, July 11, 1951, 3.

¹²⁵ “Minutes,” Advisory Committee for Biology and Medicine, December 11, 12, 1953, 6. Record Group 326, U.S. Atomic Energy Commission, Division of Biology and Medicine, Box 1, Folder 9.

Gioacchino Fiella pressed for a cost-versus-risk analysis between providing radiation protection at 1 percent and at 10 percent of the permissible total established by the National Committee on Radiation Standards. Fiella argued that the \$100,000 the study might cost would be well spent because meeting the criteria that the ACBM ultimately adopted would cost “millions.”¹²⁶ In agreement, Elvin C. Stakman, a botanist with the Institute of Agriculture at the University of Minnesota and member of the National Academy of Sciences, added that the Committee had a “double obligation ... one is to human beings and the other is to taxpayers.”¹²⁷ Stakman’s decision to articulate this point suggests that although Committee members were accustomed to taking value into consideration when choosing which experiments to fund, this might have been the first time that the AEC’s Advisory Committee for Biology and Medicine had decided to factor in an “obligation” to taxpayers in their decision making about safety standards. The Committee then broadened the scope of the inquiry by substituting “installation” for “power plant,” a move that gave them the flexibility to apply the study’s findings to any facility for any purpose, and the motion passed.¹²⁸ Warren voted against the measure and, although he did not explain his reasoning, his opposition—when combined with his earlier (non-seconded) motion suggests that he believed that the Committee should adopt safety standards and that safety, and not cost, should be the priority. This represented a fundamental difference between Warren, who appears to have favored a deliberation based on safety-versus-danger, and his colleagues on the Committee who had voted to postpone making a decision about safety pending the results of a cost/benefit analysis.

¹²⁶ “Minutes,” 7.

¹²⁷ “Minutes,” 7.

¹²⁸ “Minutes,” 7.

This meant that the Committee would not be adopting safety standards but, instead, would be making an altogether different decision: how much risk to justify on the basis of cost.

By 1954, when radioactive fallout from American weapons testing had grown into an international controversy, AEC officials, their military partners, and—because of the expansion fostered, in large part, by the use of testing for political gain—a larger and more influential group of affiliates and stakeholders spoke with one voice. The AEC’s backing of the military’s testing goals meant that the fallout controversy and the issue of continental weapons tests became inseparable from other facets of the program and thus drew support from those unaffiliated with weapons development or who had no preference about where weapons were tested. In 1953 I. I. Rabi, a man who in 1958 was among those who helped persuade Eisenhower to agree to a testing moratorium and, in 1953, the Chairman of the GAC, a group that opposed pursuing H-bomb development, wrote a worried letter to Eisenhower fearing that the program—“so important for the advancement and preservation of our institutions”—would suffer cutbacks and lose hard-won momentum.¹²⁹ Rabi was an officer at Columbia’s Physics Department and affiliated with Brookhaven National Laboratory for Atomic Research on Long Island, a laboratory unlike Los Alamos or Lawrence Livermore National Laboratory, that was most interested in developing peacetime applications of atomic energy. Rabi wanted to convince Eisenhower to preserve the program’s funding. From Eisenhower’s perspective, however, during the early days of his administration when he was looking for ways to reduce military spending and was aware of the growing concern about the dangers of fallout

¹²⁹ I.I. Rabi to Eisenhower, March 25, 1953, 2. Papers of Dwight D. Eisenhower, Administration Series, Ann Whitman File, Box 4, A75-22 Ann Whitman File, Atomic Energy Commission 1953-54 (6), DDE Library.

from continental weapons tests, it was easy to conflate Rabi's comments with that growing controversy, and to interpret his plea as a call to continue testing. Thus, the fallout controversy that threatened atmospheric weapons testing also contributed to strengthening the program's ability to sustain it, firming up the bonds between the program, military officers and networked affiliates and scientists.

Criticism also opened up avenues for AEC officials and affiliates to use their promotional resources to publicize their opinions about the safety and necessity of weapons testing. Officials defended weapons testing in the same way that officers at *Crossroads* had, with appeals to national security. These appeals inevitably made way for the construction of a false dilemma: If the AEC could not conduct nuclear weapons experiments in the way, and at the location, they chose, then, according to AEC/military logic, experiments could not be conducted, progress could not be made, the Soviets would win the arms race, and the result would be "annihilation."¹³⁰ The approach precluded the possibility that AEC officials would consider any criticism--constructive or otherwise. The AEC paired that message with another that reinforced the notion that fallout, at least that produced by American weapons testing, was of no greater import than natural exposure to background radiation while living in Denver or Reno, or flying in an airplane. An enthusiastic proponent of this strategy was Dr. John Bugher, appointed by Dean to replace Warren as Director of the Division of Biology and Medicine. In 1954, after international attention had been drawn to the problem of fallout because of Pacific testing and *Newsweek* had carried stories about the effect of Strontium 90 on human bone, the Division's scientists met in special session to discuss the problem, its effect on

¹³⁰ Libby quote in "Russ Set Off 5 Super Bombs, Scientist Says," *Los Angeles Times*, June 6, 1957, 25.

testing, and whether they should modify the figures they had earlier adopted for a “safe” exposure standard.¹³¹ Bugher directed the afternoon session with the aid of a mortality table prepared by the Metropolitan Life Insurance Company charting deaths from “bone cancer” incidence in the U.S. since 1954 and combined that information with his own estimate of future deaths from Strontium 90. Bugher concluded that “in terms of death...[Strontium 90 exposure] would come in somewhere about half of what we kill with automobiles.”¹³² One facet of this approach, targeting especially the American public, was the use of (unequal) risk comparisons. AEC officials and affiliates equated the involuntarily risks of exposure to radioactive tests to voluntary ones, such as driving, with the aim of convincing people to become as comfortable with the routines of nuclear testing—and routine dispersal of radioactive fallout—as they were with the risks of getting in their car and driving to the market.

The uncompromising dual-pronged strategy, relentlessly delivered by AEC spokespersons and their affiliates throughout the era of atmospheric testing, was effective. An analysis of polls taken one year apart, in April 1957 and April 1958, for example, shows that among those adults who knew of the controversy about fallout completely reversed their opinions about whether testing should be stopped. In 1957 69 percent favored cessation while 29 percent opposed it. By April 1958, 28 percent of those polled supported cessation while the majority, 64 percent, opposed halting atmospheric

¹³¹ William F. Newman, [AEC biochemist] *Newsweek*, November 12, 1956. Transcript, “Special Meeting of the Advisory Committee on Biology and Medicine to the Atomic Energy Commission, November 26, 1956” (“Transcript”) U.S. DOE Archives: 326 U.S. Atomic Energy Commission, Collection Secretariat, Box 1271; Folder O&M-7 ACBM BP. For examples of the publicity about Strontium 90, see *Newsweek*, June 25, 1956, 70; Ralph Lapp, *The New Republic*, July 9, 1956, 5.

¹³² Bugher, “Transcript,” 81.

weapons tests.¹³³ Because a higher percentage of school-age children, those in grammar or high school, supported cessation than did adults, the analyst concluded that “education was the most significant variable,” with the “amount of anxiety . . . directly inverse to the level of education.” That finding, along with the analyst’s explanation, provide another example of the success of the AEC’s “re-education” campaign, one that amounted to an extension of the military’s self-interested selective release/withdrawal of information about radioactive effects. The author assumed that formal education made the difference between those who disapproved and those who approved of continued weapons testing based on the “hysterical” reaction of the former and the “decrease of anxiety about its effects” expressed by those whose “educational background enabled [them] to assimilate and evaluate the information presented.”¹³⁴ In this case, however, it may be that schoolchildren had a keener sense of the dangers of radioactive fallout than their parents. civil defense initiatives in schools, Bert the Turtle in *Duck and Cover* along with three million copies of a sixteen-page booklet entitled *Bert the Turtle Says Duck and Cover*, and companion radio program meant that although both children and their parents were made aware of civil defense information in their homes, children received an extra dose of education while at school.¹³⁵ It is thus worth considering that children, who expressed

¹³³ Eugene J. Rosi, “Mass and Attentive Opinion on Nuclear Weapons Tests and Fallout, 1954-1963,” *The Public Opinion Quarterly* 29 (1965): 280-297, 290.

¹³⁴ Rosi, “Mass and Attentive Opinion on Nuclear Weapons Tests and Fallout,” 292.

¹³⁵ As JoAnne Brown notes, schools were a logical place for FDCA to initiate civic education. See Brown, “A Is for Atom, B Is for Bomb: Civil Defense in American Public Education, 1948-1963,” *Journal of American History* 75 (1988): 68-90, 70; for a general overview of civil defense, see Allan Winkler, “A 40 Year History of Civil Defense,” *The Bulletin of the Atomic Scientists* 40, 16-22, with discussion of Bert the Turtle and education spin-offs, 20. For a narrative about Bert the Turtle and the making and circulation of *Duck and Cover*, see <http://www.conelrad.com/duckandcover>; For civil defense as the integral component in a national policy of deterrence, see Guy Oakes and Andrew Grossman, “Managing Nuclear Terror: The Genesis of American Nuclear Strategy,” *International Journal of Politics, Culture, and Society* 5 (1992): 361-403, especially 364-365.

preferences for cessation in a higher percentage than groups the study considered highly educated adults (and perhaps their parents,) were better equipped to “assimilate and evaluate” the issue. More evidence of the effectiveness of the AEC’s campaign to diffuse fears about radioactive fallout emerges from Camp Desert Rock in 1958, when soldiers surveyed as part of a psychological study unexpectedly reported more anxiety about an upcoming detonation after attending a standard indoctrination lecture on atomic weapons and effects than they did before the lecture. The study’s authors attributed the increase to a possible “shift in attitude” about residual radiation and the expectation that they would be covering contaminated terrain, and surmised that the lecture had helped soldiers develop a “more realistic and healthy respect” for the residual radiation that was one of the weapon’s effects.¹³⁶

In a well-known incident, AEC Commissioner Willard F. Libby employed the risk versus reward tactic. Libby had been one of the AEC’s most outspoken, and respected, defenders of weapons testing from 1955 when he accepted a seat from Strauss on the AEC.¹³⁷ Libby, a chemist, spent the war working for the Manhattan Project from Columbia University and after the war moved to the University of Chicago. From that position, he served as an advisor to the AEC, on AEC’s Committee of Senior Reviewers, and also on its General Advisory Committee from 1950-1954. Libby gained international renown beginning in 1949 with an article in *Science* about the relationship between environmental radiocarbon and the age of biological matter, fully articulated as a

¹³⁶ Dr. Robert D. Baldwin, Monitor, Training Methods Division, “Staff Memorandum Experiences at Desert Rock VIII,” 41-42. NVO751034; ACH1.050808.044.

¹³⁷ For an example of Libby’s frustration about the possibility that a plan to construct a nuclear reactor in downtown Chicago to fuel Northwestern University would be blocked by the Reactor Safeguard Committee, a committee that was outside the AEC’s control, see Balogh, *Chain Reaction*, 131.

technique for radiocarbon dating in 1952.¹³⁸ His discovery caused revisions of dates for the Ice Age, the Dead Sea Scrolls, and Stonehenge, an achievement that earned him the Nobel Prize in Chemistry in 1960. In 1957 Libby used his status as an AEC Commissioner and scientist in responding to a call for an end to testing by Dr. Albert Schweitzer, the 1952 Nobel Peace Prize recipient, then in the spotlight after the release of a documentary about his life and devotion to his hospital in French Equatorial Africa.¹³⁹ A member of the Norwegian Nobel Committee read a letter from Schweitzer, appealing for an end to nuclear experimentation and fearing radioactive fallout was approaching catastrophic proportions. “Even if not directly affected by the radioactive material in the air, we are indirectly affected through that which has fallen down, is falling down, and will fall down.”¹⁴⁰ The appeal was not broadcast in the U.S., though it was in fifty other countries. It may have resonated strongest among Norwegians, who learned immediately after the broadcast that a recent Soviet test had resulted in a radioactive rainout in Norway.

Libby made a foreign policy case for continued testing, framing his response in the condescending risk/reward scenario that characterized AEC commentary: Was Schweitzer aware of the “the most recent information” about fallout that showed that compared with those “other risks which persons everywhere take as a normal part of their

¹³⁸ Articles in *Science* from 1947 forward chronicle the evolution of Libby’s work. See especially, J. R. Arnold and W. F. Libby, “Age determination by radiocarbon content: checks with samples of known age,” *Science* 110 (1949): 678-680. Willard F Libby, *Radiocarbon Dating* (Chicago: University of Chicago Press, 1952).

¹³⁹ Bosley Crowther, “Screen: Genuinely Reverent Report” *New York Times*, January 21, 1957, 20.

¹⁴⁰ “Schweitzer and Libby on Nuclear Tests,” *Science*, New Series, 125:3254, May 10, 1957, 923. For other accounts of the exchange, see Divine, *Blowing on the Wind*, 121-126; Milton S. Katz, *Ban the Bomb: A History of SANE, the Committee for a Sane Nuclear Policy, 1957-1985*, 17; and Titus, *Bombs in the Backyard*, 83.

lives,” radiation from nuclear tests was “extremely small”? He then asked Schweitzer to weigh the risk from fallout against the risk “to freedom-loving people everywhere in the world of not maintaining our defenses against totalitarian forces.”¹⁴¹ It has long been understood that Libby’s promotion of the AEC’s testing program, as well as his participation in Project Gabriel and instigation and shepherding of Project Sunshine, a program that studied the global distribution of Strontium 90 by collecting and analyzing biological material (including the bones of dead infants and children, from all corners of the earth) that—minus the lurid and illicit details—formed the basis for the “most recent information” that Libby cited in his response to Schweitzer, was shaped by his position on the AEC.¹⁴² What has been heretofore overlooked is the way that Libby’s arguments about the testing safety were influenced by what might be called a universal mixing hypothesis that formed the core of his work on the environmental accumulation of Carbon 14 and his interest in defending that work against critics who disputed his findings and conclusions.

Libby capitalized on his authority as a Commissioner to diffuse, and in some cases to prevent, critique of the assumptions and methods that formed the basis for his radiocarbon dating technique. He not only used Sunshine study results to defend the claims for the safety of testing that the AEC had made since Dean initiated continental

¹⁴¹ “Schweitzer and Libby on Nuclear Tests,” *Science* New Series 125 (May 10, 1957): 923.

¹⁴² For a study that discusses the relationship of both projects, Libby’s involvement, and the AEC’s investment in the studies as indicative of scientific understandings about the environment and its ability to absorb pollutants, see Laura A. Bruno, “The bequest of the nuclear battlefield: Science, nature, and the atom during the first decade of the Cold War,” *Historical Studies in the Physical and Biological Sciences* 33 (2003): 237–260, esp. 238, 240–250, 258. For the studies and Libby’s involvement as an indication of the AEC’s interest in radiological safety, see Hacker, *Elements of Controversy*, 183; as indicative of a larger pattern within the AEC and among its affiliates of an institutional disregard for ethical and moral boundaries in the interest of science, see ACHRE, *Final Report*, Ch. 13.

testing, but his position as a bully pulpit to defend his professional reputation. At the time he responded to Schweitzer, Libby had already spent several years defending his conclusions against critics who found fault with his analyses.¹⁴³ The scholarly debate about the validity of his fundamental assumptions seems to have strengthened his commitment to the position he had assumed on universal mixing. Libby's abuse of power operated to the benefit of AEC officials seeking to neutralize the fallout controversy but it contributed directly to offsite overexposures by influencing how AEC officials, and other government agencies, dealt with contamination. One of the foundational premises of Libby's discovery was that radioactive carbon was uniformly and completely mixed in the air, oceans, and in all living material and organisms.¹⁴⁴ The premise made its way into the AEC's internal deliberations preceding the H-bomb and influenced the decisions and statements he made about fallout as an AEC Commissioner. On December 7, 1949, for example, the AEC concluded on the basis of "independent calculations" that radioactive carbon produced by a thermonuclear (H-bomb) bomb would not reach a "danger point" unless 500-50,000 detonations had occurred—the difference a function of whether one adopted a conservative or "reasonable" estimate. Though Libby was not specifically cited, among the AEC's advisors he was at the forefront of radiocarbon studies, and the two assumptions that formed the basis for the calculations and the AEC's conclusions

¹⁴³ By the time the first edition of Libby's *Radiocarbon Dating* came out, researchers at Columbia, Michigan, and Yale Universities were building on his work. See J. Laurence Kulp, "Key to the Past," *The Scientific Monthly* 74 (June 1952): 367. For an early challenge to Libby's dispersal assumptions, see Robert K. Plumb, "Atomic Calendar for Very Ancient Objects is Being Improved for Greater Accuracy," *New York Times*, August 15, 1954, E-9. For a summary of the technique and refinements, see Lloyd A. Curie, "The Remarkable Metrological History of Radiocarbon Dating [II]," *Journal of Research of the National Institute of Standards and Technology* 109 (2004): 185-215.

¹⁴⁴ For Libby's explanation of the process, see his Nobel Lecture entitled "Radiocarbon Dating," published in *Science* 133 (1961): 621-629.

were identical to those that formed the basis of his work: that radioactive carbon would be universally mixed and remain in the atmosphere or would be “completely” mixed with “normal” (naturally occurring) carbon in the earth’s air and water.¹⁴⁵

Though Libby’s work on radiocarbon focused on natural, cosmic, sources of radiation, and calculations stretching over thousands of years, he applied the same theoretical models to evaluate the problem of man-made radioactive isotopes produced by nuclear detonations and fallout dispersal in the short term—assumptions that contradicted what was already known about hot spots found after the Trinity detonation data reinforced by Stafford Warren’s studies at *Crossroads* that also revealed the concentration radioactivity up the food chain; and, in 1955 at least, by what had been learned from the survivors in Japan that radiation dosages differed in ways that were not explained by their distance from the bomb’s center.¹⁴⁶ By then, however, Libby’s views were well entrenched among the AEC’s advisory committees. In 1955, for example, just after Libby left the GAC to join the AEC, the Committee received word that data collected by Japanese researchers and analyzed by the New York Safety and Health Laboratory and an oceanographer hired by the AEC’s New York Operation Office, “suggested that the radioactivity from the *Castle* series which had fallen into the Pacific Ocean or drifted out from the Lagoon was not being diffused evenly.” The GAC met this challenge to their former colleague’s position by insisting on a do-over. They absolved

¹⁴⁵ Sumner T. Pike, Acting Chairman to President, with attachment, “The Effect of Radioactive Carbon from Thermonuclear Bombs,” Papers of Harry S. Truman, President’s Secretary’s File: Subject File, National Security Council Atomic, Atomic Energy: Super Bomb Data. HST Library.

¹⁴⁶ See Hardin Jones to Doctor John Bugher, July 18, 1955. File, “Sunshine correspondence, Jones, Hardin, Donner Laboratory,” Libby, Box 9, U.S. AEC RG 326, NARA. The biological concentration of radioactive isotopes was pointed out to Libby in 1957 by Herbert Hirsh, who also cited a study published in *Science*. Herbert Hirsch, Assistant Professor of Cancer Biology, University of Minnesota, to Willard F. Libby, May 12, 1957. File “Sunshine Correspondence Miscellaneous,” Libby Box 9, U.S. AEC RG 326, NARA.

the New York Laboratory and the AEC-contracted analysts while faulting the Japanese data collectors: “it would be provident to initiate immediately another oceanographic survey to assess and verify the Japanese findings.”¹⁴⁷

As Commissioner, Libby actively promoted the uniform mixing hypothesis by drawing correlations between naturally-occurring and man-made radiation throughout the program. He supported Project Sunshine as an unprecedented opportunity to do a “radioactive tracer experiment on a world-wide scale” and pressed for declassification of aspects of the study which would demonstrate that radioactive isotopes from nuclear testing would, in fact, spread to every corner of the globe, a finding that would help validate his universal mixing hypothesis.¹⁴⁸ He took advantage of opportunities to review papers and presentations from other scientists and analysts and encouraged them to include his findings about radiocarbon dispersal.¹⁴⁹ And, he quieted challenges to his studies that emerged from AEC affiliates by reminding scientists who expressed opinions that were at odds with his that they pursued their livelihood at his pleasure, in one instance indirectly by criticizing a scientist (John Gofman, who became an outspoken

¹⁴⁷ GAC, “Memorandum dated March 22, 1955, Subject: Recommendation of ACBM Regarding Announcement of Project Troll,” Attached as Appendix “B” to letter from G. Fiella, Chairman, Advisory Committee for Biology and Medicine, to Lewis L. Strauss, U.S. Atomic Energy Commission, April 28, 1955. RG 326, Division of Biomed & Env. Research, Meetings, Advisory Committee for Biomed & Environmental Research, Meetings #41-50, Box 104, NARA.

¹⁴⁸ Information on the study and Libby’s positions drawn from ACHRE, *Final Report*, Ch. 13.

¹⁴⁹ For an explicit connection between the two, see Libby’s response to Lester Machta, Chief, Special Projects Section, U.S. Weather Bureau, who had written Libby for his comments on a paper that he expected to deliver in May 1958. After a comment approving Machta’s plan to point out errors about stratospheric fallout, Libby recommended that he mention “the C¹⁴ data have a bearing which because of their accuracy warrants some mention.” Additionally, he wanted Machta to include “soil aging and plowing factors” notes draft explicit connection between his radiocarbon findings and Strontium 90 in fallout, see April 15, 1958 letter from W. F. Libby to Lester Machta, Chief, Special Projects Section, United States Weather Bureau. File, “Sunshine Correspondence Lester Machta Harry Wexler,” Libby Box 9, U.S. AEC RG 326, NARA.

critic of the AEC and nuclear power) through his superior for engaging in political activity.¹⁵⁰ From a suppositional standpoint, the consequences of Libby's interpretation of Sunshine data were becoming evident in 1959. When the study came to light, Ralph Lapp, a long-time critic of the methods the AEC used to support its claims that testing was safely conducted, pointed out that AEC officials, including Libby and John Bugher, then-Director of the Division of Biology and Medicine, used findings from the study to underestimate the effects of H-bomb testing, actions that he believed contributed to a four-year continuation of potentially life-threatening testing and that, because of their global implications, exceeded the limits of their authority¹⁵¹ But there were irrefutable effects of Libby's defense of his radiocarbon dating technique via the connections he made between naturally occurring and man-made radioactive dispersal.

Libby's ideas about uniform mixing, as embedded into advisory committees concerned with establishing radiation exposure standards and then deployed throughout the program, were directly implicated in the use of averaging to downplay the dangers of exposures known at the time to be hazardous. Libby's approach made its way into the standards ultimately adopted, where workers were allowed to receive a yearly dose that could be averaged over their working life—set individually at 5 rem per year, and not

¹⁵⁰ Libby contacted Hardin Jones, the Assistant Director of California's Radiation Laboratory about Gofman's conduct. See John W. Gofman, University of California Radiation Laboratory, to W. F. Libby, March 25, 1957. Libby had first contacted the Manager of the San Francisco Office of the AEC to have him get copies of the transcripts of talks given by Gofman and another scientist, along with any tapes of the radio's coverage of the talks. See H.A. Fidler, Manager of the San Francisco Office of the AEC, to W. F. Libby, December 5, 1956. Both documents located in File, "Sunshine Correspondence Gofman, John W." Libby Box 9, U.S. AEC RG 326, NARA. For other examples, see the exchanges between Libby, Paul C. Tompkins Director of the U.S. Naval Radiological Defense Laboratory and Eugene P. Cooper, its Associate Director, August 28-October 2, 1958. "Sunshine Correspondence Miscellaneous," Libby Box 9, U.S. AEC RG 326; Libby to Hardin Jones, April 1, 1957, "Sunshine Correspondence Jones, Hardin Donner Laboratory" Libby Box 9, U.S. AEC RG 326 NARA.

¹⁵¹ Ralph Lapp discussed, and critiqued, the project in 1959. "Sunshine and Darkness," *Bulletin of the Atomic Scientists*, January 1959, 27-29.

more than 15 rem in any one year—and the general population to one-fifth that, as averaged over millions of people. Emphasizing that the new standards were not the result of information that demonstrated damage from previous radioactive exposures, and suggesting that the limits were designed to prevent genetic damage, the AEC estimated that its program would result in a .5 rem early average “per capita dose” with “the total dose to the whole population from man-made radiations ... not likely to exceed 10 million rems per million of population up to age 30.”¹⁵² Through Strauss, the averaging method directly influenced the decisions that Eisenhower made to approve the *Hardtack* series of tests for Spring 1958 when Strauss pointed out that the yield from two of the tests would “presumably” be deposited “world wide” because of the altitude at which they would be detonated.¹⁵³

These arguments also worked to prevent other government officials from carrying out their responsibilities. In November 1958 the Food and Drug Administration (FDA) considered withholding from distribution and preventing consumption of some produce from California, specifically lettuce from El Centro in extreme Southern California and spinach and celery from Oxnard, on the coast between Santa Monica and Santa Barbara, because it was contaminated with Strontium 90 in levels that approached the maximum permissible dose. When Gordon Dunning, then Chief of the AEC’s Weapons Effects Radiation Branch of the Division of Biology and Medicine, learned of the FDA’s concern, he drew on Libby’s assertions about universal uptake and continuous

¹⁵² Atomic Energy Commission, press release December 10, 1957, “AEC Adopts New Radiation Exposure Limits,” 1-3, 326 U.S. Atomic Energy commission, Collection, Div of Bio & Med, Folder, Press Files, 1957-1959; *Prescott v. U.S.*, Defendants’ Exhibit DX 21964.

¹⁵³ Strauss to Eisenhower, November 23, 1957, 3. Folder: Atomic Energy Commission 1957 (1), Dwight D. Eisenhower Papers as President of the United States, 1953-1961 (Ann Whitman File) Administration Series, Box no 16. DDE Library.

exposure—as with cosmic radiation—to convince the FDA to take no action. In a memorandum for the file that made its way into Libby’s papers, Dunning reported that he “point[ed] out that the ‘maximum permissible level’ was based on the assumptions that the entire diet was at this level of activity and that the exposure be continuous.”¹⁵⁴

The authority Libby enjoyed as an AEC Commissioner beginning in 1954 provided him with a venue to combine the AEC’s appeals to national security with promotion of his own opinion about universal dispersal over those of his critics—an opinion used to dispute the arguments of those experts who found variations in dispersal and non-uniform consequences, even as fallout from atmospheric weapons testing was contributing to the erosion of the perceived accuracy of his method and his hypothesis.¹⁵⁵ After suggesting that Schweitzer was uninformed about the effects of fallout—as Libby interpreted the data—he guarded against the possibility that Schweitzer’s imagination (and those who read Libby’s published response) would not track in the same direction as Libby’s about what might happen should the U.S. fail to maintain its defenses. Libby reinforced his assertion that radioactive fallout was the lesser of two evils. He reminded Schweitzer that fallout was relatively insignificant given that it was the only thing staving off doomsday:

Here the choice seems much clearer--the terrible risk of abandoning the defense effort which is so essential under present conditions to the

¹⁵⁴ Gordon M. Dunning to Files, November 17, 1958. File “Sunshine Correspondence Los Angeles Area (Fan Mail)” Libby Box 9, U.S. AEC RG 326, NARA.

¹⁵⁵ *New York Times* science reporter William L. Laurence quoted findings from the Lamont Geological Observatory of Columbia, that Libby’s radiocarbon dating system was inaccurate because “the increasing frequency of atomic tests and ... the larger shots which produced continuous long-term fall-out, caused sufficient air contamination to render the black-carbon method unreliable.” “Atom Calendar Dates the Past: Columbia Model Uses Carbon Dioxide System for Timing 30,000-Year Objects,” *New York Times*, August 19, 1956, 78.

survival of the Free World against the small controlled risk from weapons testing.¹⁵⁶

The AEC used the same strategy whether responding to those, like Schweitzer, who sought an end to all nuclear experimentation, or to those, like congressmen, who expressed no interest in halting weapons testing but who were interested in learning more about fallout and the program over which they were entitled to exercise oversight. In 1957, the JCAE called the AEC's Director of the Division of Biology and Medicine, Charles Dunham, to explain the disparity between the AEC's assurances of safety and the opinions of other scientists that radioactive fallout from testing was hazardous.¹⁵⁷ After discussing some of this literature, the Vice Chairman of the Committee, Clinton P. Anderson of New Mexico, asked Dunham to explain the contradiction between the opinions of outsider scientists and the AEC's. Anderson's position on the value of the program and of testing was as far from Schweitzer's as the witness before him. In fact, during hearings about radioactive fallout in 1954, then-Chairman Anderson had signaled his support for the program by stating that nuclear tests were "vital to the security of the free world" and consciously or unconsciously explaining at the outset of those hearings that the safety of testing was a foregone conclusion, their purpose being "to clear up 'public misapprehension and unwarranted concern.'"¹⁵⁸ Despite the history of Anderson's

¹⁵⁶ Cited by A Constandina Titus, "Selling the Bomb: Public Relations Efforts by the Atomic Energy Commission During the 1950s and Early 1960s," *Government Publications Review* 16 (1989): 20; and *Bombs in the Backyard*, 83.

¹⁵⁷ Special Subcommittee on Radiation of the Joint Committee on Atomic Energy, 85th Congress, "The Nature of Radioactive Fallout and its Effects on Man," May, June, 1957, United States Government Printing Office, 1957, 20.

¹⁵⁸ Cited by Robert Divine, *Blowing on the Wind*, 44.

support, Dunham's first response was to sideline the issue of health effects to emphasize the significance of testing:

Senator Anderson. How do you account for the fact that these people can read all this nice literature that the AEC has put out, giving them absolute assurance, and still be scientists, and they are still worried?

Dr. Dunham. I wonder if they are so worried about the fallout as they are about the spread of nuclear war?

To be fair, Dunham afterward spent many hours over the course of seven days of hearings answering questions about fallout and submitted reams of documents from AEC-affiliated scientists supporting the AEC's positions about exposure standards and radiation protection procedures. Nonetheless, his first reaction was to evade Anderson's question, making sure that the senator remembered at the outset that the issue was not about the dangers of fallout but about the potential for nuclear annihilation. Dunham's strategy echoed the testing-equals-survival trope that the military used to justify experimentation during *Crossroads*, when the ships anchored in Bikini's harbor were "doomed in the nation's defense to atomic death or devastation."¹⁵⁹ It was the same strategy that the AEC's supporters in Nevada used to chastise opponents when testing came to Nevada in 1951, "Ditch Those Rosy Glasses—Russia Really has the H-Bomb" and later in 1955, when the fallout controversy seemed poised to threaten future tests: "There are a lot worse things than death. Trying to live in a communist-dominated country is most of them."¹⁶⁰

To augment his own claims, and to speak authoritatively about the safety of the atmospheric program, Strauss relied more and more on the network of military

¹⁵⁹ "160 Ships now anchored for first A-bomb test," *Los Angeles Times*, June 2, 1946, 3.

¹⁶⁰ "Editorial," *Review Journal*, January 22, 1951; *Review Journal*, March 24, 1955.

supportive AEC spokesmen such as Commissioner Libby, lower-level program officials such as Dunham, and AEC affiliated scientists who had risen to prominence with Dean's Chairmanship. As Marshall Brucer, a Tucson, Arizona M.D., remarked in a 1976 memorial tribute to Charles L. Dunham, a Director of the AEC's Division of Biology and Medicine under Strauss, Dunham helped the AEC weather what Brucer derogatorily referred to as the "Great American Radiation Hysteria" by enlisting a cadre of AEC affiliates in support of the program and atmospheric testing. Dunham, he reported, was unperturbed in the late 1950s at the prospect of testifying before the JCAE in 1959 about radioactive hazards. Brucer said "It was easy for Chuck to do this on very short notice. He just called in the project directors he had been supporting for the past ten years."¹⁶¹ Under Strauss, the program mobilized sufficient scientific authority to keep public fears at bay and to soothe the concerns of congressmen who might have placed restrictions on the AEC to limit, or eliminate, continental (and possibly even Pacific) weapons tests. It was the combination of all three of these resources, all deriving directly or indirectly from the Manhattan Project's influence over the peacetime program—wartime strategies of control, the militarization of the program, and the influence that Strauss wielded in the Eisenhower administration and over his cabinet—that gave Strauss the ability to protect his position and atmospheric testing from 1954 when fears of radioactive fallout began circulating on the national stage through the end of his term in 1958.

¹⁶¹ Marshall Brucer, M.D., "In Memoriam," *Journal of Nuclear Medicine* 17 (1976): 1116-1117.

CHAPTER TEN

THE CAMPAIGN AGAINST DISARMAMENT

From 1953 through June 1958 Lewis L. Strauss successfully defended the militarized structure of the program re-created under Dean against threats from the arms control initiatives and the fallout controversy of the Eisenhower years. As Eisenhower's Atomic Energy Advisor and AEC Chairman, Strauss used the strategies of control that became commonplace after *Operation Crossroads* set a precedent for the military's use of the bomb and the program to achieve self-interested political goals and encouraged their use by program administrators and managers. He also used his position and friendship with Eisenhower to strengthen the authority he enjoyed under the Act over other arms of government, eliminating possibilities for diplomacy that could have slowed or stopped the nuclear arms race and thwarting budget cutting initiatives that Eisenhower himself endorsed.¹ And, in a move that illustrates the relationship between the Manhattan Project and the militarized peacetime program and that also sheds light on Strauss's ambitions for himself and for the program during his tenure, Admiral Strauss set himself up as a latter-day General Groves, appointing Groves's "backup and shadow czar," Brigadier General Kenneth Nichols to be his General Manager. Nichols, then in his mid-forties and engaged in a joint position as AFSWP's Deputy Director of Guided Missiles and as the Army's Chief of Research and Development, was unable to help Strauss as he had Groves under conditions that required him to accept civilian authority. In 1955, after having "difficulty in concealing his distaste for his obligation to respond to inquiries"

¹ For an interpretation of the Act as granting Strauss (and AEC Chairman generally) authority over State and Defense, see John McCone, former Secretary of the Air Force and AEC Chairman, "Interview with John McCone," July 26, 1976, 22. Oral Histories, DDE Library.

from JCAE staff members, Nichols resigned.² Strauss then appointed another of Groves's special assistants and a veteran of the MLC and one-time Director of Military Applications, Brigadier General Kenneth E. Fields.³ Fields was adept where Nichols was not, practiced at downplaying the effects of fallout from Nevada testing and smoothing the feathers of congressmen such as Utah's Douglas Stringfellow. Apparently nonplussed by their demands, he testified thirty-one times over a three month period.⁴ Because the AEA required the General Manager to be a civilian, Nichols and Fields each resigned their Army commissions to serve Strauss. To complement his own authority within the administration and in support of this militarized managerial structure, Strauss drew on the expertise of scientists among the program's network of affiliates to speak out against the claims of outside experts that testing was producing harmful levels of fallout. Had Eisenhower purposefully set out to strengthen the Military-Industrial Complex that he famously derided as he left office, he could have done no better than in choosing Strauss, who had been the first to recognize and exploit the domestic political potential of atom bombs. He had directed his postwar energies to militarization and expansion, increasing as time went on the numbers of stakeholders affiliated with the program and the stake of influential affiliates such as E.O. Lawrence in military projects and expansion.

Strauss, like his predecessor, took the AEC far beyond the official post-1949 concept of the AEC as a "producer" for the DOD, protecting AEC/DOD autonomy

² Allardice and Trapnell, *The Atomic Energy Commission*, 66-67, 165. For a biographical sketch of Nichols (1907-2000), see John W. Simpson's description of his achievements in *Memorial Tributes, National Academy of Engineering* 10 (Washington, D.C.: National Academies Press, 2002), 183-187.

³ *Time*, "Personnel: Changes of the Week," April 25, 1955.

⁴ Fradkin, *Fallout*, 123. For Nichols, and Fradkin's observation that under Strauss, the illusory notion of a "civilian" commission under Strauss, 122.

through weapons testing and emphasizing the potential of the Soviets to use nuclear weapons to obliterate the United States—a use of program resources that allowed him to secure a level of appropriations equal to the partnership’s ambitions.⁵ As the editor of the *Las Vegas Review Journal* wrote in 1955 when defending testing despite the claims of radioactive hazards, the blasts helped everyone “understand the horror,” adding “there are a lot worse things than death. Trying to live in a communist-dominated country is most [sic] of them.”⁶ Strauss used bomb-fueled fear of nuclear war to keep defense budgets high and helped enlarge the military industrial complex that Eisenhower argued might lead the nation to ruin. And, it appears likely that it was Strauss’s influence that prevented Eisenhower from recognizing that the AEC and its military partners were using atmospheric weapons tests for their domestic political value as generators of fear, political support, and funding. Eisenhower, for example, seems not to have made a connection between military demonstrations such as flyovers or Navy Day ceremonies that he derided and the promotional activities that officers made part of every exercise or maneuver in Nevada. Similarly, although he had an “aversion” to the tendency of the military (and others) to whip up fear and create “hysteria,” he failed to appreciate how the AEC and its military partners used Nevada tests for that very purpose.⁷ Early in his term, Strauss received Eisenhower’s permission to launch a five-year, five-billion-dollar expansion of AEC facilities to increase military production by an amount nearly three

⁵ For the elaboration of the AEC as a producer and the DOD as a consumer, see February 6, 1952 Memorandum to Secretary of Defense [Lovett], and “State viewpoints,” June 11, 1952. *Foreign Relations of the United States, NSC Affairs Atomic Energy Regulations*, Vol. II.

⁶ “Banning the Nuclear,” *Las Vegas Review Journal*, March 23, 1955, 4.

⁷ “Interview with General Andrew J. Goodpaster,” by Dr. Maclyn P. Burg, *Oral Historian*, June 26, 1975, 81; for Eisenhower’s aversion to fear mongering, see continuation of Goodpaster’s interview, January 16, 1978, 108. *Oral Histories*, DDE Library.

times the federal government's 1953-1958 budget for health and nearly half that spent over the same period for international affairs.⁸ For a time, Strauss's comprehensive approach to maintaining AEC/DOD authority and autonomy allowed him to prevent diplomacy and the fallout controversy from interfering with atmospheric weapons testing. The significance of his influence in the Eisenhower administration is illustrated by the fact that it was only in April 1958 as Strauss's term was coming to an end that Eisenhower agreed to respond in kind to a Soviet decision to halt weapons testing. On October 31, 1958, thirteen years after Strauss proposed *Operation Crossroads*, seven years after testing began in Nevada, six years after the first H-bomb exploded in the Pacific, and four months after Strauss stepped down as AEC Chairman, the U.S. temporarily suspended atmospheric testing. Before the suspension, however, Strauss exerted tremendous influence: he created the conditions for the bomb to be used after the war as an instrument of military entitlement, fostered the militarization of the program, and helped engineer Cold War mobilization. More than a participant in the construction of the Military-Industrial Complex, Strauss was one of its architects.

This chapter examines Strauss's Chairmanship from the operational levels of the program to the influence he exerted in the Eisenhower administration. First, it discusses the importance of the managerial and operational continuities between Dean's regime and Strauss's and the changes that Strauss encouraged at the program's managerial level that prevented the fallout controversy from interfering with atmospheric weapons testing. Second, it explores the methods Strauss used to secure his authority over cabinet

⁸ For the expansion, see Richard W. Cook, AEC Director of Production during Strauss's chairmanship. Interview conducted by Maclyn P. Burg, October 27, 1975. Oral Histories, DDE Presidential Library. For the budgetary figures, see Table "Outlays by Superfunction and Function: 1940-2006 (in billions of dollars)." Online at <http://home.att.net/~rdavis2/outlays.html>.

members and AEC commissioners who opposed his authoritarian rule. Third, it shows how Strauss used that authority to stifle diplomatic opportunities for arms control. The history in this chapter demonstrates that the two most important factors in this process were the AEC/DOD partnership and Strauss's use and endorsement of wartime strategies of control.

From Dean to Strauss: Continuity and Change

Though Dean and Strauss brought different talents and personalities to the Chairmanship, they both served President Eisenhower during the first six months of his administration and shared similar ambitions. Because of this, the transition from one to another was not institutionally significant. At Eisenhower's request, Dean stayed on as AEC Chairman until the end of June 1953, presiding over the completion of *Upshot-Knothole* and giving Strauss time to settle in to his position as Atomic Energy Advisor. Dean fulfilled many of the same goals, especially militarization, for the program that Strauss had pursued as the military's stalking horse on the Commission. The expansion that Dean shepherded increased the program's footprint and the number of affiliate stakeholders with an interest in the program's continued expansion. As the military ethos that he fostered spread through the managerial and operational tiers of the program, militarization gained structural integrity. Militarization also influenced the decision-making of advisors and the work of advisory committees. Perhaps no example better illustrates this phenomenon than the way a Director of the Advisory Committee for Biology and Medicine, E. C. Stakman, opened a March 1954 meeting of the Committee. Assembled twelve days after *Bravo's* unexpectedly high yield ignited fires on islands twenty miles distant from the explosion, forced the emergency evacuation of personnel

and Marshallese from three islands in the path of its fallout cloud, and sickened the fishermen aboard the *Lucky Dragon*, Stakman opened the meeting of experts in radioactive effects by welcoming the group with a paraphrase of Confederate General Nathan Bedford Forrest's motto: "Victory goes to the nation that gets there fustest with the moistest and bestest weapons."⁹

Strauss's methods for influencing policy did differ from Dean's, reflecting their different personalities and the challenges each overcame. Dean was astute and affable, but instead of putting himself in the spotlight, he took an indirect approach to policymaking. As evidenced by the success he had in working through subordinate-level officials to secure approval for continental testing, the strategy was successful. It also had the added benefit of allowing him to keep his own hands clean and beyond criticism when his plans did not pan out, as with his efforts to re-package the bomb as a tactical weapon. Dean also enjoyed cordial relations with the JCAE through his term despite the death during his last year as Chairman of his friend and JCAE Chairman, Brien McMahon. One of the most influential congressional supporters the militarized AEC had, McMahon succumbed to cancer in July 1952 during a short-lived campaign for the presidency on a platform "to ensure world peace through fear of atomic weapons."¹⁰ Unlike Dean, Strauss was unable to cultivate much support from the JCAE, and their relationship became increasingly confrontational after the 1954 elections when the

⁹ See Memoranda and notes of Special Meeting of Advisory Committee for Biology and Medicine, held March 13, 1954. U.S. Atomic Energy Commission, RG 326 Division of Biomedical and Environmental Research Meetings ACBM 21-33 to Meetings ACBM 41-50, Box 104, Folder "Meetings A_C_B_M_Meeting #41-#50," NARA. On March 12, 1954, the *New York Times* reported that the bomb's fallout exceeded predictions about quantity and direction, 1.

¹⁰ "Introduction," The Brien McMahon Papers, Georgetown University, Special Collections. Introduction available at <http://www.library.georgetown.edu/dept/speccoll/mcmscope.htm>.

Democrats regained control of Congress. In personal and professional relationships, where Dean relied on persuasion and reassurance, Strauss was direct, condescending, and insensitive. Strauss's response to a woman who lived near the site and wrote him about the possibility that radioactive fallout had caused the cancer and death of her first-grade son and the deformities of a still-born child she delivered, is illustrative: "Former President Truman ... said that any dangers that might result from fallout were a small sacrifice."¹¹ By turns prickly or emotional and sensitive when frustrated or unable to get his own way, Strauss's authoritarian manner alienated other administrative officials, congressmen, and AEC Commissioners alike.

Only to Eisenhower did Strauss appear to show respect. By all accounts, Strauss was austere and unyielding—tough and scrappy with “more elbows than an octopus” according to his opponents.¹² In the most generous light, he comes across as self-righteous and idealistic, adept at chicanery, and not above lawbreaking; less generously, he is portrayed as a ruthless and egotistical scoundrel.¹³ He is best known for stripping Oppenheimer of his security clearance, the culmination of a vendetta that stretched back to Oppenheimer's opposition to development of the H-bomb;¹⁴ for deceiving Congress

¹¹ Martha Laird to Peter Jennings, “Coverup at Ground Zero,” *Turning Point*, aired during 1994 on ABC.

¹² Cited by Duncan Norton-Taylor, “The Controversial Mr. Strauss,” *Fortune*, January 1955, 110.

¹³ Gregg Herken summarized Strauss's personality as a combination of “extraordinary vanity and stubbornness with a vindictive streak,” *Brotherhood of the Bomb*, 169. For a summary, see also Barton J. Bernstein's review of Richard Pfau's biography of Strauss, *No Sacrifice Too Great: The Life of Lewis L. Strauss* (Charlottesville, VA: University Press of Virginia, 1984), “Sacrifices and Decisions: Lewis L. Strauss,” *The Public Historian* 8 (1986): 105-120. For an analysis of the Oppenheimer case as an example of the policing, or control, of experts in “institial positions” between the state and citizens, who drew authority from their cultural prestige and their access to state secrets and who took stands in opposition to the dominant state authority, see Charles Thorpe, “Disciplining Experts: Scientific Authority and Liberal Democracy in the Oppenheimer Case,” *Social Studies of Science* 32 (2002): 525-562, 527-528, 533.

¹⁴ Kai Bird, Martin Sherwin, *American Prometheus: The Triumph and Tragedy of J. Robert Oppenheimer* (New York, NY: Vintage Books, 2006), 435-490; Herken, *Brotherhood of the Bomb*, 179-317.

about AEC responsibility for the *Lucky Dragon* incident and his handling of the fallout controversy that then erupted,¹⁵ and for pursuing an anti-arms control agenda until his Chairmanship ended in 1958.¹⁶ Of these, only his attack on Oppenheimer is understood in light of a history that predated his tenure under Eisenhower, and all seemed to reflect that with Strauss's ascension, the AEC had changed course. As Herbert York, then-Director of the Livermore Radiation Laboratory, recalled, when Strauss took over from Dean he "proceeded to clean up the loose ends with a vengeance."¹⁷ Despite the impressions left by Dean and Strauss and the difference between Dean's congenial public persona and Strauss's condescending one, the administrative transfer made little difference in the program's operation. The militarization that occurred under Dean freed Strauss from much of the burden of administering the program, allowing him to direct his energies on the policymaking front.

Because of Strauss's history with the program and the repertoire of strategies of control from which he was comfortable drawing, he adjusted to and exploited the changes that had occurred in the years since he stepped down as one of the first five AEC Commissioners. When he assumed responsibility for the program in 1953, continental weapons testing was commonplace and AEC directors and personnel were adept at

¹⁵ The earliest account is Ralph Lapp's *The Voyage of the Lucky Dragon* (New York: Harper & Brothers Publishers, 1958); for summary accounts, see Schwartz, *Atomic Audit*, 421; Hewlett & Holl, *Atoms for Peace and War*, 279; Titus, *Bombs in the Backyard*, 19; Ellen Leopold, *Under the Radar: Cancer and the Cold War* (Piscataway, NJ: Rutgers University Press, 2008) 117-118. For the relationship between news about the *Bravo* test that caused fallout to descend on the fishermen and expressions of fear in popular culture, see Joseph Masco, *The Nuclear Borderlands*, 295-296; for deception, see Divine, *Blowing on the Wind*, 30-31; and Titus, *Bombs in the Backyard*, 19.

¹⁶ See Divine, *Blowing on the Wind*, esp. 11-13, 42-47, 68, 75-105, 177, 184, 207-208. For one of the most recent accounts of Strauss's opposition, see Herken, *Brotherhood of the Bomb*, 302-310. On the relationship between the fallout controversy and the Test Ban Treaty, see Jeffrey W. Knopf, *Domestic Society and International Cooperation: the Impact of Protest on U.S. Arms Control Policy* (New York: Cambridge University Press, 1998).

¹⁷ Herbert York, *Race to Oblivion*, 38.

managing tests and public relations in and around the Site. The first H-bomb was already eight months old, and the impasse over arms control between the U.S. and the U.S.S.R. made nuclear war seem closer than ever. Having fueled those fears since the end of the war when he and Forrestal used the possibility of nuclear war to secure permission to conduct *Operation Crossroads*, Strauss knew how to exploit them. In March 1954 after fallout from “Bravo” put him in the uncomfortable position of explaining to reporters the blast’s higher-than-expected fallout and the unanticipated cloud trajectory, Strauss concluded the press conference by mentioning that an H-bomb could “take out” New York City. As historian Robert Divine long ago pointed out, he “raised the spectre of nuclear holocaust” to diffuse a conversation about fallout.¹⁸ More than the fast footed way to downplay fallout and avoid fallout-related support for arms control, however, Strauss’s response was a practiced one. Portending nuclear cataclysm alongside a narrative that nuclear weapons, developmental testing, and a muscular nuclear-armed military offered the nation its only chance for survival was one of Strauss’s favorite tropes. It combined national security and military urgency, and Strauss used them and other wartime strategies of control during his service under Eisenhower to strengthen and expand the militarized structure that he inherited from Dean. He continued the practice of deluding other officials in the Eisenhower administration and the public about the hazards of radioactive substances and fallout, using media manipulation as an integral part of this

¹⁸ Perhaps because of the temporal boundaries of Divine’s study, he overlooked Strauss’s history when considering his response to reporters’ questions, *Blowing on the Wind*, 11-13. For Strauss’s comparisons between the U.S. and Soviet hydrogen bombs, see *New York Times*, March 27, April 1, 1954.

process.¹⁹ When the controversy over fallout erupted, Strauss and other AEC officials managed public relations around the Nevada Test Site with even more care.

Only after the public's concerns about the hazards of radioactive fallout began to gain enough political traction to potentially threaten continental weapons testing altogether did Strauss take an interest in limiting offsite fallout. The first concerted plan was adopted by the AEC and its affiliates and initiated with the 1955 *Teapot* series. Officials built flexibility into the testing schedule by including a variety of different types of tests in the series and having each bomb ready as the series got underway. The plan was that weapons expected to produce little in the way of off-site fallout could be tested on days when the weather either precluded or made more dangerous the detonation of a weapon expected to produce large amounts of radioactive fallout.²⁰ The second plan was devised during an AEC meeting in 1955 while the *Teapot* series was underway. New Mexico's Senator Clinton P. Anderson, the JCAE Chairman, provoked it with a letter he wrote to Strauss asking that the AEC re-evaluate testing in Nevada. Anderson suggested that the AEC consider detonating only "very small yield devices" after having learned from a meteorologist he talked to in Nevada (waiting to witness a detonation delayed because of weather) that the probability of having weather conditions that met "all" safety criteria for detonation was "about one day in twenty-five."²¹

¹⁹ For a discussion of how Strauss isolated himself from the Commission and how little he shared about nuclear hazards with the administration, see former deputy chief of the U.S. Delegation to the U.N. and Ambassador Gerard C. Smith, "Interview with Gerard C. Smith," May 8, 1990, 1-3. DDE Library.

²⁰ See William R. Kennedy, Jr., "Fallout Forecasting—1945 through 1962," Los Alamos National Laboratory, LA-10605-MS, UC-11, issued March 1986, CIC-14 Report Collection.

²¹ For the discussion of the Anderson's conversation and the letter, see Udall, *Myths of August*, 245

The AEC discussion about Anderson's letter illustrates that Strauss and at least two AEC commissioners disagreed not only about why continental testing was necessary but also whether it was even necessary at all. Strauss, primarily interested in the use of atmospheric testing to maintain support for AEC and military expansion, made the case for moving nearly all testing back to the PPG. Commissioners Willard Libby and Thomas Murray objected. Libby's response was a prideful one, based almost certainly on the fact that he had used his status as a scientist and reputation as the developer of radiocarbon dating that fallout from weapons tests was sufficiently diluted that it posed no hazards and also his view that tests were so necessary that people would "have to learn to live with" fallout. Libby's position differed little from that of a pro-testing argument by NSC staff that took exception to statements by administration officials about disarmament for the reason that it left the "peoples of the world" unprepared for the "realities" of the international situation.²² For his part, Murray argued that moving the series to the PPG would delay the series by sixty or ninety days. Murray's motivations were less clear than Libby's. During the August 1954 meeting where commissioners were expected to vote on *Teapot*, Murray indicated that he thought that the president had decided to "discontinue the use of the Nevada Proving Grounds." Once assured that Eisenhower had not, Murray added his assent to those of his fellow commissioners and the 1955 testing series—*Operation Teapot*—was officially underway.²³ His subsequent reluctance to have the tests conducted anywhere but Nevada is thus less understandable, but was likely related

²² NSC Brief of 8-27-54 submitted in conjunction with 11-29 State Report and review of NSC 112. December 1, 1954. MNSC, Third Supplement.

²³ "Atomic Energy Commission, Meeting No. 1020" minutes [with deletions]. 344. U.S. DOE Archives, Record Group 326 U.S. Atomic Energy Commission, Collection 1951-1958 Secretary File, Box 1263.

to his support for the development of tactical weapons and the fact that *Teapot* included a number of tests designed to perfect lightweight thermonuclear (H-bomb) weapons, nuclear missiles, and contained an assortment of military effects tests.²⁴ Murray's tendency to position himself against Strauss may also have influenced his decision. Murray did, for example, go around Strauss to Eisenhower, writing him with ideas about arms control, with explanations of his objections to Strauss's decisions, and with arguments against the concept of Mutual Assured Destruction on moral and practical grounds.²⁵ Despite the support for the Nevada tests expressed by Murray and Libby, Strauss persisted with commentary that addressed both arguments. He did so in a way that suggests he was making an case for moving the tests based on the accumulating dangers of radiation exposure for residents in Eastern Nevada and Southern Utah. Strauss said that fallout patterns for Nevada tests were well established—"East over Pioche and over St. George, which they apparently always plaster"—and feared that Anderson's letter was the first in a salvo that would threaten atmospheric testing altogether. He said he had "always been frightened that something would happen which would set us back with the public for a long period of time." He also reassured Libby and Murray that the move would not hinder development, telling them that Al Graves and Herbert York, Los Alamos's Test Director and the Director of Lawrence Livermore National Laboratory, were also "talking" about moving everything except "little" tests to the Pacific. Their comments suggest that they may have preferred testing at the PPG—it was "easy to do...you can do them one a day practically." After Murray interjected with another

²⁴ Weapons information drawn from Nuclear Weapons Archive, Teapot series, <http://nuclearweaponsarchive.org/Usa/Tests/Teapot.html>

²⁵ For Murray's reasoning, see Thomas E. Murray, *Nuclear Policy for War and Peace*, summarized on 224-229.

complaint about the time Pacific testing would take, Strauss discredited the objection with a simple solution that had gone unmentioned as long as continental testing generated political benefits: “Fly them out.”²⁶ That option failed and *Teapot* began in February 1955 and continued through mid-May, with its shots justified through appeals to national security and military urgency, and their effects portrayed as innocuous through media manipulation.

Because *Teapot* was approved after fallout from *Upshot-Knothole* stirred up controversy about continental testing, the AEC’s Office of Information reconfigured its public relations strategy, launching an “educational” campaign in December 1954 to preempt complaints before the series began:²⁷

Developments since *Upshot-Knothole* have recently been reviewed. Events have intensified the need for a pre-series educational program ... [to] keep public misunderstanding or apprehension over use of the Nevada Proving Ground at a minimum level.²⁸

One strategy included in the AEC’s public relations portfolio was the comparison between Pacific and Nevada tests that Dean had emphasized and reinforced in his last *Report* to Congress. In a January 1955 flyer entitled “Atomic Test Effects in the Nevada Test Site Region,” the AEC and its military partners reduced its national security and relative safety message to elementary-level statements that indirectly ridiculed the complainants and cast doubt on their patriotism. After reinforcing the impression that the

²⁶ Cited by Stewart L. Udall in *Myths of August*, 246-7.

²⁷ See Richard G. Elliott, Director, Office of Information, “Memorandum, Subject: Continental Test Information Plans” October 13, 1954, to all seven AEC Information Office Directors. RG 326 U.S. Atomic Energy Commission, Environ Measurements Lab; Collection NYOO-69A114, Box 131659-2 Teapot. Doc. 410505 (now also http://www.hss.energy.gov/HealthSafety/IHS/marshall/collection/data/ihp1c/0505_a.pdf)

²⁸ “Atomic Energy Commission Public Information and Public Education Programs,” December 6, 1954, U.S. DOE Archives, RG 326 U.S. Atomic Energy Commission, Collection 1951-1958 Secretariat File, Box 1263, Folder MR & A-7 Teapot, Vol. 1.

AEC and its military partners were nothing more than servants to the national interest by invoking the authority of the president over a matter as rudimentary as the increased magnitude of nuclear weapons, they re-emphasized the points made in a cover letter issued by the AEC/military Joint Test Organization from Camp Mercury, Nevada, that fallout was an inconvenience, not a hazard. Above a sketch of a bald man, presumably a scientist, with a bushy halo of hair and equally bushy eyebrows standing atop a mushroom cloud and peering down through a telescope, the officials and officers dismissed the complainants with cartoonish simplicity:

Our large fission bombs, the President has said, are more than 25 times as powerful as the weapons with which the atomic age dawned ... and hydrogen [fusion] weapons are in the range of millions of tons of TNT. ... Despite their relatively low yield, Nevada tests have clearly demonstrated their value to all national atomic weapons programs. Because of them we now have big bombs, and smaller ones too; in fact, a whole family of weapons. Because of them our Armed Forces are stronger and our Civil Defense better prepared.

An unusual safety record has been set. No one inside Nevada test site has been injured as a result of the 31 test detonations. No one outside the test site in the nearby region of potential exposure has been hurt.²⁹

The curiously worded cover letter that was reprinted on the face of the flyer betrays the underlying current that for the AEC and its military partners—here, the Joint Test Organization [JTO]—safety was not a product of any effort by the testing organization to reduce the hazards of testing for people living off-site, but was, instead, a function of the impressionability of people downwind. In other words, the JTO's attempt to thank those who did not complain about testing revealed that it measured "safety" by

²⁹ In the flyer, the AEC continued its practice of subordinating discussions of fallout to the flash and blast phenomena. United States Atomic Energy Commission, "Atomic Test Effects in the Nevada Test Site Region," January 1955, *The Record of Past Tests*, 1. Cover letter, James E. Reeves, Test Manager, "A message to people who live near Nevada Test Site," Joint Test Organization, Camp Mercury, Nevada, February, 1955. Flyer online at http://www.fourmilab.ch/etexts/www/atomic_tests_nevada/.

the extent to which people living off-site expressed satisfaction with AEC reassurances.

The JTO effectively transferred the burden for safety to Americans themselves:

Some of you have been inconvenienced by our test operations. At times some of you have been exposed to potential risk from flash, blast, or fall-out. You have accepted the inconvenience or the risk without fuss, without alarm, and without panic. Your cooperation has helped achieve an unusual record of safety.³⁰

As one of the AEC's stakeholders, the *Las Vegas Sun* followed suit. After State Senator Edward Leutzinger of Eureka County in North Central Nevada proposed moving tests, the *Sun* ridiculed him so severely that the comments can only be seen as an effort to dissuade others from making similar recommendations and to convince its readers that the only ones who feared testing were unintelligent and insensible:

another of our sterling members of the legislature has made an ass of himself for all the world to see ... this isn't the first crackpot who has voiced such sentiments without taking the trouble to learn the facts. ... The friendly people of the AEC have spared no effort nor expense to insure public safety ... yet all sorts of wild rumors circulate over back fences. ... These gossipy individuals who spread witch tales ... succeed only in frightening old ladies and simple-minded citizens ... sensible people of Nevada ... are glad for the fine publicity the state receives. ... We might suggest [the senator] take a vote of the more intelligent majority.³¹

Promotional efforts that relied less on claims of safety and more on ridiculing testing's opponents may have been necessary, at least from the AEC's perspective, given that the tests planned for *Teapot* were expected to be especially dirty.

The tests of tactical weapon prototypes and maneuvers for *Teapot* that AEC officials and military officers used to enhance their political influence were themselves

³⁰ James E. Reeves, Test Manager, Joint Test Organization, "A message to people who live near Nevada Test Site," Camp Mercury, Nevada, February, 1955.
http://www.fourmilab.ch/etexts/www/atomic_tests_nevada/.

³¹ *Las Vegas Sun*, February 18, 1955.

responsible for the production and offsite dispersal of some of the highest levels of fallout of any tests conducted in Nevada. The March 23, 1955, shot “Satchel,” a cratering effects test detonated despite the fact that observations from Pacific testing and experience with a similar cratering experiment in Nevada demonstrated that such shots produced harmful levels of offsite fallout, offers one example of the sidelining of safety in the interests of military objectives.³² Also known as “Teapot ESS,” “Satchel” was six feet long and weighed four tons with an expected yield of one kiloton. Like the 1951 cratering test that Shields Warren opposed, the below ground detonation of “Satchel” increased the chance that it would produce a large amount of radioactivised earth that would descend while so hot it might cause “external beta burns.” In that instance, a committee overruled Warren because tracking the test’s fallout cloud was one of the objectives and it would be easier to trace it over land.³³ The 1951 test produced a highly radioactive low-level cloud that settled in and around Elko, Nevada, while a higher-level cloud crossed over the Continental Divide.³⁴ Between that shot and granting approval for “Satchel,” AEC officials received additional information about the hazards of surface, or underground, tests. In 1954 I. I. Rabi, an AEC advisor and Chairman of the GAC, advised Strauss that the *Castle* series of tests in the Pacific substantiated the problem of high levels of localized fallout from tests conducted at or near ground level and advised that because of

³² Information about “Satchel” (Teapot ESS) see Miller, *Under the Cloud*, 228-229; *U.S. Atlas of Nuclear Fallout*, 206-210.

³³ Shields Warren, “Notes on the Meeting of a Committee to Consider the Feasibility and Conditions for a Preliminary Radiological Safety Shot for Operation ‘Windsquall’,” May 32-22, 1951, 41, Los Alamos Scientific Laboratory, May 21 and 22, 1951. *Prescott v. U.S.*, Defendant’s exhibit DX390241. Warren also cited in ACHRE staff “Memorandum to the Members of the Advisory Committee on Human Radiation Experiments” March 8, 1995, Meeting 12, Briefing 12, Tab H, online at <http://www.gwu.edu/>.

³⁴ For information about the tests and resulting fallout of the 1951 shots, see Miller, *Under the Cloud*, 130-133 and *U.S. Atlas of Nuclear Fallout*, 86-91.

the differential decay rate and distribution, the AEC should continue to study the problem but remain mindful of a cumulative risk from such studies. Rabi made clear that although he derived his data from thermonuclear testing in the Pacific, his findings were equally appropriate for continental tests, representing a difference in area only and “scaled up from the results of tests already made in Nevada from much smaller weapons.”³⁵ “It is almost inevitable that an atomic explosion,” Rabi wrote,

where a substantial portion of the fireball reaches the surface, will result in a heavy and lethal fall-out over an area much greater by a factor up to 10 than the area of blast damage. Therefore, weapons exploded at an altitude of 1 ½, or greater, times the radius of the fireball will not result in a high degree of local fallout, but in a wide distribution of fall-out over a long period of time. ... The Committee further suggests that the Commission ... study the longer-range problem of what would happen to the environment, and to plant and animal life, which had been subjected to intense fall-out amounting to 500 r. in 50 hours over an area of approximately 5000 square miles, as occurred over the Pacific in the [redacted] test.

Neither Warren’s warnings during the first year of testing nor Rabi’s were enough for the AEC to prevent the military from detonating “Satchel,” a test that carved a crater 300 feet wide and 128 feet deep, scattering significant levels of fallout in and around Las Vegas.

Militarization caused the subordination of precautions advocated by Warren and Rabi and was the primary reason why the AEC allowed the Army to detonate “Satchel” in Nevada. The test itself was expected to produce results similar to the cratering event originally planned for Amchitka but held in Nevada in 1951. For officers interested in an exercise scenario, the smallish “Satchel” offered yet another opportunity to demonstrate the nuclear readiness and versatility of ground troops and their commanders. For

³⁵ Rabi likely referred to the 1951 cratering shot. Rabi for the General Advisory Committee to Lewis L. Strauss, June 3, 1954, “Summary Report of the 40th Meeting of the General Advisory Committee, held in Washington on May 27, 28, and 29, 1954,” 4. Department of Energy Historian’s Office Archive; U.S. DOE Archives, 326 U.S. Atomic Energy Commission, Collection Secretariat, Box 1275, Folder O&M GAC.

AFSWP, the underground blast provided an opportunity for it to expand its influence, broadening the concern of its Directorate of Weapons Effects Tests from the damage nuclear weapons did to equipment to the medical and biological effects of radioactive fallout.³⁶ While admitting that the AEC's Division of Biology and Medicine had already conducted these studies, producing "well documented" results and contractor laboratories were also continuously engaged in such studies, AFSWP reported that "it was felt" that the military should conduct its own studies.³⁷

The goal of those studies seems to have been to use fallout readings from the *Teapot* tests to create a data set that was unencumbered (as others were not) with the potential for exposures to cause injury in the long term—the objective being to study the effects of "short-term fallout-of immediate military importance." AFSWP arranged with armed forces medical and veterinary personnel to collect every twenty-four hours throughout the fourteen-week series samples of milk, portions of calves from slaughterhouses, and urine samples from personnel at locations throughout the U.S., Hawaii and Alaska, Greece, Panama, Japan, Germany, and Africa, and directing that they be shipped immediately thereafter to the Army's Medical Service Graduate school. Air Force officers also conducted less sophisticated studies in conjunction with the cloud sampling following "Satchel" and other shots of the *Teapot* series. After its sampling planes landed and without decontaminating them, the Air Force instructed servicemen to

³⁶ See summary history of Armed Forces Special Weapons Project (AFSWP), Doc. 41908, Defendant's Exhibit DX21959, *Prescott v. U.S.*

³⁷ December 16, 1954, letter with attachments from A.R. Leudecke, Major General, USAF, Chief AFSWP to Brigadier General H. H. Twitchell, Director of Professional Services, Office of the Surgeon General, Subject: Fall-Out Studies. SWPSF-5-1/921.1, ACHRE staff briefing 8. http://www.gwu.edu/~nsarchiv/radiation/dir/mstreet/commeet/meet8/brief8/tab_f/br8fli.txt. For background on the duplication of these studies and the request that AFSWP perform studies within AEC's sphere of responsibility, see "Transcript of Seventeenth Meeting, Committee on Medical Science" October 30-31, 1952, 44-46. DOD, Research and Development Board. Doc RCC6.950210.001

rub their hands on the fuselages. When the men appeared to suffer no physical injuries from the contact, the Air Force determined it had scored an economic and psychological victory. The results showed that the contamination on returning planes was due primarily to the concentration of radioactivity around the fittings and seams of aircraft and not on the planes' smooth skin. Because it was all but impossible to decontaminate those areas, the Air Force decided that decontamination of planes used for cloud sampling and tracking was unnecessary. Additionally, officers concluded that the absence of injury to the men who rubbed their hands on the still-hot planes was an effective way to counteract any psychological reluctance Air Force personnel might have about boarding or working on and around planes that had not been decontaminated.³⁸ Though Los Alamos scientists and researchers complained that the Air Force's conclusions were at odds with the fundamental principles of radiation safety and permissible exposure levels, and that if they were adopted would jeopardize the accuracy of the findings derived from samples taken by non-decontaminated aircraft—the reason for sampling in the first place—those complaints led only to a compromise and further experiments of the *Teapot* variety by the Air Force during *Operation Plumbbob* in 1957.³⁹

For their own institutional reasons, AFSWP and the Air Force alike benefited from the fallout of the 1955 series. AFSWP built a scientific imperative into *Teapot* to extend its sphere of influence. The Air Force used its responsibility for sampling to justify a decision that decontamination was unnecessary—creating the impression for its personnel that radioactive exposures below those that would cause skin burns were safe

³⁸ “Draft-For Discussion Purposes Only” Memorandum, Advisory Committee Staff to ACHRE, March 8, 1995, Tab H-2 ACH1.000012.028.

³⁹ “Draft” Memorandum, March 8, 1995, ACH1.000012.028.

and, on that basis, that nuclear missions could be conducted at less expense than previously believed. In this way, military officers laid claim to deriving scientific information from “Satchel” and other *Teapot* tests, tests that were expected to produce high levels of radioactive fallout nationwide and, based on the extent of AFSWP’s sampling network, globally too, in the midst of the fallout controversy.

One reason that Strauss and the militarized AEC had no difficulty garnering Eisenhower’s approval for a test that the AEC expected to produce high levels of fallout was that Strauss was as competent as Dean at focusing on the magnitude of tests in the Pacific to minimize the nature of tests conducted in Nevada. In August 1954 when Strauss requested Eisenhower’s permission for the 1955 *Teapot* series, he included in the routine request a paragraph explaining that those tests would be of “small enough energy yield and fired under such conditions as to reduce hazard to the public to a minimum,” acknowledging that although fallout from the tests might be hazardous, the AEC would work to limit them.⁴⁰ As reassuring as was Strauss’s promise to limit the dangers from Nevada after his admission to Eisenhower that they “might” be hazardous, it appears in comparison with his explanation of the precautions to be taken with an underwater Pacific test—one that in terms of yield would be thirteen kilotons smaller than a tower shot planned for Nevada as part of the *Teapot* series—that Strauss intentionally framed the requests to reinforce the difference in significance between Nevada and Pacific testing. In December 1954 while Strauss was still answering to complaints about fallout from the *Bravo* test and the death of Aikichi Kuboyama, one of the Japanese fishermen

⁴⁰ The president approved the series on September 9, 1954. August 20, 1954, letter to President Eisenhower from AEC Chairman Lewis L. Strauss. U.S. DOE Archives, Record Group 326 U.S. Atomic Energy Commission, Collection 1951-1958 Secretariat Files, Box 1263, Folder NIR & A 7 Teapot, Vol. 1.

from the *Lucky Dragon*, that was fresh in his critics' minds, Strauss was careful to explain to Eisenhower that an underwater test the Navy planned for the Pacific would produce no harmful effects to people or to fisheries. Strauss explained that both the Scripps Institute of Oceanography and the Office of Naval Research were conducting studies to locate an ideal spot for the thirty-kiloton shot, that the general area was free of commercial fish, that currents and winds were such that contamination would not migrate and cause contamination problems, and, that the nearest people lived on Guadalupe Island, some seventy-five miles from the site. Strauss anticipated that no evacuation would be necessary and personnel would ensure that the area affected would be secured from "random shipping and aircraft."⁴¹ In contrast, Strauss did not inform Eisenhower that AEC/military planners for *Teapot* expected that the tests would produce enough fallout that it would be detectable in the urine of people across the globe and in milk from such distant places as Japan and Germany.

Featured in two *New York Times* articles accompanied by a picture of the "desert eruption," the four-ton "Satchel" was touted by AEC officials and military officers as a "highly portable" device designed to be planted by a "small combat team." A "hit-and-run raiding force" of 5,000 soldiers from the Second Infantry Division participated in an exercise that simulated the use of the weapon to destroy an enemy's guided missile site. The newspaper reported that it was "believed maneuverable enough to be handled by one man in a sneak raid."⁴² The coverage of the first sub-surface shot to be conducted at the

⁴¹ Strauss to Eisenhower, December 1, 1954, 1-2. Folder: Atomic Energy Commission 1953-1954 (2), Dwight D. Eisenhower, Papers as President of the United States, 1953-1961 (Ann Whitman File) Administrative File, Fox 4, A75-22, DDE Library.

⁴² "Atomic 'Satchel' Set Off In Nevada, Underground Charge Erupts Like Volcano In Desert—High Portability Noted," and "Weapons in Maneuvers," *New York Times*, March 24, 1955.

Site since 1951 in the *Las Vegas Sun* was accompanied by four images of the shot, mentioning also that along with the foot soldiers participating in the exercise, an additional 280 military men observed the spectacle from five miles away. The *Las Vegas Review Journal* noted that thirty-five aircraft including jet planes of the Tactical Air Command also participated. The *Sun* emphasized that the AEC postponed the blast because of weather conditions until “the last possible minute” when the conditions were finally favorable to steer the radioactive debris away from Las Vegas.⁴³ And yet, those predictions were wrong, and may have been known to be wrong by the paper’s reporter at the time they were written: fallout from the ninety-six foot deep crater that “Satchel” created did descend on Las Vegas, in other areas of Clark County, and Northeastern Arizona, while a higher-elevation cloud of material continued in a southeasterly direction.⁴⁴ The fallout contained the third-highest ratio of radioactive iodine—I-131—of any continental weapons test and the cities of Las Vegas, Dallas-Fort Worth, and Houston remained “hot” after the March 23 shot through March 24.⁴⁵

A sister exercise to “Satchel” produced no radioactive fallout. *Exercise Surfboard* used conventional explosives to simulate a nuclear missile and a “satchel” in exercises conducted along the California coastline. Its scenario was more involved, but its objective was similar to the “live” nuclear maneuvers in Nevada, with a small raiding force armed with a small simulated nuclear weapon expected to use it to destroy an enemy missile site. A joint Navy-Army exercise, *Surfboard* involved 12,000 Navy personnel and 8,000

⁴³ *Las Vegas Sun*, March 24, 1955, 1; preliminary coverage, “Slate Underground A-Blast at Yucca Flat,” *Las Vegas Review Journal*, March 22, 1955, 1.

⁴⁴ Information drawn from the National Cancer Institute Study and collected in the U.S. *Atlas of Nuclear Fallout*, 206-210.

⁴⁵ Miller, *Under the Cloud*, 228.

soldiers, with 5,000 from Ft. Lewis, Washington, alone. Though two planes collided in a cloud of artillery smoke and debris, the pilots parachuted to safety. The simulated losses, however, were high—with 700 men counted as “casualties” because of their proximity to the one atomic missile fired by the “Aggressor” forces. After three hours, the men returned to the exercise as “replacement” troops and succeeded in planting the “satchel” and achieved the objective of demolishing the target missile site.⁴⁶ Officers publicized the maneuver in the same way that they did exercises in Nevada, with coverage before, during, and after the exercise, complete with pictures. Stories about *Surfboard* appeared in the same issues as those reporting the “Satchel” exercise. With no mention of the residual activity that would, in a real battle with real nuclear weapons, contaminate the battlefield for friendly and enemy soldiers alike, readers were left to imagine that a nuclearized Army was ready for action.

Though typical of earlier exercises and little different from the pattern Army officers and others set in the use of nuclear weapons to secure political support for maintaining high troop levels, “Satchel” is significant because it, along with others in the *Teapot* series, seems to have shaped Eisenhower’s thinking about nuclear weapons and their utility. The detonation of tactical-style devices at *Teapot*, the publicity about “Satchel,” and the practice of omitting any mention about residual radiation and its potential to injure U.S. soldiers almost certainly influenced Eisenhower’s comment during a news conference just before “Satchel’s” detonation that he would use atomic weapons “just exactly as you would use a bullet or anything else.”⁴⁷ Seven days later, on

⁴⁶ Gladwin Hill, “Two planes crash in Coast Games,” *New York Times*, March 20, 1955, 23; Gladwin Hill, “‘Aggressor’ back at his old tricks,” *New York Times*, March 27, 1955, 46.

⁴⁷ “President Says Atom Bomb Would Be Used Like ‘Bullet,’” *New York Times*, March 17, 1955, 1.

March 23, the same day that the Army conducted the “Satchel” exercise, he reiterated his position along with a concept of “measured retaliation” to fight “limited wars” that would not call for the intensive nuclear bombing that under the doctrine of “massive retaliation” would be used in a larger, world war.⁴⁸ Additionally, with so much emphasis by outsiders as well as Strauss about the radioactive hazards of H-bombs and other weapons detonated in the Pacific and so little about the hazards of fallout from the Nevada tests, it was easy for Eisenhower to reason that nuclear bombs, missiles, and shells, of the sort tested in Nevada were, as he wrote in 1956, “smaller & of less danger to humanity” with the ancillary benefit of reducing the amount of fissionable material for H-bombs.⁴⁹ Unlike Truman, who remained noncommittal when asked whether he would approve the use of atomic weapons while refusing to rule out that possibility,⁵⁰ Eisenhower expressed no qualms about the use of nuclear weapons and even before “Satchel” did not hesitate to say that they should be used in the same way as any other armament in the arsenal.

At a February 11, 1953, meeting of the NSC convened to consider a strike against the Chinese at Kaesong, Eisenhower was unequivocal: “We *should* consider the use of tactical atomic weapons.” Dulles agreed, and while the Pentagon began to assess the danger to friendly forces and consider other targets, the NSC Planning Board developed “contingency plans” for war.⁵¹ According to then assistant, later Ambassador, Gerard C.

⁴⁸ Anthony Leviero, “President Shuns Stand on Quemoy,” *New York Times*, March 24, 1955, 9.

⁴⁹ Eisenhower Diary Entry, April 23, 1956, *Diaries of Dwight D. Eisenhower, 1953-1969*.

⁵⁰ *Public Papers of the Presidents of the United States, Harry S. Truman, 1950* (Washington, D.C.: U.S. Government Printing Office, 1965), 726-727, reprinted in Dennis Merrill, Thomas G. Patterson, eds., *Major Problems in American Foreign Relations, Volume II: Since 1914*. (Boston; New York: Houghton Mifflin Company, 2000), 310.

⁵¹ Richard H. Immerman, *John Foster Dulles: Piety, Pragmatism, and Power*, 68-69.

Smith, it was around this time that Dulles found reasons to veer away from Eisenhower's position on the use of nuclear weapons. After Smith learned of the military's plans about Quemoy-Matsu and an attack focused on Amoy [Xiamen] harbor, he arranged for "some military people" to meet with Dulles and explain their plan and its consequences:

And they were very glib about surgical strikes and I finally said, "Well, now what is your estimate of casualties?" And I will never forget, this Major said, "Well, we think about 186 thousand casualties." Dulles never mentioned the use of nuclear weapons for that purpose again.⁵²

Eisenhower, however, maintained that nuclear weapons should be used—a position that he expressed after transferring in early 1953, with Strauss's blessing, custody of nuclear weapons to the military. The move institutionalized the possibility that nuclear weapons would become a routine component of the arsenal.

The decision remained contentious from that moment forward, with debate among the Secretaries of Defense, State, and Chairman Strauss filtering up to Eisenhower periodically for clarification. As with maneuvers involving "live" nuclear weapons, the objective was more difficult to achieve in practice than it was to put down on paper. The core of those disagreements were fundamental differences between tactical and strategic uses—the same distinction that Dean had tried to overcome in 1951—and the way Eisenhower dealt with them illustrates the he was confident that various types of nuclear weapons were available for tactical and strategic use.

On December 5, 1953, two days after Eisenhower explained to Churchill in Bermuda that he did not think nuclear strikes to take out planes or troops would cause the Soviets to bomb London, the NSC took up the issue of responsibility for the use of

⁵² Gerard C. Smith, "Interview with Gerard C. Smith," May 8, 1990, 28-29. DDE Library.

nuclear weapons.⁵³ During that meeting, the DOD expressed its opinion that distribution of weapons to commanders under NSC 162/2, “Basic National Security Policy,” meant that commanders could use them as they would any other weapon. This seemed to indicate that the weapons they would have at the ready would be “tactical” weapons—arms that could be deployed at a field commander’s level. Dulles disagreed with the DOD’s position, using the word “tactical” to explain that although the military had physical custody of the weapons and the responsibility for planning for their use, their deployment would be up to the president. Strauss also opposed the DOD’s ideas and without reference to weapons types, avoiding the word “tactical,” and without explaining whether his position was based on a philosophical difference of opinion or on his understanding of the radioactive consequences of nuclear weapons use, disapproved of a commander’s option to deploy a nuclear weapon tactically: “There was no thought expressed that their use could be arbitrarily decided upon by a local commander.” He suggested that a phrase be added to clarify that nuclear weapons would be “considered” in the event of hostilities “with the specific prior approval of the President as Commander-in-Chief.”⁵⁴ For his part, Eisenhower attempted to settle the disagreement by reiterating that the fundamental dilemma was not about who would use them, but what they would be used for:

⁵³ “Memorandum of Meeting Regarding Bermuda, December 5, 1953,” DDE’s Papers as President, International Meetings Series, Box 1, Bermuda-State Dept. Report-Top Secret. DDE Library.

⁵⁴ The problematic section was 39(b). See W.B. Smith, Department of State, “Memorandum for the President,” December 3, 1953; Strauss to General Cutler, Special Assistant to the President,” December 3, 1953; James S. Lay, Executive Secretary NSC, “Memorandum for the President,” December 16, 1953. Folder: Atomic Weapons, Correspondence and Background for Presidential Approval and Instructions for use of (1953-1960) (1). NSC Series, Subject Subseries, Box 1: Atomic Weapons, Presidential Approval and Instructions for use of (1). DDE Library.

a distinction should be made between tactical and strategic use. ... The decision on tactical use might be left up to the commander in the field, but the decision on strategic use, particularly retaliatory, should be made here in Washington.⁵⁵

It is impossible to know whether in 1953 Eisenhower was aware of the rudimentary nature of the most advanced tactical weapons; but it seems that either he had little understanding of the residual radioactive effects that set nuclear weapons of any sort apart from their non-nuclear counterparts or he believed that the radioactivity would not present insurmountable problems. The reader will recall that by December 1953 the military had detonated a shell-type weapon, “Nancy”—or “Nevada Zombie”—in Nevada. The canister, three feet in diameter and ten feet long resembled a common shell, but at six and one-half tons it was not easily portable and no chamber had yet been devised to propel it forward. “Nancy” was detonated after being hoisted to the top of a tower. And in May 1953 soldiers detonated a state-of-the-art 280 mm shell—the 803 lb. “Grable”—from an eighty-five ton cannon that was shipped to the Site between two semi-trucks. “Grable’s” range was approximately twenty miles. By 1957, when then-Secretary of Defense Radford recommended that Eisenhower allow nuclear cannon to be deployed into South Korea, he had two models from which to choose: one was a 280 mm Grable-type weapon and the other was the “Honest John,” a 762 mm rocket, fired from a truck-mounted cannon, with a range of twenty-two miles.⁵⁶ Dulles repeatedly objected, arguing

⁵⁵ Robert Cutler, “Memorandum for the Record” December 2, 1953. Folder: Atomic Weapons, Correspondence and Background for Presidential Approval and Instructions for use of (1953-1960) (1). NSC Series, Subject Subseries, Box 1: Atomic Weapons, Presidential Approval and Instructions for use of (1). DDE Library.

⁵⁶ Michael Gordon Jackson, “Beyond Brinkmanship: Eisenhower, Nuclear War Fighting, and Korea, 1953-1968,” *Presidential Studies Quarterly* 35 (2005): 63, following A. J. Bacevich, *The Pentomic Era: The U.S. Army between Korea and Vietnam* (Washington, D.C.: National Defense University Press, 1986), 82-84, 94-95.

that the weapons were of a type that would breach the armistice and, with some sense that he felt repugnance at the thought of their use, said they were of little value apart from their “psychological” significance: “why in the world” is it “essential that we be able to haul these great monsters around.”⁵⁷ Though Eisenhower initially agreed with Dulles, preferring that nuclear armed aircraft be sent into South Korea instead, he ultimately gave in under persistent pressure from the JCS. In January 1958 Eisenhower allowed the military to situate nuclear cannons in South Korea; a year later the Air Force installed nuclear cruise missiles with a 1,100 kilometer range.⁵⁸

Delegating responsibility for the use of nuclear weapons was a thornier issue. In 1954 the problem was preliminarily addressed by the Secretaries of State, Defense, and Strauss with a decision to add language about the diplomatic implications of the use of weapons without waiting for a specific presidential directive. The compromise did not specify whether the weapons were tactical or strategic. The problem emerged again in March 1955 and a year later in March 1956, with the result in each instance that the president retained authority to decide on the use of weapons. In 1956 a provision was added for advance authorization.⁵⁹ At that time, Eisenhower was still working through the military’s implementation plans, discussing the issue at an NSC meeting before

⁵⁷ Jackson, “Beyond Brinkmanship,” 64.

⁵⁸ Jackson, “Beyond Brinkmanship,” 65.

⁵⁹ See “Memorandum for Secretary of State, Secretary of Defense, Chairman, Atomic Energy Commission” January 4, 1954, Subject NSC 162/2, paragraph 39(b); “Memorandum for Secretary of State, Secretary of Defense, Chairman, Atomic Energy Commission” March 14, 1955, [162/2, 39(b)] affirmed as NSC 5501, Paragraph 34. Folder: Atomic Weapons, Correspondence and Background for Presidential Approval and Instructions for use of (1953-1960) (1). NSC Series, Subject Subseries, Box 1: Atomic Weapons, Presidential Approval and Instructions for use of (1). DDE Library.

committing himself to advance authorization.⁶⁰ As the president was mulling over ways that nuclear weapons might be deployed, the AEC and its military partners planned for the 1957 series in Nevada, including warheads, tactical-type weapons, and military exercises—“Desert Rock VII” and “Desert Rock VIII.”

International anxiety about fallout, the number of tests planned, and the types of shells and weapons to be detonated, made planning 1957’s *Operation Plumbbob* more complicated for AEC officials than usual. *Plumbbob* involved twenty-nine tests, including warhead prototypes, smaller devices that concentrated yield, and troop exercises in conjunction with the seventy-four kiloton “Hood,” a thermonuclear warhead developed by Lawrence Livermore Laboratory and detonated from a balloon. The AEC adjusted its public relations campaign stateside to gin up support nationwide for continued atmospheric testing while also directing its message abroad. For Strauss and other AEC officials, the goal was to convince Britain and France, alienated by the failure of arms control negotiations and continued atmospheric testing in the face of evidence that radioactive fallout was causing global contamination, that the U.S.’s atmospheric weapons tests would benefit them, too.

AEC information officials added an “educational” campaign that portrayed testing as internationally significant. The campaign extended from the time the public relations plan was formalized in the winter of 1957 until the end of the series in October 1957 and

⁶⁰ “Briefing Note” for “Meeting in the President’s Office” June 27, 1958; “Memorandum for the Secretary of State, Secretary of Defense,” Subject: Policy regarding use of atomic weapons” July 1, 1958. Folder: Atomic Weapons, Correspondence and Background for Presidential Approval and Instructions for Use of (1953-1960) (2), NSC Series, Subject Subseries, Box 1: Atomic Weapons, Presidential Approval and Instructions for use of (1), DDE Library.

was tailored as a countermeasure to the international outcry over fallout.⁶¹ Alongside an umbrella claim to national security, the idea was to assert that weapons tests had value that extended beyond the U.S., with plans to announce routinely throughout the operation that the tests would “serve in the defense of the United States and the Free World.”⁶² AEC officials ensured that the national press would cooperate in the dissemination of its message by opening up eight of the shots to representatives of the national media selected on the basis of their significance in nationwide media markets and to press, radio, and television, along with reporters from Nevada and its bordering states. As an indication of how seriously the AEC took international pressure for a moratorium on atmospheric nuclear testing and how critical Strauss and other officials believed it was to mobilize political support for testing, the AEC targeted especially those areas where the it had significant operations and large numbers of employees who might be expected to become politically active to protect their jobs, especially around Hanford, Oak Ridge, Savannah River, and Paducah.⁶³ To generate support around the Nevada Site, the plan combined notification of officials with face-to-face lobbying of state, county, and local, officials in Nevada, Arizona, Utah, and California to convince “opinion leaders” that the tests would be safe. Additionally, meetings between officials with the AEC’s Division of Biology and Medicine officials and “veterinarians, physicians, and public health officials” were

⁶¹ “Public Education and Information Plan for Operation Plumbbob,” attached to memorandum from Paul F. Foster, Assistant General Manager for International Activities, to Elmer B. Staats, Executive Officers, Operations Coordinating Board. Collection, NSC-OCB Central Files, Box 10, Folder OCB 000.9 [Atomic Energy] File 6, Feb-Mar 1957. DDE Library.

⁶² “Public Education and Information Plan for Operation Plumbbob,” 9.

⁶³ “Public Education and Information Plan for Operation Plumbbob,” 3-4.

expected to gain the support of local respected authorities.⁶⁴ Finally, the AEC planned to distribute a variety of self-promotional material to the media, schools, and at each personal encounter or meeting with state and local officials, community members, doctors, and veterinarians, including the booklet “Atomic Test Effects in the Nevada Test Site Region” and a motion picture, “Atomic Tests in Nevada.” And, to complement these AEC-produced materials, officials worked to offset any impressions that the Commission was engaged in a promotional exercise by distributing an article that appeared in the *Journal of the American Medical Association* and lent an authoritative air of impartiality to the issue of testing hazards. The article, “Protecting the Public During Weapons Testing at the Nevada Test Site,” was written by Gordon Dunning, the Director of the AEC’s Division of Biology and Medicine.⁶⁵ The National Cancer Institute later estimated that the I-131 released during *Plumbbob*, twice as much as any other series in Nevada, caused approximately 38,000 people to contract thyroid cancer and 1,900 to die from the disease.⁶⁶

Strauss and Eisenhower: Authority and Executive Sanction

The imperative to use atmospheric testing for domestic political gain that was at the heart of militarization and the authority Strauss exercised in the Eisenhower administration enabled Strauss to prevent the president from achieving two of the goals he set for his administration: improving world opinion toward America and her policies

⁶⁴ “Public Education and Information Plan for Operation Plumbbob,” 9.

⁶⁵ “Public Education and Information Plan for Operation Plumbbob,” 9.

⁶⁶ National Cancer Institute, *Study Estimating Thyroid Doses of I-131 Received by Americans from Nevada Atmospheric Nuclear Bomb Tests*, 1997, cited in “Operation Plumbbob,” Nuclear Weapon Archive, <http://nuclearweaponarchive.org/Usa/Tests/Plumbbob.html>.

and slowing or halting the arms race.⁶⁷ Both of these ambitions were embodied in Eisenhower's December 1953 "Atoms for Peace" speech before the U.N. General Assembly. In his famous speech, Eisenhower denigrated the logic of the arms race and made a commitment to developing benevolent uses for nuclear energy. Eisenhower's goal was much the same as Secretary of State Acheson's had been in 1951 when he directed Ambassador Benjamin V. Cohen to present the initial proposal for disarmament before the General Assembly: to give the U.S. an advantage in world opinion over the Soviets.⁶⁸ Eisenhower hoped to smooth over the disenchantment among America's U.N. partners that developed after the expansion of weapons production and experimentation dramatized by thirty-one atomic detonations, troop maneuvers in Nevada, and the six tests in the Pacific, including the 10.4 megaton thermonuclear "Mike" that made the U.S. position on the nuclear arms race increasingly incoherent, especially to the European allies. Weapons testing and mobilization made America's diplomatic efforts seem feeble in comparison. Additionally, anti-communist rhetoric also had a negative effect on the ways that European allies and others perceived the United States. Because of this, the support from the international community that Truman and Eisenhower expected in response to their persistent attempts to discredit the communists failed to emerge. In its 1953 annual report to President Eisenhower, the Psychological Board reported that

⁶⁷ For Eisenhower's plans for atomic energy and the development of his thinking about Atoms for Peace, see "Memorandum of Conversation Regarding Bermuda Meeting," December 4, 1953; and the record of a smaller meeting between Eisenhower, Sir Winston Churchill, Strauss, and Lord Cherwell, "Memorandum of Meeting Regarding Bermuda," December 5, 1953, both in DDE's Papers as President, International Meetings Series, Box 1, Bermuda-State Dept. Report-Top Secret. For the evolution of the speech, see C.D. Jackson's "Chronology-'Atoms for Peace' Project" September 30, 1954, C.D. Jackson Papers, Box 29, Atoms for Peace-Evolution (1). DDE Library.

⁶⁸ "Minutes of the Meeting of the Secretary of State With the Panel of Consultants on Disarmament," April 28, 1952. *FRUS*, 1952-1954, Vol. II, Part 2, 896-897.

Western Europe had become heavily, and increasingly, critical of U.S. foreign policy. Europeans feared a trend toward “isolationism” based upon intensified polarization between the America and the Soviets and they decried the United State’s anti-communist “hysteria.” By contrast, the Soviet’s “peace initiatives” seemed more rationally motivated.⁶⁹

The “Atoms for Peace” program was Eisenhower’s bid to recapture the good will that had been lost since the Marshall Plan and Berlin Airlift and he hoped to generate solidarity among America’s allies in the UN against the Soviet Union. By the time he delivered it on December 8, 1953, support from European allies had weakened to such an extent that Eisenhower put his honor on the line in an effort to reverse the trend:

the United States pledges before you—and therefore before the world—its determination to help solve the fearful atomic dilemma—to devote its entire heart and mind to find the way by which the miraculous inventiveness of man shall not be dedicated to his death, but consecrated to his life.⁷⁰

He responded to complaints that the U.S. was a disingenuous diplomatic partner by emphasizing that the complaint was fundamentally untenable. Eisenhower expressed frustration with the possibility that any reasonable person could expect that even the world’s largest arsenal could be decisive should war break out: “The expenditure of vast

⁶⁹ “Status of United States Programs for National Security as of June 30, 1953,” 8. The Psychological Program, 1. DNSC.

⁷⁰ Dwight D. Eisenhower, “Text of the Address Delivered By the President of the United States Before the General Assembly of the United Nations In New York City on Tuesday Afternoon, December 8, 1953,” 9. Available online at http://www.eisenhower.archives.gov/research/digital_documents/Atoms_For_Peace/New%20PDFs/Binder13.pdf

sums,” Eisenhower stated, could not “guarantee absolute safety for the cities. . . . The awful arithmetic of the atomic bomb does not permit such an easy solution.”⁷¹

Because Strauss, one of Eisenhower’s most powerful advisors, disagreed with the president’s objectives and used all the resources and tactics he could muster to prevent military resources from being diverted to peacetime use and to discredit diplomatic overtures that posed threats to continued weapons testing, the plan failed to produce more than a short term turnaround. Instead, because of militarization of the program and Atomic Governance, the same pattern of aggression backed by weapons tests and inflammatory rhetoric that characterized the final years of Truman’s presidency continued—as did the Soviets’ use of the UN as a forum to blame America for relying too heavily upon weapon superiority. Soviet representatives argued that the U.S. blocked all reasonable attempts to develop workable solutions. As Eisenhower said later, U.S. policy was increasingly being made on the basis of world opinion as shaped by Soviet declarations.⁷²

Strauss was a significant factor in the process that kept the program funded and atmospheric testing alive through the fallout controversy and disarmament standoff. It was to Strauss that Eisenhower turned for assessments of the foreign policy implications of atomic energy proposals. As Benjamin P. Greene notes, Eisenhower did not really know what to make of the different opinions he received about weapons testing and development and was thus unsure about how to translate those opinions into his thinking

⁷¹ “Text of Address,” 4.

⁷² “Minutes of the 269th Meeting of the National Security Council, Camp David, Maryland,” December 8, 1955, MNSC, 11.

about arms control—Strauss provided that “broad” view.⁷³ Strauss parlayed Eisenhower’s uncertainties and the trust that he placed in him to wield authority over other cabinet members. This extended to the ways that other cabinet members kept their diaries. Strauss, for example, received Eisenhower’s permission to advise them that they should refrain from dictating the contents of their diaries, a nineteenth-century habit as Strauss explained the practice to Eisenhower, to prevent “recurrent leaks.”⁷⁴ He also wielded power over Eisenhower by virtue of his authority to review the evaluations, recommendations, or suggestions, submitted to Eisenhower about atomic energy or foreign policy. Strauss used that responsibility as a license to veto any proposal that might jeopardize atmospheric weapons testing.⁷⁵

Strauss’s desire for autonomy could not have fit more perfectly with Eisenhower’s administrative style, one designed to “maximize responsibility” among strong and opinionated advisors.⁷⁶ Strauss was mindful, however, of the need to create the impression of subservience. After Eisenhower had apparently discussed with Strauss

⁷³ Benjamin P. Greene, *Eisenhower, Science Advice, and the Nuclear Test-Ban Debate 1945-1963* (Stanford: Stanford University Press, 2007), 134-137.

⁷⁴ See the “Secret” exchange of notes between Strauss and Eisenhower, February 5, 1954. Atomic Energy Commission 1953-54 (5), Dwight D. Eisenhower, Papers as President of the United States, Ann Whitman File, Administrative Series, Box No. 4, A75-22. DDE Library.

⁷⁵ On April 23, 1954, for example, Strauss reported to Eisenhower on a meeting he had with Bernard Baruch at Eisenhower’s request. Strauss first summarized Baruch’s idea, then after agreeing that it was “sound,” explained that it was unworkable: Baruch underestimated how long it would take for the pre-conditions of the proposal to be in place; it would be difficult to find a “suitable intermediary” to present the plan to the Soviets (Baruch suggested Churchill or Nehru); and then cited the “ever-present hurdle” of inspection. Strauss concluded his letter with a suggestion that Eisenhower advise Baruch that Strauss had briefed him and that while he would give it some thought, the “interesting points” he made “bristle with difficulties and complexities. Lewis Strauss to President, April 23, 1954. Dwight D. Eisenhower Papers as President of the United States, 1953-61, Ann Whitman File, Administration Series, Box No. 4, A75-22, Folder Atomic Energy Commission 1953-54 (4), DDE Library.

⁷⁶ Blanche Wiesen Cook, *The Declassified Eisenhower: A Divided Legacy of Peace and Political Warfare* (New York: Doubleday & Company, Inc., 1981), 150.

the “degree of independence” the AEC Chairman wielded, he wrote a letter to Eisenhower on May 4, 1953, that itemized fourteen different avenues through which the president could assert control over the Chairman aside from appointing him.⁷⁷ As Strauss’s authority within Eisenhower’s administration grew, he lost credibility among members of Congress and, with it, his ability to sway public opinion. His biographer explains that Strauss was “ill-suited to leadership in a politicized environment,” inflexible in his positions, and most comfortable with acting under the mandate of “an executive authority.”⁷⁸ And while that may be, what seems more likely is that it was not the political environment that discomfited Strauss. As his backchannel maneuvering with Forrestal and Hicklenlooper to destabilize Lilienthal’s authority at Chairman illustrated, he was very much a political animal. It was not politics, but criticism, that Strauss could not abide: his preference for having an executive mandate under which to operate was important to him not only for the authority he derived from the mandate but also because he expected to use that mandate as a shield against criticism; and, as his relationship with Eisenhower demonstrated, used that expectation to his advantage. Strauss easily displaced responsibility for criticism about his performance to Eisenhower.

An example from early in Strauss’s regime illustrates how Strauss used criticism about his performance as a means of cementing his relationship with Eisenhower and maintaining his authority within the administration. This was a valuable tactic for Strauss, who was a political liability almost from the outset because of the Oppenheimer affair, the fallout controversy, and disregard for congressional authority. Strauss successfully

⁷⁷ Strauss to Eisenhower, May 4, 1953. Folder: Atomic Energy Commission 1953-1954 (6), Administration File, Dwight D. Eisenhower, Papers as President of the United States 1953-1961 (Ann Whitman File) Administration Series, Box No. 4, A74-22. DDE Library.

⁷⁸ Richard Pfau, *No Sacrifice Too Great, The Life of Lewis L. Strauss*, 183.

deflected Eisenhower's attention away from significant criticism about his administration of the program by directing it to petty issues that he magnified and used to elicit the president's support. On April 2, 1954, for example, India's prime minister Jawaharlal Nehru issued the first strong international challenge to U.S. atmospheric testing following the "Bravo" incident. Eisenhower responded to Nehru's call by telling Secretary of State John Foster Dulles that the U.S. should "propose" a moratorium on the testing of nuclear and thermonuclear weapons. Dulles formed an "interdepartmental committee" that included Strauss to study the president's plan, which Strauss opposed. On June 23, 1954, he convinced the National Security Council to table the plan using the argument that the Soviets would find ways to avoid treaty restrictions—the verifiability issue that Strauss persistently used as a reason for rejecting diplomatic overtures for disarmament.⁷⁹ But Strauss's objections overstated the content of Eisenhower's proposition, which did not actually call for a moratorium. Eisenhower had suggested to Dulles that the U.S. merely use Nehru's call as an opportunity to float the possibility of a moratorium internationally and to open avenues for discussion with the Soviets. Apart from the opposition he pressed within the committee, Strauss worked to ensure that Eisenhower would not raise the moratorium idea to the diplomatic level in advance of the NSC meeting.

In early June, Strauss picked up on a report in the press that he had secretly taped conversations conducted in his office and used that incident to manipulate Eisenhower into a position where he would be reluctant to disagree with Strauss's position that even broaching the possibility of a moratorium on atmospheric testing was not in the national interest. Strauss ("upset and subdued," as a note in the file indicated) first tried to see the

⁷⁹ Knopf, *Domestic Society and International Cooperation: the Impact of Protest on U.S. Arms Control policy*, 110-111. For an encapsulation of how disingenuous these claims were, see 111.

president in person, he then hand-delivered the clipping along with a letter to the president denying that he had a tape recorder in his office. In the letter, Strauss noted that when he took over the office from Dean, he had the one “recording device” that he found removed from its location behind the fireplace along with the wires connecting it to a control at his desk. To impress Eisenhower with the gravity of the newspaper article, he equated his situation with Forrestal’s breakdown and suicide, where the “constant repetition of slander ... destroyed our poor friend, James Forrestal.” Strauss attached a note to the letter to Ann Whitman, Eisenhower’s secretary, asking that it be brought to the president’s attention and mentioning that he only wanted to be sure that Eisenhower saw it and that “it was not written to obtain any letter of reassurance from him for I do not need that.” After taking the matter up with “The Boss,” Whitman passed along Eisenhower’s suggestion that he (Strauss) consider “the whole matter a great accomplishment.” As an indication of the emotional drama that Strauss had shown to Eisenhower’s secretary when he delivered the message, she added to the president’s words her own note of encouragement: “I hate to see you as upset as you were this morning. Please don’t be!”⁸⁰

Six months later, Strauss was embroiled in controversy, having brought down Oppenheimer and in the middle of the Dixon-Yates contract scandal. Strauss shared enough of his frustrations with Eisenhower that the president penned an encouraging note to him on December 29. Eisenhower wrote that he had every confidence in Strauss’s

⁸⁰ Strauss to Eisenhower, June 9, 1954; Ann Whitman to Strauss, June 9, 1954. “Atomic Energy Commission 1953-54 (4), Ann Whitman File, Dwight D. Eisenhower, Papers as President of the United States, Administration Series, Box No. 4, A75-22. DDE Library.

ability and believed he was doing a “superb” job.⁸¹ At the time Eisenhower sent those words of encouragement, however, Strauss had already bared his soul to a *New York Times* reporter. In an interview that Eisenhower learned about only as it was going to press, Strauss explained that he was beleaguered: “for the first time in his life, I have enemies.” He also told the reporter that he would never again accept a public job, that he was looking forward to the day when his term ended, and dejectedly added that he might “not have been the man” for the job. When Eisenhower learned via teletype the content of Strauss’s comments, he wrote him another letter. It illustrates that Strauss had successfully shifted the responsibility for his mental wellbeing to the president. Eisenhower clearly felt that he had not done enough to relieve Strauss’s anxiety the previous day.

I am a little disturbed. I well realize that this has been a rough year for you, and I want you to know that the calm fortitude with which you have faced your difficult problems has excited my admiration. . . . I can only repeat that despite the arrows of outrageous fortune that sometimes seem to come our way, I hope most devoutly that the satisfaction – which you must have – of a good job done in the best interests of our country will keep your spirits high.⁸²

Strauss manipulated Eisenhower’s attention away from criticism about his performance by dramatizing how the criticism itself had wounded him.

And, Strauss reciprocated in ways that cemented the bond. Strauss cultivated Eisenhower’s friendship through little notes of encouragement and approval, and with

⁸¹ See Eisenhower to Strauss, December 29, 1954, and teletype to “The White House Washington D.C. Dec 29 1954, Strauss Asserts A.E.C. Job is Last” in “Atomic Energy Commission, 1953-1954 (I) Ann Whitman File, Dwight D. Eisenhower, Papers as President of the United States, Administration Series, Box No. 4, A75-22. DDE Library.

⁸² Eisenhower to Strauss, December 30, 1954. “Atomic Energy Commission, 1953-1954 (I) Ann Whitman File, Dwight D. Eisenhower, Papers as President of the United States, Administration Series, Box No. 4, A75-22. DDE Library.

gifts. Eisenhower's support and protection was an especially important asset for Strauss, who rankled many, particularly congressional Democrats and the three Truman appointees on the AEC who objected to his authoritarian, "one-man-rule" style, during his first year as Chairman.⁸³ In May 1958, as Strauss's term as Chairman neared its end, New Mexico's Senator Anderson criticized the AEC's claim that a "clean" bomb was near production and Strauss's support for military weapons testing, calling Strauss the "modern apostle of McCarthyism." The attacks produced a tense round of criticism and rejoinder between Strauss and Anderson over the radio and in newspapers. Between those incidents and a June 5 letter that Strauss wrote to Eisenhower discussing the expiration of his term, he presented Eisenhower with a one-third interest in a prize bull, Brockmere 10. Eisenhower was delighted: "I am so overwhelmed by your generosity ... that I have discarded as completely inadequate all the conventional phrases of appreciation."⁸⁴

Strauss combined his administrative influence to modulate opinions emanating from the administration and coming into it. When AEC Commissioner Thomas Murray disagreed with a Commission decision, he received permission from Strauss to contact the president. Murray believed, as his fellow Commissioners and Strauss did not, that the AEC should invite a UN observer to attend the upcoming *Castle* series of tests. Murray believed it would serve as a signal to the UN and member nations that Eisenhower was serious when he said that he desired a shift in the course of America's atomic program.

⁸³ See "G.O.P. Aims to Ease Fight on Atom Rule," *New York Times*, May 21, 1954, 1.

⁸⁴ Eisenhower to Strauss, May 14, 1958. For the Strauss/Anderson exchanges, see Strauss to Chairman Carl T. Durham, U.S. House of Representatives, May 3, 1958, and "Off the Deep End," *The Evening Star*, May 7, 1958, A-26, attached to "Memorandum to The President" from Strauss, May 8, 1958. Atomic Energy Commission 1958 (4); Administration File, Ann Whitman File. For Strauss's letter to Eisenhower discussing his leavetaking, see Strauss to Eisenhower, June 5, 1958, Atomic Energy Commission 1958 (2); Administration File, Ann Whitman File; Administration Series, Box 16, A75-22, Dwight D. Eisenhower, Papers as President of the United States, 1953-61. DDE Library.

When Eisenhower received Murray's explanation via letter, he sent it to Strauss along with a note that he did not know what to make of the request because, in Eisenhower's words, he had "not been informed as to the character and nature of the forthcoming tests" and thus could not determine whether a UN observer was appropriate. Strauss met with Eisenhower and subsequently drafted a reply to go out under the letterhead of Sherman Adams, Eisenhower's Assistant, and had one of Adams's secretaries finalize it for his signature. The letter was so dismissive that the secretary attached a note to the final version just to be sure that Adams approved of it—"This seems awfully strong." Adams resolved the secretary's misgivings by jotting "this is ok" on her note, signed the letter, and informed Murray tersely that the president would not "intervene" in a Commission decision, "particularly since the majority included the Chairman of the Commission." The letter continued dismissively, explaining to Murray that he use "the privilege of appeal to the President ... with restraint" because "it would be impossible to cope" with appeals from the government's many commissioners who held minority opinions.⁸⁵ Undaunted, Murray persisted in trying to get the president to work through the UN. In early February 1954 and in line with his support for atomic weapons and distaste for large yield weapons, he proposed to Eisenhower that the U.S. consider a limited agreement. Murray suggested trying to reach a limited agreement to halt large scale testing—those that could not be kept secret—while continuing negotiations about smaller nuclear weapons. Again, Strauss drafted the letter for Eisenhower's signature and, misinterpreting Murray's suggestions by ignoring his phased-in approach, pushed Murray

⁸⁵ See Thomas E. Murray to President, January 4, 1954, Eisenhower to Lewis Strauss, January 4, 1954, Strauss to Adams, January 11, 1954, Alberta to Governor Adams, undated, Adams to Murray, January 13, 1954. Dwight D. Eisenhower Papers as President of the United States, 1953-61, Ann Whitman File, Administration Series, Box No. 4, A75-22, Folder Atomic Energy Commission 1953-54 (5). DDE Library.

aside by mentioning that the issue was one that would be discussed with the Secretary of State and the Chairman of the Atomic Energy Commission.⁸⁶

His control over insiders went beyond his position at the top of the atomic energy empire and his efforts to control public opinion about testing. At the time of the Oppenheimer investigation, Eisenhower granted Strauss authority over the public comments made by all officials in his administration.⁸⁷ In 1956 and 1957, an NSC directive reinforced Eisenhower's previous order and extended Strauss's authority, adjusting a requirement that Strauss "check" all information to one requiring instead that Strauss first "clear" all statements. This gave Strauss additional power to influence foreign and domestic policy.⁸⁸ It extended Strauss's authority across all forms of public speech by other government officials, including articles, comments to journalists, speeches, and even the testimony they might deliver in open congressional hearings. At the same time, he and the Secretary of Defense became official partners, charged with working in "close collaboration" with the Operations Coordinating Board.⁸⁹

⁸⁶ Thomas E. Murray to President Eisenhower, February 5, 1954; Lewis L. Strauss, Draft reply, 2-10-54; Eisenhower to Murray, February 11, 1954. Dwight D. Eisenhower Papers as President of the United States, 1953-61, Ann Whitman File, Administration Series, Box No. 4, A75-22, Folder Atomic Energy Commission 1953-54 (5). DDE Library.

⁸⁷ *New York Times*, October 11, 1953, 3.

⁸⁸ For an example that illustrates that Strauss used this power to interfere with issues unrelated to nuclear weapons or policy, see Strauss's discussion with John Foster Dulles, Eisenhower's Secretary of State, about George Humphrey and the Import Export Bank where he told Dulles to "talk to" Humphrey and advise him of the requirement for AEC clearance and remind him that approval could take some time. Strauss to Dulles, October 4, 1956. *Minutes of Telephone Conversations John Foster Dulles and of Christian Herter, 1953-1961* (Washington, D.C.: University Publications of America, 1980).

⁸⁹ See "Official Statements Regarding Nuclear Weapons; Comments by the Secretary of Defense Accompanying his memorandum of non-concurrence dated October 12, 1956, re NSC Action NO. 1360," National Security Council "Memorandum for the National Security Council," October 24, 1956. File: Nuclear Testing (1) (November 1955-October 1956); and "OCB Recommendation on Redefinition of NSC Action No. 1631 (November 14, 1956) and Recommended Guidelines" April 25, 1957. File: Nuclear Testing (2) (November 1956-1957). Both in White House Office, Office of the Special Assistant for

Strauss also sought legislative cover for the authority he enjoyed as Chairman of the AEC and members of its advisory-level committees and affiliates, who supplied the image of detached respectability upon which the AEC and its military partners had consolidated their authority and expected to maintain it. As part of a plan to ease the Act's security provisions to provide for private development of nuclear energy, Strauss recommended amending the Act to exempt "members of advisory boards, ... consultants, and employees who receive no Government compensation" from conflict of interest laws, an exemption the military already enjoyed. In Strauss's explanation of the amendment, he noted that it would make it easier to attract "technical and management personnel of the highest caliber," a comment that referred to a goal to privatize nuclear energy. It also suggests that Strauss anticipated continued expansion of the program and its influence, creating ever wider avenues of networked affiliates financially dependent on the AEC/military partnership.⁹⁰ Before the proposal made it to the hill, Strauss reacted to opposition from Commissioners who objected to his authoritarian methods and added a provision to prevent the AEC from holding a meeting without the Chairman. Another provision elevated the AEC Chairman to a cabinet level appointment, on a par with the Secretaries of Defense and State. This would eliminate the Act's five-year term limit for the Chairman and allow him to serve at the pleasure of the president.⁹¹ In the end, Congress was more adept at W. H. Riker's heresthetic, "gaining political advantage by

National Security Affairs: Records, 1952-1961, NSC Series, Subject subseries, Box No. 6, A67-50 & A 67-64. DDE Library.

⁹⁰ "Statement on Proposed Changes in the Atomic Energy Act," 3, attached to letter from Lewis L. Strauss to The President, November 18, 1953, Dwight D. Eisenhower Papers as President of the United States, 1953-61, Ann Whitman File, Administration Series, Box No. 4, A75-22, Folder Atomic Energy Commission 1953-54 (2). DDE Library.

⁹¹ See "G.O.P. Aims to Ease Fight on Atom Rule," *New York Times*, May 21, 1954, 1.

structuring the world so you can win,” than Strauss and Eisenhower.⁹² Congress delivered Strauss a Pyrrhic victory.

Congress did amend the Act’s security provisions to allow for private industrial interest in nuclear power and also for some defense-related exchanges of military information; but instead of expanding the president’s (and Strauss’s) authority over atomic policy, it reduced it while strengthening the JCAE’s ability to monitor AEC activities and to review projects, initiatives, and its budget. In 1957, the JCAE struck again: taking more control over AEC spending by changing its appropriation procedures and securing “project-by-project authorization.”⁹³ While there were political reasons behind this forced shift in power, the most important was Strauss’s inability, despite his influential connections, to broker a truce after he lied to Congress in 1954 following the *Bravo* fallout incident.

Militarization enabled Strauss to withstand congressional ire for the duration of his Chairmanship. The AEC’s partnership with the military and Strauss’s uncompromising support for military weapons testing ensured support from the military’s backers in Congress. Additionally, program affiliates dependent on the AEC and on military projects readily supplied scientific authority to contradict the findings and assertions from outside scientists that cast suspicion on Strauss’s assertions. Strauss could thank Dean for these benefits. Dean solidified the AEC/military partnership and shepherded program expansion, increasing numbers of scientists from public and private

⁹² See Melody Rose’s elaboration on the theory as a tool to understand shifts in the political winds and relations of power, “Losing Control: The Intraparty Consequences of Divided Government,” *Presidential Studies Quarterly* 31 (2001): 679-698, esp. 681.

⁹³ For a dated but insightful discussion of this seizure of power, see H. L. Nieburg, “The Eisenhower AEC and Congress: A Study in Executive-Legislative Relations,” *Midwest Journal of Political Science* 6 (1962): 115-148, esp. 130-132, 135.

universities throughout the nation he and other officials encompassed under a generous AEC/military funding umbrella. When Strauss could no longer stand on his own authority, he mobilized that army of experts that Dean assembled to re-educate the American public so that they would be no more fearful of fallout than they were of driving. Strauss exploited his administrative authority to interfere with arms control negotiations even as he counted on the loyalty of AEC officials to keep the program operating in the military's benefit. When necessary, he called on influential leaders among the program's affiliates and stakeholders such as E. O. Lawrence and Edward Teller to lend authority to his assertions, to bolster political support for his Chairmanship and to argue for continued atmospheric testing.⁹⁴

The fallout controversy was the most serious challenge to Strauss's authority and to the AEC/DOD partnership that occurred during his Chairmanship. The illusion that the AEC and its military partners had created that nuclear weapons detonations could be managed began to melt away in 1954 along with their monopoly over information about the effects of radioactive exposure. In early March, Strauss admitted that fallout from the H-bomb "Bravo" had unexpectedly descended onto an atoll and exposed twenty-eight

⁹⁴ See, for example, the testimony of Ernest O. Lawrence and Dr. Edward Teller before Congress, "Fallout from Nuclear Weapons Tests—Summary-analysis of Hearings" May 5-8, 1959. (U.S. Government Printing Office: Washington, D.C., 1959).

The relationship between the program, its affiliates, and the military that brought weapons testing to Nevada and kept it there through 1958 foreshadowed, and is related to, the organizational impetus and capacity that John Kurt Jacobsen and Claus Hofhansel argued in 1984 was responsible for State support of nuclear power, where "the synergy of the premature, overly optimistic forecasts of plentiful, low cost energy and the substantial State-sponsored capital investment ... resulted in an enduring set of symbiotic public and private institutions." They argue it was neither economic analysis nor social benefit that drove State support, but rather, a "happy convergence" brought about by the mutually reinforcing integration of the perceived interests of State elites and private elites and of *plans* for pursuit of their interests. Italics in original. "Safeguards and Profits: Civilian Nuclear Exports, Neo-Marxism, and the Statist approach," *International Studies Quarterly* 48 (1984): 195-218, quote on 205.

Americans and 326 “natives” to where the AEC believed would be out of harm’s way.⁹⁵ The revelation cast doubt on the confident assertions that AEC had circulated since testing began in Nevada. “Bravo” was three times larger than expected, and that underestimation of its yield was compounded by a failure to predict accurately the wind currents in the area of the test.⁹⁶ When the *Lucky Dragon* crew sickened by fallout from “Bravo” returned home on March 14 and Japanese doctors familiar with radiation sickness identified the cause of their illness, Strauss denied that the men suffered from acute radiation syndrome.⁹⁷ But Strauss’s words carried no weight: public opinion shifted so decisively after the “Bravo” incident that it caused what one historian called a “fatal collapse” of the AEC’s propaganda machine.⁹⁸ Strauss continued to deny that the men had been harmed by radioactive fallout while the CIA, perhaps at Strauss’s request, investigated a claim that the fishermen had been in the area on a spying mission.⁹⁹ In late March he refused to provide Japanese officials with testing schedules they requested to

⁹⁵ *New York Times*, March 12, 1954.

⁹⁶ Information on *Bravo* drawn from Medical Follow-up Agency Commission on Life Sciences, National Research Council, “Mortality of Nuclear Weapons Test Participants,” 8. Defense Nuclear Agency, DNA1.940923.058.

⁹⁷ *New York Times*, March 16, 1954, 19. The crewmen were hospitalized in Tokyo, where one of them died six months later. For Strauss’s efforts to deceive Congress by explaining that radiation exposure had nothing to do with the men’s illnesses, see Titus, *Bombs in the Backyard*, 19. The earliest full account of the incident was Ralph Lapp, *The Voyage of the Lucky Dragon* (New York: Harper & Brothers Publishers, 1958). For summary accounts, see Schwartz, *Atomic Audit*, 421; Ellen Leopold, *Under the Radar: Cancer and the Cold War* (Piscataway, NJ: Rutgers University Press, 2008), 117-118. For the relationship between news about the *Bravo* test and expressions of fear in popular culture, see Joseph Masco, *The Nuclear Borderlands*, 295-296

⁹⁸ Dee Garrison, *Bracing for Armageddon: Why Civil Defense Never Worked* (Oxford; New York: Oxford University Press, 2006), 51.

⁹⁹ See Hiroko Takahashi, “New Findings about the Lucky Dragon,” *Hiroshima Research News* 6 (2004). Available in English at <http://serv.peace.hiroshima-cu.ac.jp/English/dletter/ne1804.pdf>

prevent future incidents and to guard against harvesting radioactivized fish.¹⁰⁰ And, as late as December, several months after Aikichi Kuboyama died and the U.S. Ambassador paid an indemnity to his widow, Strauss and the DOD continued to deny that radiation had caused the man's death.¹⁰¹ Strauss circulated deceptive information among AEC Commissioners, who had every reason to know better, that "we have, of course, long understood ... it was hepatitis from antiquated medical techniques" that was responsible for his death.¹⁰² Weeks later, U.S. and Japanese officials agreed to settle the injury and property claims for two million dollars.¹⁰³

By that time, Strauss had already been responsible for giving people outside the program reasons to believe that H-bomb experimentation had gone too far. On the same day that the *New York Times* reported that Strauss refused to provide the Japanese with testing schedules, American newspapers reported that the Soviets described their hydrogen bomb as a tactical weapon "eight or ten times" the power of an atom bomb.¹⁰⁴ Strauss's response came on March 31, and the *New York Times* reported it in its April Fool's Day edition. Instead of explaining the significance of the Soviet bomb by comparing the potential yields of American and Soviet H-bombs, Strauss emphasized the Soviet bomb's potential for destruction with a word-picture of its capacity to destroy New York City. He then sought to limit its significance by pointing out that an American

¹⁰⁰ *New York Times*, March 26, 1954, 5.

¹⁰¹ Divine, *Blowing on the Wind*, 30.

¹⁰² Lewis L. Strauss, Memorandum to Willard F. Libby, 9 December 1954, and W.F. Libby to Mr. Lewis Strauss and Mr. Thomas E. Murray, "Rad. Fall Out." U.S. Atomic Energy Commission, RG 326, Libby Box 9, Folder "Sunshine Miscellaneous," NARA.

¹⁰³ Divine, *Blowing on the Wind*, 31.

¹⁰⁴ *New York Times*, March 26, 1954.

H-bomb was much more destructive: it could level cities with a destructive capacity “600 to 700 times that of Hiroshima and Nagasaki.”¹⁰⁵

On the surface, Strauss’s response, coming as it did in the middle of his personal campaign to downplay the effects of H-bomb testing, appears to have been a boastful and careless misstep. But from the perspective of militarization and the deployment of strategies of control to generate a combination of fear and confidence in military solutions, Strauss’s comments emerge as one piece of a deliberate ploy to generate even more support for American H-bombs and military superiority. The other piece of the equation can be found in an NSC decision made in the wake of the our-bomb-can-destroy-more-cities-than-your-bomb dialogue to supply film footage of the *Mike* thermonuclear blast to television networks. Dean supplied the film, already edited to remove sensitive information,¹⁰⁶ and may have expected that it would be released for public consumption.¹⁰⁷ But it was held in reserve, perhaps until it could serve AEC/DOD goals. It is impossible to know why the film was released a year after it was ready for public viewing; but given the routine media manipulation practiced by the AEC and the DOD, it seems likely that the NSC decision to release a film of an American H-bomb explosion at the very time that Strauss, AEC officials, and officers, found themselves defending H-bomb development was not coincidental. The film removed any supposition about the power of an H-bomb and provided a moving image to accompany Strauss’s

¹⁰⁵ *New York Times*, April 1, 1954, 1. As Hewlett and Holl pointed out, Strauss underplayed the extent of destruction by declining to discuss the effects of fallout, 273.

¹⁰⁶ For the “Mike film,” see Divine, *Blowing on the Wind*, 22.

¹⁰⁷ Dean to Eisenhower, June 17, 1953. Folder: Atomic Energy Commission 1953-54 (6), Administration File, Dwight D. Eisenhower Papers as President of the United States, 1953-61 (Ann Whitman File), Administration Series, Box 4, A75-22. DDE Library.

discussion of an H-bomb destroying New York City. The combination of Strauss's comments, the film, and Soviet claims, all helped Strauss hammer home his view that continued H-bomb development was essential for national survival by providing the vivid argument against arms control and generating even more support for AEC/DOD projects. The message certainly raised fears; but in some circles generated calls for diplomacy and for a halt to testing. Strauss's saber rattling and the advances in nuclear weapons that had brought about hundreds-fold increases in destructive capability formed the basis for an argument that civil defense was not enough. Readers of the *New York Times* wrote to the newspaper demanding renewed diplomatic overtures. The CDA responded to the Soviet bomb and mounting anxiety by stepping up its operations, bringing home the possibility of nuclear Armageddon to people in communities throughout the United States.¹⁰⁸

Scientists outside the U.S., free of the AEC's fetters, pressed for a suspension of atmospheric weapons tests. On May 5, 1954, the same day that the AEC detonated "Yankee," a 13.5 megaton thermonuclear bomb, in the Pacific, a group of scientists and engineers in Great Britain called for an end to testing.¹⁰⁹ Sir Winston Churchill joined

¹⁰⁸ *New York Times*, April 1, 1954, 21.

¹⁰⁹ British scientists were especially forthcoming; a result, perhaps, of the less-secretive (at least less apt to rely upon anti-communism as a reason for the withholding of data) atmosphere of the United Kingdom Atomic Energy Agency compared to the U.S. AEC. See for example J. Rundo, who concluded that "tests be held to a minimum consistent with scientific and military requirements and that appropriate steps be taken to correct the present status of confusion on the part of the public." "Measurements of Cs137 in Human Beings in the United Kingdom," (Atomic Energy Research Establishment: Harwell, UK, 1958), 276.

One avenue of comparison between the U.S. and UK approaches is the way each dealt with milk contamination. In the UK, when an accident at the Windscale reactor caused a radioactive release, the government dumped all milk that could possibly have been contaminated into the ocean, continued to monitor dairy herds and reimbursed those farmers affected by the continual confiscation of milk until a clean product emerged. In contrast, when U.S. scientists began studying the accumulation of Strontium 90 in milk in a North Dakota milk shed beginning in 1953, it conducted its studies in secret. When publicity from 1956 through 1961 began to affect the amount of milk that people drank, the government cooperated with the milk industry to develop a machine that they anticipated would remove *most* of the Strontium 90 from dairy products. Comments from radio address, Bea Lucille Bridges, Executive Director of the New England Dairy and Food Council, "Fallout—What It means to Massachusetts and New England"

them in November, commenting that he had learned that radiation exposure was cumulative and could pose serious problems for the earth for as long as 5,000 years.¹¹⁰

Of all the complaints about weapons testing and fallout, however, one of the most worrisome for AEC officials and program affiliates was the threat to atmospheric testing by a proposal from the Federation of Atomic Scientists (FAS) for a United Nations study of radioactive contamination. The way that Strauss and the AEC met that challenge presents a snapshot of the importance of militarization for supplying the resources necessary to keep the fallout controversy from interfering with the AEC/military goals. In February 1955 the FAS circulated among its members a “Proposal for a UN Commission to Study the Problem of H-Bomb Tests,” that it planned to submit to the UN’s Political and Security Affairs and to the UN Ambassador. The FAS made the appeal public in early March.¹¹¹ The scientists’ call caused considerable concern among military officers and AEC officials, especially Commissioner Libby and Admiral Paul F. Foster, Special Assistant to the AEC’s General Manager. The two were among the first to devise a plan to avoid the possibility that a committee put together by the UN would end up with a “packed jury” against the AEC and atmospheric testing.¹¹² Libby and Foster proposed to avoid the negative publicity that resisting the proposal would draw in a way that would

December, 1961, Boston radio, audiotape. Box 56, *Edward Teller Papers*, Hoover Institution Archives, Stanford, [ETP].

¹¹⁰ *New York Times*, May 5, 1954, 18. For Churchill’s comments, see Hanson Baldwin, *New York Times*, December 18, 1954, 1.

¹¹¹ “FAS Proposal for a UN Committee to Study the Problem of H-Bomb Tests,” Information Bulletin No. 60. Raymond T. Birge Collection, Box 9, Folder, “Organization and Societies.” The Bancroft Library, University of California, Berkeley.

¹¹² Harold Brown to Dr. Bugher, April 19, 1955, Memorandum re Study of Radiation Effects by an International Group. U.S. Atomic Energy Commission, RG 326, Libby Box 9, “Sunshine Miscellaneous” 7 of 11. NARA.

allow the AEC to work from the inside to situate cooperative scientists on the committee. Their plan would “assure participation by competent and objective scientists.”¹¹³ That proposal evolved over time into one that generated positive publicity for the AEC, satisfying even the FAS, and was all-but-guaranteed the sort of “objectivity” that Libby and Foster expected.

The final product appears to be a Strauss creation. In April, the National Academy of Sciences, which relied on AEC affiliated scientists for nuclear expertise, announced that it would be “undertaking an appraisal of radiation effects.”¹¹⁴ The study would be financed by the Rockefeller Foundation, which had supplied funding for other AEC projects and whose Director for Medical Sciences and Vice President was a member of the AEC’s Advisory Committee for Biology and Medicine.¹¹⁵ The NAS’s announcement, reported in the FAS April 18 newsletter, proclaimed that the AEC approved the study and stopped just short of praising Strauss for his support: “Chairman Strauss has given

¹¹³ Brown to Burger, April 19, 1955, Memorandum re Study of Radiation Effects by an International Group. U.S. Atomic Energy Commission, RG 326, Libby Box 9, “Sunshine Miscellaneous” 7 of 11. NARA.

¹¹⁴ As Jacob Darwin Hamblin argues, “no scientific assessment has had a broader impact on the development of biological thinking in nuclear policy and abroad.” Hamblin’s research provides the international significance of the study, demonstrating that the NAS report and an equivalent analysis of the effects of radioactive exposure by the British Medical Research Council (MRC) was not coincidental, a position held by both Divine (*Blowing on the Wind*, 319-321) and Hacker (*Elements of Controversy*, 185-189), but was the result of a coordinated “negotiation” between the NAS, AEC, and AEC scientists and equivalent personnel, scientists, and affiliates of the British MRC. “A Dispassionate and Objective Effort: Negotiating the First Study on the Biological Effects of Atomic Radiation,” *Journal of the History of Biology* 40 (2007): 147-177, 149.

¹¹⁵ Strauss had been the Rockefeller’s financial advisor during the three years between his service as AEC Commissioner and appointment as Eisenhower’s Special Assistant. For the relationship between the study, the Rockefeller Foundation, and the AEC, see Hamblin, “A Dispassionate and Objective Effort,” 148-149. Dr. Alan Gregg was the Rockefeller Foundation Vice President who served on the AEC’s Advisory Committee. Paul S. Pearson, “The Biological Program of the Atomic Energy Commission,” *American Institute of Biological Sciences* 3 (1953): 17-19, esp. 18. For a request from John C. Bugher, the AEC’s Director of Division of Biology and Medicine, to the Foundation requesting support for the collection of bones from South American for Project Gabriel, see Bugher to Andrew Warren, Rockefeller Foundation, December 30, 1953. ACHRE No. DOE-013195-A.

assurances that the AEC will extend its full cooperation.” The *Christian Science Monitor* also expressed its pleasure, pointing out that this was the study that so many had longed for, “a definitive study of the effects of radiation.”¹¹⁶ A little more than a year later, Strauss used the study’s findings to validate his previous claims about the safety of weapons testing. He penned a confident, positive, and reassuring letter to Eisenhower, writing that a “distinguished committee of medical people and other scientists with whom we have been cooperating for about a year” had issued a report that radioactive fallout was small “compared with background [naturally occurring cosmic, earth, and air] radiation, or as compared with the average exposure in the United States to medical X rays.” Emphasizing that the study vindicated him, Strauss added that the findings confirmed the public statements he had made the previous February.¹¹⁷

The consolidation of program resources and the dedication of those resources to military weapons testing prevented the fallout controversy from gaining sufficient political traction to bring about an end to testing for as long as Strauss exercised authority as Eisenhower’s chief advisor. But, unable to monopolize completely the flow of information about the hazards of fallout, the AEC/military partnership remained under attack from above by administration advocates for arms control and diplomacy and from below, where oppositional scientists within the U.S. continued to press for test suspension. And yet, the AEC and DOD officials effectively defended their ability to conduct atmospheric weapons tests and, in fact, escalated the pace of testing, by

¹¹⁶ *F.A.S. Newsletter*, April 18, 1955, 2. Raymond T. Birge Collection, Box 9, Folder, “Organization and Societies.” The Bancroft Library, University of California, Berkeley. *Christian Science Monitor*, April 8, 1955.

¹¹⁷ Strauss to Eisenhower, June 13, 1956. “Atomic Energy Commission, 1955-56 (4),” Ann Whitman File, Dwight D. Eisenhower, Papers as President of the United States, Administration Series, Box No. 4, A75-22, DDE Library.

mobilizing the program's affiliates and exploiting their scientific credibility in the interests of atmospheric weapons testing.

Strauss overcame the suspicions that weakened the AEC's credibility in the eyes of some members of the public and in Congress by capitalizing on the professional and political capital of scientists whose projects depended on AEC support but who also enjoyed independent status because of their own achievements or their affiliation with public or private universities. In addition to administering the program in ways that benefitted the laboratories, Strauss reciprocated by using his influence to intervene personally for the program's affiliates. When *Time* prepared a story that did not suit Edward Teller, for example, Strauss drew on his authority as AEC Chairman to have the article "anesthetized."¹¹⁸ Strauss's most important ally on the Commission was Willard F. Libby, who was among the first persons that Strauss turned to when he noticed public commentary unfavorable to the AEC's stance.¹¹⁹ Libby was more affable than Strauss, but he was no more willing to change his mind than Strauss was and no less willing than him to use coercion when persuasion failed.

This process brought into the public sphere one side of the debates that took place behind the scenes among AEC advisors before the era of continental testing. Those who took a conservative approach to permissible exposure levels were outnumbered by those

¹¹⁸ Strauss to Teller, March 8, 1954. Box 4, Item 3, ETP.

¹¹⁹ See November 14, 1956 correspondence between Libby and Strauss, and between Libby and Dr. George F. Pieper, November 14, December 7, 1956. File "Sunshine Correspondence Miscellaneous," Libby Box 9, U.S. AEC RG 326, NARA. See also correspondence about Linus Pauling and the Libby's efforts to diffuse his opposition to testing by having his associates meet with Pauling directly, Potts [Libby's Special Assistant] to Libby, May 22, 1958; Potts to Western, Division of Biology and Medicine re Pauling's computations; Libby to Pauling, March 12, 1958; Morse Salisbury, Director of AEC information services to Libby, June 7, 1958; Joel Hildebrand [University of California] refusal to sign Pauling's petition to Pauling, May 20, 1957; Strauss to Libby, June 3, 1957, thanking him for sending him the letter Hildebrand wrote to Pauling; all in "Sunshine Correspondence Pauling," Libby Box 9, 326 U.S. AEC RG 326. NARA.

who used creative calculations to make higher doses appear safe. Where those early conversations had focused on approximations of risk on an individual scale, with scientists who pressed for higher exposure standards averaging the effects of exposure over the life span of an employee or soldier, the fallout controversy sparked a change in that reasoning. Increases in the numbers of exposed people brought about by increased levels of fallout made averaging on a global scale the reasonable next step—and one that was possible to do with some accuracy because of Projects Gabriel and Sunshine that produced data about worldwide isotope dispersal.

As an AEC Commissioner, Libby used data derived from AEC sponsored studies in support of continued atmospheric testing. During a meeting of scientists, for example, he channeled the discussion away from the fallout hazards and focused the conversation instead on estimating future exposure levels should testing continue unabated. When William F. Neuman signaled his desire for the committee to consider how much exposure had already occurred and to then evaluate on the basis of exposure whether testing should be terminated, Libby eliminated Neuman’s issue as a topic for consideration by the group. Knowing from prior correspondence that Neuman was not only interested in the issue but concerned that by one measure of dose, an international agreement to control testing was “*immediately* necessary,” Libby quickly silenced Neuman. He dismissed his concerns by pointing out that he (Neuman) was not a “specialist in bone cancer,” and declaring that the committee was more competent to discuss other problems. Libby then directed the committee to discuss what he called the “most important” thing: the “matter of trying to estimate as best we can what the eventual human body burden will be for

continuation of testing at the past rate.”¹²⁰ From Libby’s perspective, it was relatively simple step to produce global averages and use them to downplay short and long term hazards.

This was not an entirely successful strategy, particularly when compounded in the public sphere by a history of Strauss’s exaggerations. Libby’s arguments based on universal mixing of radioactivity and global averaging could backfire. On one occasion, Libby claimed that the increase in deaths caused by radioactive fallout was “so small that it cannot be detected,” and that “testing could be increased 15,000 times without hazard.” The comment fueled the arguments of grassroots anti-testing organizations such as SANE that AEC officials exhibited a “blithe disregard for human welfare.”¹²¹ Because claims supportive of testing that emerged from AEC officials or other outspoken proponents such as Edward Teller became more suspect as time went on, scientists not so readily connected with the program became more important to the AEC as the fallout debate matured. This resulted in a bifurcated approach to dealing with the controversy.

One strategy was for AEC scientists to quell the immediate concerns of Americans by equating man-made radiation with naturally occurring radiation, a comparison that drew attention away from isolated pockets of contamination—such as that which was left on California produce in mid-November 1958 from testing conducted

¹²⁰ Emphasis in original. Transcript, “United States Atomic Energy Commission Informal Discussion Group of Radioactive Fallout,” July 29, 1957, 2, attached to note from J.C. Potts to “WFL”, referred there as the “Hollister Roundtable,” August 9, 1957. File “Sunshine Correspondence H. L. Holister (JCAE),” Libby Box 9, U.S. AEC RG 326, NARA. For Neuman’s analysis of the hazards of Strontium 90 and the necessity for establishing a maximum permissible dose, see “The Evaluation of the Hazards of Sr-90 Fallout,” emphasis in original, attached to Neuman to Libby, November 26, 1956. File, “Sunshine Correspondence—Comar, Neuman, Kulp, Dunham, Bruicer, Shoup,” Libby Office Files 1954-1959, Box 9, U.S. AEC RG 326, NARA.

¹²¹ Bill Siegel, “Blast Fallout Reports; Committee Terms AEC Statements Untrue,” *Syracuse Daily Orange*, December 2, 1958. Contained in Libby, Box 9, “Sunshine Correspondence, U.S. AEC RG 326. NARA.

in Nevada the month before¹²²—and made the risks from fallout seem innocuous compared to the risks of driving, or living in Denver. Scientists backed by the authority of private and public universities and laboratories rationalized the hazards from fallout with the same national defense arguments and anti-communistic rhetoric as the AEC, while complementing those arguments with assertions that risks from fallout were negligible when balanced against common risks to health.¹²³ One ambitious report from Harlan B. Jones with the University of California Radiation Laboratory at Berkeley reported that although fallout had a “deleterious effect upon man’s health” it was small compared to the “life-span loss per person,” figured in days, caused by smoking, being 25 percent overweight, having 25 percent elevation in lipoproteins, driving an automobile, or working in industry.¹²⁴ Another approach—the one preferred by Libby—carried the problems well away from the everyday concerns of most Americans. In private discussions and public pronouncements, he buried the connection of testing to fallout in statistical debates about genetics, global population figures, and environmental capacity for dilution of Strontium 90 and other radioactive isotopes. Both avenues provided AEC experts and spokespersons an opportunity to calculate away in the abstract what they

¹²² See 616 above, n. 154.

¹²³ The Regents of the University of California were not oblivious to the fallout controversy that pointed directly at their facilities, nor of the soothing press releases that emerged from under their letterhead. In a letter to Lawrence dated July 10, 1957, Edwin W. Pauley, chairman of the Regent’s board, wrote to Lawrence telling him keep them all “thoroughly” informed. Pauley closed his remarks by reminding Lawrence that he belonged to a community larger than that composed of those involved with atomic weapons: “This is a grave responsibility that we owe to humanity in general and neither you, nor I, would ever want to be accused of not having informed the entire Board of all material on hand, or on all phases, of this important subject.” Pauley to Lawrence, Document No. 113079, EOL.

¹²⁴ “A Summary and Evaluation of the Problem with Reference to Humans of Radioactive Fallout from Nuclear Detonations” January 14, 1957, 34. Document No. 113452, EOL. See also a report prepared by Thomas L. Shipman, M.D. for Los Alamos Scientific Laboratory, “Milk Production and the Age of Fallout” under a letterhead that emphasized the laboratory’s relationship with the University of California. “Advance Copy: Hold For Release: June 27, 1957” Document No. 113982, EOL.

knew was impossible to do in the real world: to test nuclear weapons without producing hazardous levels of fallout. The AEC attempted to negate the public response to the growing evidence of radiobiologic hazards with appeals to national security or, as Libby did with Schweitzer, by discrediting the opinions of outside researchers as founded on incomplete information.

Predictably, however, as the controversy heated up and more independent opinions entered the public sphere, AEC advisors made a strategic adjustment and recommended that health issues be avoided altogether. Their fear was that, as with adverse reports of genetic damage, they might say something “that the newspapers could pick up as a matter of disagreement between the AEC and a scientific paper.”¹²⁵ So, to the policy of reminding the public that testing was essential to preserve national security, the AEC tried to negate adverse publicity about radioactive contamination by demonstrating that it was a temporary condition, leaving the impression that even highly contaminated areas became livable in time. This was one of the reasons that the Advisory Committee of Biology and Medicine decided in 1956 to allow islanders from Rongelap to return to their island despite dangerous levels of radioactivity there. They reasoned away the ethical and moral compromises of their decision, finding it relatively insignificant because “of the already relatively high exposure to which these natives had already been subjected.” The Committee added a caveat to the recommendation that provides another illustration of their dedication to the AEC as an institution and their willingness to abandon their professional responsibilities in favor of providing advice on how to avoid future threats to the program’s vitality. In deciding to allow the AEC to return the

¹²⁵ “Minutes of the 58th Meeting of A.E.C. Advisory Committee on Biology and Medicine” [with deletions] November 16 and 17, 1956. *Prescott v. U.S.*, Defendant’s exhibit DX 22404.

Rongese to their home, the Committee warned the AEC that should they then begin to suffer adverse health effects, re-evacuation would not be in the AEC's best interests. Any re-evacuation, they advised, would affect "world opinion" and jeopardize the "continuation of weapons testing."¹²⁶ While AEC officials calculated ways to protect the program, neither the fallout controversy nor Eisenhower's personal aversion to the continued detonation of H-bombs caused him to direct Strauss to stop producing or testing them.

President Eisenhower's subdued response to the domestic and international clamor against continued H-bomb testing illustrates the effectiveness of strategies of control that Strauss used to deflect Eisenhower's attention away from the dangers of weapons testing. While Strauss persistently downplayed the fallout controversy as overblown, he exploited the offers of advice about approaches to arms control that Eisenhower received as the controversy heated up as opportunities to reinforce his no-arms-control agenda.¹²⁷ After Eisenhower discussed with Strauss the possibility of limiting H-bomb testing on April 5, 1954, for example, Strauss responded to those comments with a letter that both trivialized the complaints and exaggerated the importance of continued H-bomb tests. Strauss turned the H-bomb size issue into a public relations matter and, ensuring that the president would be receptive to his conclusions, used language from a speech that Eisenhower gave about massive retaliation to press his

¹²⁶ "Minutes of the 58th Meeting of the A.E.C. Advisory Committee on Biology and Medicine" [with deletions], November 17-17, 1956. *Prescott v. U.S.*, Defendant's Exhibit DX 22404.

¹²⁷ Eisenhower's diary entries for April 1, 1954, through May, 1954, are preoccupied with arms control issues brought to the fore by Strauss: Strauss's "misgivings" about Churchill's complaints about refusals by the U.S. AEC to share information with Great Britain (April 1); Strauss's willingness to review an avenue for diplomacy suggested by Baruch (April 9) and Strauss's evaluation of that proposal as naïve and optimistic (April 23). *Diaries of Dwight D. Eisenhower, 1953-1969* (Frederick, MD: University Publications of America, 1986, 1987).

own argument for the national security imperatives of continued H-bomb testing. Strauss first informed Eisenhower that he had discussed the president's concerns with Admiral Radford (the Chairman of the Joint Chiefs of Staff) and they had agreed to issue a statement that "under the circumstances" the U.S. did not envision testing "larger and yet ever larger weapons."¹²⁸ In the letter's second paragraph, Strauss implicitly connected weapons testing with national survival and subtly characterized as "suicidal" Eisenhower's interest in limiting weapons tests while crediting him with having had the foresight to understand, and publicly announce, that position in the first place:

The unacceptable alternatives of an agreement for atomic disarmament which is unenforceable on the one hand and, on the other, of a unilateral determination to limit our armament, which could be suicidal, are of course the reason why, as you have said in your December 8th address, that the "defense capabilities of the United States" must be such that they "could inflict terrible losses upon an aggressor. ... So great that such an aggressor's land would be laid waste."¹²⁹

Disarmament Intercepted

On New Year's Eve 1953, Eisenhower drew on the Psychology Board's evaluation of world opinion the previous June to consider the objections of Strauss, the JCS, and their affiliates and supporters to arms control.¹³⁰ Eisenhower wrote to his assistant, C. D. Jackson, that the verifiability argument was "academic" and the notion that there could be "no complete disarmament without inspection" was a product of the "hysterical fear" aroused by the Soviet bomb, a fear that Eisenhower concluded could be

¹²⁸ Strauss to Eisenhower, April 5, 1954. Folder: Atomic Energy Commission 1953-1954 (4), Administration File, Dwight D. Eisenhower, Papers as President of the United States, 1953-1961, (Ann Whitman File), Administration Series, Box 4, A75-22, DDE Library.

¹²⁹ Strauss to Eisenhower, April 5, 1954.

¹³⁰ "Status of United States Programs for National Security as of June 30, 1953", 8. The Psychological Program, 1. DNSC.

overcome only with “intellectual analysis ... rather than the screaming support of positions already taken.”¹³¹ The accuracy of the Psychology Board’s report was validated in 1956 when the United Kingdom and France expressed their discomfort with their tense geographical position between two atom-rattling giants. During UN disarmament negotiations, the two nations refused to join in the U.S. proposal, submitting instead a joint “working paper” of their own that synthesized the American and Soviet proposals.¹³² The public separation of America’s two most important NATO allies strengthened Soviet resolve and prestige. The conditions for this circumstance were ones that Eisenhower himself, despite his desire for a diplomatic solution to the arms race, put in play initially by granting Strauss an outsized portion of authority within his administration.

In May 1954 Eisenhower tried to resolve the fallout controversy and thereby improve U.S. standing with its allies by appointing both Strauss and Charles E. Wilson, Secretary of Defense—the most ardent proponents of atmospheric weapons testing and supporters of the verifiability argument against arms control, an argument that Eisenhower had decided was a “hysterical” position—to study the implications of curtailing H-bomb testing. He reconstituted the special committee of the NSC composed of the Secretaries of Defense, State, and the Chairman of the AEC, to “consider the

¹³¹ Memorandum from Eisenhower to C.D. Jackson, (Special Assistant), December 31, 1953. *Diaries of Dwight D. Eisenhower, 1953-1969* (Frederick, MD: University Publications of America, 1986, 1987).

¹³² “United Nations Status of Disarmament Negotiations,” State Current Foreign Relations, No. 17, April 25, 1956, 1. *Minutes of Meetings of the National Security Council*, Third Supplement. This was a change from their earlier alliance with the U.S. in 1952. “Summary of Significant Developments Since the Adoption of NSC 112 on 19 July 1951” 46, 54. *Minutes of Meetings of the National Security Council*, Third Supplement, 1995.

question of possible suspension of thermonuclear weapons test operations.”¹³³ Because of the militarization of the atomic program, this group was even less likely to consider diplomatic alternatives to the status quo than the Special Committee had under Truman when Secretary of State Acheson aligned with Defense against AEC Chairman Lilienthal and discarded alternatives to the H-bomb to mend political fences between the Truman administration and congressional Republicans. In August 1954 Eisenhower’s Special Committee--Strauss, Dulles, and Wilson—discussed an “urgent” review of policies. They decided that advocating disarmament had been “detrimental to the security of the United States.”¹³⁴ Among their arguments was one that derided proponents of disarmament by praising the wisdom of those who opposed it: “more sophisticated among the public consider advocacy of disarmament hypocritical ... or unrealistic.”¹³⁵ In February, during a discussion of the review conducted in advance of a NSC meeting, Strauss used his objections to State and Defense presentations to expand his authority and that of the committee beyond the H-bomb testing and fallout issue to include disarmament. He argued that the need to prepare quickly for NSC meetings compromised studies and limited the value of the information brought before the NSC.¹³⁶ Both Robert Bowie, the Deputy Director of the CIA, and Robert Anderson, Secretary of the Treasury, objected to

¹³³ AEC Meeting 982 Minutes, 5-7-54, [Item (7) only, remainder redacted] DX21940. U.S. DOE Archives, RG 326 U.S. Atomic Energy Commission, Collection Secretariat, Box 1277, Folder O& M 12 National Security Council.

¹³⁴ December 1, 1954, NSC Brief, “A Review of the United States Policy on the Regulation, Limitation, and Balanced reduction of Armed Forces and Armaments.” August 27, 1954, The NSC requested the review of the basic principles of the existing disarmament analysis (NSC 112 (July 1951)) “as a matter of urgency.” MNSC, Third Supplement.

¹³⁵ December 1, 1954, NSC Brief. MNSC, Third Supplement.

¹³⁶ February 9, 1955 “State-Memorandum of Conversation re: Review of NSC 112,” MNSC, Third Supplement.

Strauss's proposition and suggested instead that the president appoint an outside person with "outstanding qualifications" to review disarmament policy. The result was a compromise that kept Strauss and the Secretaries of State and Defense in charge through a recommendation to the president that he appoint an outside individual to conduct the review, designate the three and a representative from the CIA as assistants, permitting that individual to select a panel of consultants. Publicly, the review would be unfettered; secretly, Eisenhower was to direct the reviewer that the result should place no limits on production of nuclear material and should take no positions that could "limit later options."¹³⁷

After their appointment, the three men worked together as an internal counterfoil to the diplomatic options that Bernard Baruch and Harold E. Stassen were formulating at Eisenhower's behest outside the administration. Stassen, former Governor of Minnesota had served on the NSC and became Eisenhower's Special Assistant for Disarmament Policy, and Baruch was a long-time personal friend and unofficial advisor.¹³⁸ Neither Strauss nor then Secretary of Defense Charles Wilson was amenable to restrictions on production or experimentation of nuclear weapons. Their alliance was well known. In 1954, the JCS opposed a Department of State "working group" proposal for disarmament because it was based on an "invalid" conclusion that disarmament was "feasible" and "in the national interest." In a breakdown of DOD disagreements with State's proposals, the JCS agreed with only one other submitting agency, the AEC. Strauss considered

¹³⁷ February 9, 1955, "State-Memorandum of Conversation re: Review of NSC 112," and February 14, 1955, "NSC Memorandum to Dulles" with recommendations. MNSC, Third Supplement.

¹³⁸ For Eisenhower's views of the significance of arms control and his support for Stassen, see "Interview with General Andrew J. Goodpaster," by Dr. Maclyn P. Burg, Oral Historian, June 26, 1975, 84. DDE Library.

verification of the Soviet atomic stockpile an “impossibility.”¹³⁹ On June 27 and 28, 1955, the JCS and the Secretary of Defense objected to a proposal for disarmament.¹⁴⁰ In response, Stassen, Eisenhower’s special envoy for disarmament, gathered the JCS together to inform them that their refusal to agree to any discussion of disarmament absent a solution to the “world’s political problems” was entirely unrealistic.¹⁴¹ But it was not just the JCS that was working against Stassen. Eisenhower’s appointment of Stassen contributed to the emergence of a DOD/AEC/State coalition against disarmament.

Dulles, who tended to defer to Strauss on nuclear issues, was keen to protect his status as Secretary of State against Stassen.¹⁴² Dulles especially objected to Stassen’s informal title as “Secretary for Peace” and resented the possibility that he would be overshadowed by Stassen’s diplomatic efforts. Stassen’s outsider status strengthened the alliance between Dulles and Strauss, who took Dulles’s side over the issue and criticized

¹³⁹ “Department of Defense Comments on State Department Working Group Review of United States Policy on Control of Armament, Dated 29 November 1954,” *Minutes of National Security Council Meetings*, Third Supplement.

¹⁴⁰ “The statement that ‘There is general agreement within the participating agencies ... ’ does not accurately reflect the view of the Joint Chiefs of Staff.” “Memorandum for the Secretary of Defense. Subject: U.S. Policy on Control of Armaments”, 27 June 1955, 1. “It is the unanimous view of the Joint Chiefs of Staff and the Armed Forces Policy Council ... that dealing with arms regulation in advance of the settlement of the major political issues ... is unrealistic and contrary to the best interests of our national security. “Memorandum for the President” 28 June 1955, MNSC, 1.

¹⁴¹ “Principal Points Raised in Planning And Discussion of Governor Stassen’s Revised Proposals Concerning Control of Armaments, June 33, 1955” *Minutes of National Security Council*, Third Supplement.

¹⁴² For deference to Strauss’s opinions, see Dulles, “Memorandum of Conversation with Admiral Strauss” July 28, 1955, Papers of John Foster Dulles, 1951-59, General Correspondence and Memoranda Series, Box No. 1, File: Memos of Conversation-General-S(4); Dwight D. Eisenhower Presidential Library. For an impression of the problems Stassen faced from the opposition in Eisenhower’s cabinet, see “Interview with General Andrew J. Goodpaster,” June 26, 1975; January 16, 1978, 83-90, 97-99. Oral Histories, Dwight D. Eisenhower Presidential Library. For Stassen’s own recollections, see “Interview with Harold Stassen,” April 19, 1977. Oral Histories, Dwight D. Eisenhower Presidential Library.

Stassen as someone “seeking to serve personal ambitions and build himself up.”¹⁴³ In a May 20, 1955, memorandum summarizing a meeting with Stassen, Dulles rejected Stassen’s explanation that the media was primarily responsible for the use of the term, reiterating that “however that may be, I did not care for it.” He also recorded that he told Stassen that he should work independently until the U.S. had taken a position on disarmament, at which time the State Department would take control of the negotiations and Stassen would be expected to “take policy guidance” from State.¹⁴⁴

Dulles’s antipathy caused Eisenhower to engage in some double-dealing of his own, with the result that Dulles became even more disenchanted with Stassen’s value and with disarmament. On June 23, 1955, and in advance of the mid-July 1955 Geneva Summit between the U.S., U.S.S.R, Great Britain, and France, Stassen gave a policy report on disarmament to the NSC that was vehemently opposed the following day by the JCS (in a document that was “instructed to be burned” and has since disappeared).¹⁴⁵ Five days after Stassen’s presentation, the JCS registered its “unanimous” position that “dealing with arms regulation” before “settlement of major political issues” was not only

¹⁴³ For the comment, see Dulles, “Memorandum of Conversation with Admiral Strauss” June 19, 1958. Relatedly, see also a note made following a telephone call from Strauss where he objected to the pro-forma language in a draft letter appointing him as a Special Assistant to Dulles: “whoever wrote it is considering him another Stassen and if that is the way it is he better leave town.” Both in John Foster Dulles Papers, 1951-59, General Correspondence and Memoranda Series, Box 1, File: Memos of Conversation-General-S(4). For examples of the collaboration between Dulles and Strauss against Stassen, see telephone records, July 13, 20, 31, 1956, October 19, 22, 23, 26, 1956, *Minutes of Telephone Conversations, John Foster Dulles & Christian Herter*; and minutes of NSC meetings June 8, 1956, September 15, 1956, November 21, 30, 1956. *Minutes of National Security Council Meetings*, Third Supplement. See also Eisenhower’s diary entry for May 22, 1956, *Dwight D. Eisenhower Diaries*.

¹⁴⁴ John Foster Dulles, “Memorandum of Conversation With Mr. Stassen,” May 20, 1955, [handwritten: “cc Hoover 5/23/55], Papers of John Foster Dulles, 1951-59, General Correspondence and Memoranda Series, Box No. 1, File: Memos of Conversation-General-S(3); Dwight D. Eisenhower Presidential Library.

¹⁴⁵ June 24, 1955, “Views of JCS on disarmament” and June 27, 1955, “Memorandum for Secretary of Defense” explaining JCS position. *Minutes of National Security Council Meetings*, Third Supplement.

“unrealistic” but “contrary to national security.”¹⁴⁶ Dulles subsequently told Eisenhower that he did not want Stassen at the Geneva conference for fear that it would indicate that the U.S. was interested in disarmament. Stassen recalled that Eisenhower told him of Dulles’s position not long before the Geneva Summit and for that reason did not want him part of the official delegation. He told Stassen, however, to go to SHAPE (Supreme Headquarters Allied Powers Europe) in Paris to stand by with General Gruenther and Admiral Radford so that they would all be nearby if Eisenhower wanted them to be at the conference. When in Eisenhower’s opinion the Soviets were receptive and opening up the issue of disarmament, Stassen, Gruenther, and Radford left Paris for Geneva.

Then, in the presence of all of them, of Dulles and everybody else, this whole delegation, he [Eisenhower] told me what he learned since he arrived and he asked me to prepare a speech on the subject for the next day.¹⁴⁷

Dulles was surprised by Stassen’s arrival and might reasonably be assumed to have been frustrated during the course of writing the speech with Eisenhower who, according to Stassen’s recollections, tended to side during the process with Stassen.

After Geneva, Dulles actively worked to undermine Stassen, a task that Stassen made easier by conscientiously reporting on his activities to Dulles. Dulles thus had opportunities to develop oppositional strategies and, in consultation and coordination with Strauss, to lobby other members of the NSC, the JCS, and on occasion even the president, with arguments that attacked Stassen’s positions before Stassen officially

¹⁴⁶ June 28, 1958, JCS opposition to arms regulation. *Minutes of National Security Council Meetings*, Third Supplement.

¹⁴⁷ Harold E. Stassen, “Oral History Interview,” April 29, 1977, quote from 6, see also 5-10. Oral Histories, Dwight D. Eisenhower Presidential Library.

presented them.¹⁴⁸ By nurturing Dulles's insecurities and working with him against Stassen, Strauss brought the AEC, the DOD, and State, together in a coalition that blocked disarmament possibilities and that thus protected the autonomy that Strauss and his military partners exercised over atmospheric weapons tests. Because of that coalition, Strauss's goals could be advanced in areas where he ordinarily would have been without influence.

Dulles's alignment with Strauss and the DOD against Stassen also gave him reasons to interfere with the work of the disarmament group of the president's Science Advisory Committee. Because of his opposition to disarmament, he prevented the two State Department representatives on the committee from advancing their own opinions about arms control. According to Hans A. Bethe, the eminent scientist who chaired the group, State Department representatives on the committee personally supported a temporary suspension of H-bomb testing as a show of good faith to the Soviets that they expected would lead to some breakthrough in arms control negotiations. It was a position that the DOD staunchly opposed, arguing that any suspension of weapons testing in the absence of a parallel agreement by the Soviets and mechanisms for verification would endanger national security. Bethe believed that a system of verification was not only possible in the long term, but knew that one had been demonstrated to work and could be employed immediately should the U.S. and U.S.S.R. agree to suspend testing. He thought that the information about the proposed system of verification would bring the parties closer together and allow the committee to make headway. As it failed, however, Bethe realized that despite the support for the system expressed by the two State Department

¹⁴⁸ For examples, see Minutes, NSC Meetings February 9, 1955, June 23, 24, 27, 1955; Minutes, Eisenhower Cabinet Meetings, March 25, 1955; Minutes of Telephone Conversations John Foster Dulles, January 11, 1956, January 11, 17, 18, 22, 1957, April 22, 24, 1957; Eisenhower diaries, February 15, 1956.

representatives, they were unable to commit because of Dulles's opposition. Dulles provided the DOD with an ally they would not otherwise have had because the AEC did not have a representative on the Committee. Dulles thus contributed to complicating the committee's work at a time when the verifiability issue had been solved and there was general agreement among scientists that violations of any test ban would be detected.¹⁴⁹

Once the dangers of fallout gained more traction in the U.S., the reality of arms escalation caused a shift in the terms of the debate over disarmament. Public opinion about test suspension and arms control changed dramatically between 1956, when Adlai Stevenson campaigned on a platform that called for an end to H-bomb tests because of radioactive fallout, and 1957, after thousands of scientists joined the outspoken Nobel Prize winning scientists Albert Schweitzer and Linus Pauling in their calls for an end to testing. A poll conducted during the Stevenson campaign found only 24 percent of the respondents in favor of stopping testing, with another 30 percent opposed to a ban and one-fifth, 20 percent, who had no opinion one way or another. By May 1957, a Gallup poll found that 63 percent of those asked supported a suspension of H-bomb tests.¹⁵⁰ As an indication of the prominence of the issue, the *New York Times* decided to cover the poll's results in a multi-day series of articles and, despite noting that people on the street did not have enough information to determine the military necessity for weapons testing, encouraged people to discuss and act on what they learned about the hazards of fallout: "In the final analysis...the decision on whether or not to continue the testing of H-bombs

¹⁴⁹ "Interview with Hans A. Bethe," November 3, 1977, 11-15. Oral Histories, DDE Presidential Library.

¹⁵⁰ George Gallup, "Public Backs End of H-Bomb Tests," May 20, 1957, *New York Times*, 28.

will have to come from the people of the United States and the world.”¹⁵¹ As more and more scientists added their names to the lists of those opposed to testing and as their arguments increasingly resonated in the public sphere, Strauss and other AEC officials lost ground. The scientist upon whom Strauss relied most, Willard Libby, began to step out of the limelight and distance himself from the controversy. Testifying before a congressional subcommittee in 1957, Libby reiterated his standard argument that fallout posed very little risk compared to the “risk of annihilation” before remarks that suggested he was becoming increasingly uncomfortable with the findings about dispersal of radiocarbon from weapons testing provoked by Pauling and other scientists that cast doubt on his own arguments about the environmental dilution of radiocarbon 14. At the end of his testimony, Libby tried to discount the mountain of scientific opinion that contradicted his own statements about fallout by claiming that scientific information (and thus also Schweitzer, Pauley, and other scientists) was irrelevant: “the questions under debate are really largely political and sociological.”¹⁵²

In 1957, as Strauss and the AEC lost ground in the fallout debate and congressional hearings raised accusations of negligence and deception on behalf of the AEC and questions about the military’s continued growth, Strauss and his military partners relied even more on influential AEC affiliates for support. Edward Teller tried to quell the growing fears, but ended up causing some confusion among insiders and congressmen with his promises of a “clean” bomb that he claimed was already in the

¹⁵¹ Gallup, “Public Backs End of H-Bomb Tests,” May 20, 1957, *New York Times*, 28.

¹⁵² “Russ Set Off 5 Super Bombs, Scientist Says,” June 6, 1957, *New York Times*, 25.

works.¹⁵³ Teller's unfounded comments regarding a fallout-free bomb took Ernest Lawrence, his boss, by surprise. Drawing attention away from Teller's remarks, Lawrence de-emphasized the "clean" bomb concept, focusing during the hearings and in a meeting with Eisenhower on the importance of nuclear progress to national security. The presence of Lawrence and Teller appeared at first to have reversed the momentum building for test suspension. Strauss wrote to Lawrence that his responses to reporters had been critical to attracting advocates for continued testing.¹⁵⁴ The congratulatory mail he received from the AEC upon his return to California demonstrated the incestuous relationship among members of the commission, military officers, and (at least one) influential industrialist. Strauss's special assistant, J.H. Morse, Jr. (Captain, USN) gushed:

Everything has gone beautifully. Most important for all is the President's mental approach, vitally altered by the fact that for the first time he sees real reason for continued tests ... he is not likely to accede to deceptive Russian offers to stop. ... Furthermore, Congress will not accede if the President does.¹⁵⁵

Morse's postscript illustrates that he was not shy about using deception as a strategy of control to achieve his goals:

I explain wherever possible that weapons can be made so clean that radioactive fallout is no longer an important factor in determining their application. Militarily speaking, they are then "completely" clean.¹⁵⁶

¹⁵³ Edward Teller, handwritten notes, 1957, EOL.. For how the "clean" bomb concept was used to diffuse the radioactive fallout controversy, see Chuck Hansen, "Beware the Old Story," *Bulletin of the Atomic Scientists* 57 (2001), 52-53. For Libby's explanation of "clean" bombs, see "The Press Interviews AEC Commissioner Libby," *Bulletin of the Atomic Scientists* 14 (1958): 190.

¹⁵⁴ Lewis Strauss to Ernest Lawrence, July 1, 1957. Reel 25, document 054482, EOL.

¹⁵⁵ Morse to Lawrence, July 2, 1957, 1, EOL

¹⁵⁶ Morse to Lawrence, July 2, 1957, 1, EOL

(Admiral) Paul A. Foster, Assistant General Manager for AEC International Activities, drew allusions to 1920s pacifists and “women’s group clubs” who had been swayed by British and Japanese propaganda before praising Lawrence. As AEC officials had done since the beginnings of the fallout controversy, Foster ignored the possibility that weapons could be developed without atmospheric testing, elevating the importance of atmospheric tests above every other means for nuclear superiority or diplomacy. He praised Lawrence for his patriotism, equating the atmospheric tests Lawrence advocated as the key to national survival:

I devoutly wish that our national leaders preached less about the horrors of war and more about the horrors of defeat at the hands of a cunning and Godless Communism.¹⁵⁷

While Foster was working from the center of the program out to firm the AEC-industry alliance and praising Lawrence for the role he played in the campaign against disarmament, Strauss was focusing up, on the executive tier, to prevent Eisenhower from considering the opinions of scientists outside the AEC umbrella.

Militarization and Diplomacy

Atomic Governance prevented both Truman and Eisenhower from understanding the consequences of the weapons testing that Dean and Strauss and other AEC officials and affiliates advocated, compromising the diplomatic process and contributing to the escalation of the arms race. Militarization allowed Dean, Strauss, and military officers to generate the energy necessary to outmaneuver well-meaning individuals in the Truman and Eisenhower cabinets (and perhaps also their peers in the Soviet Union,) and those in the UN General Assembly who put their energies to slowing the arms race by negotiating limits to adventurous weapons development and atmospheric weapons testing until 1958.

¹⁵⁷ Foster to Lawrence, July 8, 1957, 1-2, EOL.

Eisenhower's official "conventionalization" of nuclear weapons had a paradoxical effect upon arms negotiations. On the one hand, the transfer of nuclear weapons into the regular arsenal routinized them and devalued persistent qualms about the use of atomic or nuclear weapons. This gave U.S. negotiators reasons to insist on the maintenance of logistical and numerical superiority.¹⁵⁸ On the other hand, the devaluation of the significance of nuclear weapons carried over into the thermonuclear realm, and the resulting tendency to experiment with them by the U.S. and the U.S.S.R; and, comments such as Strauss's that the American hydrogen bomb could destroy a city with 600 to 700 times the energy of the bombs used on Hiroshima and Nagasaki escalated the importance of a diplomatic solution to the arms race.¹⁵⁹ After the Soviets' thermonuclear detonation in 1954, the U.S. and the U.S.S.R. moved closer to the parity that would make an agreement possible. Just as Kennan had expected that the Soviets would be more willing to negotiate an arms control agreement once they had developed their own atom bomb, so too did Stassen see the Soviet's development of an H-bomb as offering a window of opportunity. In a 1955 televised address, Stassen sought to bring some clarity to the rhetoric from Strauss and Molotov that had filled the headlines by reminding those who tuned in to CBS on November 26 that although it would appear from the papers that the two nations were at an irreconcilable impasse, the leaders of both governments, with access to top level intelligence, and the people of both countries, armed only with common sense, had developed not only a better awareness of the dangers posed by

¹⁵⁸ This, of course, flew in the face of Eisenhower's assertions in his "Atoms for Peace" speech of December, 1953: "let no one think that the expenditure of vast sums ... can guarantee absolute safety for the cities. ... The awful arithmetic of the atomic bomb does not permit such an easy solution."

¹⁵⁹ Lewis Strauss, cited in *New York Times*, April 1, 1954, 1.

nuclear war but also an understanding of the benefits to be derived from peaceful development of nuclear energy.

The peoples and leaders under various forms of government and on both sides of the division between East and West are coming to see clearly that the peaceful use of atomic energy has very great potential for an advance in the well-being of the peoples of every nation, and that, in cruel contrast, a new world war would bring destruction beyond previous experience and make it certain that every nation would lose as a result of such a war. The H-bomb test by the Soviet Union should finally convince their leaders beyond all doubt that what the United States leaders have told them is true.¹⁶⁰

Because of the AEC/military partnership Dean forged, the AEC and DOD combined the weight of their influence as principal members of the National Security Council to reject platforms for negotiation formulated by the State Department staffers or by others in Eisenhower's circle of advisors. In a 1954 review of U.S. disarmament policies, for example, the NSC rejected even the possibility of diplomacy: "for the foreseeable future the achievement of international armament regulation will not be in the best interest of the security of the United States and the Free World."¹⁶¹ As Eisenhower's advisor, Strauss exploited the president's friendship and trust; and, while careful to make distinctions between weapons testing as a military imperative and disarmament, or testing cessation as a political issue, he nevertheless rejected limits on atmospheric weapons tests by characterizing experimentation as an imperative in the absence of a diplomatic accord

¹⁶⁰ Harold E. Stassen, "Address of the Honorable Harold E. Stassen, Special Assistant to the President, on the Columbia Broadcasting System, at 5:05 P.M., Saturday, November 26, 1955," Papers of John Foster Dulles, 1951-59, "General Correspondence and Memoranda Series," Box No. 5, "Memos of Conversation-General-S(3), DDE Library.

¹⁶¹ MNSC, Third Supplement, 28.

with the Soviet Union.¹⁶² Testing served not only a military, but also a political purpose, and it was because of militarization that Strauss objected to diplomatic initiatives, and through Atomic Governance that he was able to mobilize the resources necessary to protect the autonomy the AEC and DOD exercised over the program and experimentation until April 1958.

By 1958 the fallout issue added potency to the arguments of those who favored disarmament, and competing articles in popular journals by prominent scientists coupled the two issues, bringing them to the forefront together. Teller objected to disarmament in a *Foreign Affairs* article, arguing that any possible system of verification would be inadequate. Conversely, Isidor Rabi asserted that inspection and verifiability were scientifically possible. The sharp distinction between these two positions also divided Eisenhower's advisors in the NSC. Strauss favored Teller's position, but Stassen believed Rabi was correct. The division prompted Eisenhower to reconsider his original position and the NSC to order the first study on "losses consequent" to a "total suspension of nuclear tests" since the beginning of the atomic age.¹⁶³ But it was not only the scientists and diplomats who were divided. Fissures emerged that separated the DOD from the AEC. When Dulles met with his committee on disarmament to discuss the upcoming agreement to cease testing, General Alfred M. Gruenther told him that the AEC had opposed the agreement because they were "just beginning to tap possible new developments for testing in higher latitudes." Then Gruenther dismissed the AEC's

¹⁶² For a typical expression of this assertion, see Strauss to Eisenhower, July 23, 1957, Folder: Atomic Energy Commission 1957 (4), Administration File, Administration Series, Box No. 5, A75-22, Dwight D. Eisenhower Papers as President of the United States, 1953-1961 (Ann Whitman File), DDE Library.

¹⁶³ "Memorandum of Discussion at the 350th Meeting of the National Security Council" January 6, 1958, 541, 545. *FRUS*, National Security Policy; Arms Control and Disarmament, Microfiche Supplement, 1998.

opposition, saying that he believed there was not much “glitter” on the AEC promise.¹⁶⁴

For Eisenhower, Gruenther trumped Strauss and Dulles. In the words of William B. Ewald, who as one of Eisenhower’s speechwriters worked closely with the president, there was no one Eisenhower admired more. Gruenther was an

intellectual kind of companion, a real relaxing sort and yet a man whose brilliance and grasp of what was happening in the world Eisenhower really respected. He didn’t have a higher opinion of anybody than he had of Al Gruenther.¹⁶⁵

The breakdown of the AEC/military coalition, divisions among scientific advisors, and mounting international pressure to address in some meaningful way the problems posed by fallout from nuclear weapons exerted just enough leverage to push Eisenhower closer to agreement. On April 4, 1958, Khrushchev publicly announced that the Soviet Union would unilaterally cease nuclear and atomic weapons tests while waiting for agreement on the UN Resolution. Four days later, on April 8, 1958, Eisenhower agreed that the U.S. would cooperate in an unofficial moratorium.¹⁶⁶

¹⁶⁴ “Memorandum of Conversation” April 8, 1958, *FRUS*, National Security Policy; Arms Control and Disarmament, Vol. III, 1996, 595.

¹⁶⁵ “Interview with William B. Ewald,” December 16, 1977, 50. Oral Histories, DDE Presidential Library.

¹⁶⁶ “Memorandum of Conversation” April 8, 1958, *FRUS*, National Security Policy; Arms Control and Disarmament, Vol. III, 1996, 590.

CHAPTER ELEVEN

CONCLUSION

This analysis of the nation's atomic program argues that the institutional and domestic political ambitions of military officers and their supporters exerted more influence on the evolution of the peacetime atomic program during the atmospheric era than did foreign policy or national security imperatives. It has also illustrated the significance of the organizational expertise, institutional connections, and strategies of control, of the wartime Manhattan Project that gave military officers the tools they needed to assert their authority and autonomy over the program and nuclear weapons at the end of World War II. Military planners and program managers consolidated and extended their authority through appeals to national security and military urgency, by devaluing oppositional scientists and misapplying scientific opinion, and employing secrecy and deception to obscure their extra-constitutional acts. Officers and their supporters combined their authority and organizational capacity with political influence to manipulate foreign and domestic policymaking. This culminated in Atomic Governance: the shift in constitutional prerogatives that limited the ability of the American people to participate politically and denied presidents and congressional leaders alike the opportunity to gauge the effectiveness and consequences of weapons production and experimentation. While postwar ideological and political disputes between the U.S.S.R. and the U.S. may have been inevitable, the escalation of the nuclear arms race into one that was so phenomenally destructive of human life and the environment was not.

The institutional focus of this investigation has revealed the national security rationalizations of the atmospheric testing era for the exaggerations and deceptions that

they were. In the process, it has invalidated the *ex post facto* assertions that have been used in the years since by the DOD, Justice Department officials, and veterans of the AEC program to excuse the self-interested use of the program and the opportunistic exploitation of anti-communism and international events by military officers and AEC officials that interfered with the decision-making and policy-making authority of elected officials.¹ It has also demonstrated that it was not ignorance of radioactive health effects, but knowledge of the relationship between exposure levels and short- and long-term disease that AEC officials and military officers used to make claims about the safety of detonations that they believed would not cause acute injury but that had reason to expect would lead to illness long after the political benefits they derived from those tests faded into history. The deceptions they generated created a culture of institutional defensiveness and protectionism that exists to this day.

Because that culture ignores or pays scant attention to the consequences of continental weapons tests and high production to meet military demands, it has strengthened the triumphant Cold War Narrative by adding a “happy ending.” It is reflected in continued celebration of nuclear weapons superiority and ongoing promotion of the national security contribution of continental weapons testing that ignores or subordinates the consequences of weapons tests and obscures the self-interestedness of the program to celebrate the Nevada Test Site at the Atomic Testing Museum in Las Vegas and in publications such as the *Battlefield of the Cold War*.²

¹ See Robert [W.] Seidel’s formulation in his essay review of critical histories of the program, “In the Cold War risk-benefit analysis, the demonstrable dangers of losing the nuclear arms race far outweighed the uncertain dangers of radioactivity from fallout.” “Books on the Bomb,” *Isis* 81(1990):533.

² For a discussion of the one-sided Cold War narrative of the Museum and the relationship between museums and polarizing controversy, see Matt Wray, “A Blast from the Past: Preserving and Interpreting the Atomic Age,” *American Quarterly* 58 (2006): 467-483.

At the end of World War II, military officers and their supporters used wartime strategies of control and nuclear weapons tests to persuade the public and politicians that permanent mobilization was the only alternative to nuclear Armageddon. The rhetoric, weapons demonstrations, and descriptions of nuclear warfare that they used to gain domestic political influence and policymaking authority put the atomic program at the center of postwar militarization and mobilization. Their concept of continual conflict meshed with the ideological positions of realists and generated fears that elected officials, program affiliates, and boosters in Nevada and elsewhere used to achieve their own self-interested goals. Military officers and their supporters successfully undermined international control of atomic energy and diplomatic alternatives to the arms race largely because of their organizational capacity and their use of Atomic Secrecy and media manipulation to generate acceptance for the solutions they proposed. But at least part of the reason why their predictions resonated from official circles through to people across America was that they reflected and promulgated a narrative anchored deep in Western culture: a centuries-long tradition of cataclysm/salvation scenarios where the world was made anew as good triumphed over evil.³ Films geared for nuclear-age American viewers reflected this tradition and lent cultural support to the arguments for mobilization by combining variations of the doomsday-and-survival theme.⁴ It was this cultural tradition

Terrence R. Fehner, F. G. Gosling, *Battlefield of the Cold War, Volume One, The Nevada Test Site, Atmospheric Nuclear Weapons Testing, 1951-1963*, Office of History and Heritage Resources, Executive Secretariat, Office of Management, Department of Energy, September 2006.

³ Jerome F. Shapiro, *Atomic Bomb Cinema: The Apocalyptic Imagination on Film* (New York, London: Routledge, 2001), 25-35.

⁴ Shapiro cites films such as *The Beginning or the End* (1947,) *Rocketship X-M* (1950,) *The Day the Earth Stood Still*, *Unknown World*, and *The Thing from another World* (1951,) *Them!* (1954,) *It Came From Beneath the Sea* (1955,) *The Incredible Shrinking Man* (1957,) and *On the Beach* (1959). *Atomic Bomb Cinema*, 62-91.

that was embedded in Forrestal's conceit that the American armed forces alone held the keys to world salvation and that he exploited in the anti-Soviet studies he commissioned and circulated before and after the war, and used to secure permission for *Operation Crossroads*; that military officers and their congressional supporters used to attack Truman and Lilienthal; and that Dean and his military partners promulgated after the creation of the Nevada Test Site.

The extent to which they achieved their goals can be measured by the sense of inevitability about the nuclear arms race that shaped foreign and domestic policymaking throughout the atmospheric era. By December 1950, insiders such as David Lilienthal mulled over the possibility that the hopes for international regulation of atomic weapons and diplomatic solutions to a nuclear arms race that existed at the end of World War II had been lost. One month before Dean Acheson advised Truman to proceed with the hydrogen bomb, he told Lilienthal that if U.S. military policy remained resistant to international arms control while U.S. leaders continued to declare their backing for such control, then America would be committing "a fraud upon ourselves." Lilienthal agreed with Acheson's analysis, concluding that the government would end up "in the soup."⁵ Within the context of the conversation, Lilienthal's colloquialism summed up his view that the contradictory behavior would lead to budgetary or political problems down the road. But because Lilienthal routinely used "Campbell," "Campbell's Soup," or simply "soup," to encode references to the H-bomb—the Super—in his diaries, and because he had lost his ability to manage the program so that it would serve primarily civilian ends, his comment may also be understood as expressing a parallel anxiety: that the nation was

⁵ Lilienthal, *The Atomic Energy Years*, 615.

headed for atomic or nuclear catastrophe. In 1951, Truman placed responsibility for diplomacy in the hands of Soviet leaders while pinning U.S. solutions to military strength: “We will match the U.S.S.R. in honest balanced reduction of armaments or we will outmatch them in military strength.”⁶ Similarly, Eisenhower’s conventionalization of nuclear weapons and his dependence on Strauss led to the privileging of military solutions over diplomatic ones. While Eisenhower argued before his election that Truman “bungled us perilously close to World War III,” (ignoring the role he played in helping the military monopolize the program,) he was unable to overcome the leverage military officers wielded over the program and the possibility of nuclear catastrophe they used to secure influence since World War II. He failed to slow significantly the mobilization that by the end of his first year in office had three-quarters of the U.S. budget consumed in the interests of national security and one-third of the nation’s business dedicated to the defense industry.⁷ And, even after the fallout controversy made atmospheric testing politically disadvantageous, others made use of the images and scenarios of nuclear Armageddon that energized Cold War mobilization. In 1960 RAND analyst Herman Kahn capitalized on the popularity of the supposedly objective calculations of game theory and the still-vivid memories of nuclear detonations to advocate for continued militarization. The title of one chapter in his book *On Thermonuclear War*—“Will the Survivors Envy the Dead”—exemplifies the ongoing power of the promotional use of

⁶ “Report to the American People on International Arms Reduction”, November 7, 1951. Cited in “Minutes of the Meeting of the Secretary of State with the Panel of Consultants on Disarmament” April 28, 1952, n. 4. *FRUS 1952-1954*, Vol. II, National Security Affairs, 898.

⁷ Eisenhower, “Philadelphia Address”, September 1952, in Martin J. Medhurst, *Dwight D. Eisenhower, Strategic Communicator* (Greenwood Press: Westport, Conn., 1993). Eisenhower’s rhetoric has been the focus of numerous studies. See Martin J. Medhurst, ed., *Eisenhower’s War of Words*. For defense and military spending, see Hogan, *A Cross of Iron*, 473.

weapons testing to generate support for strengthening military resources. Finally, the remembrances of one officer, Lt. Gen. James V. Edmundson, who served as Strategic Air Commander for the U.S. Air Force, reveal the extent to which the notions of an inevitable nuclear war that officers had worked so hard in the immediate postwar period to generate had become a self-fulfilling prophecy. Their opportunistic exploitation of international conflicts for domestic political and institutional ends fueled antagonisms, increasing Cold War tensions and U.S. insecurity. Ultimately, they boxed in not only elected officials but officers, too. Noting that the fears of a surprise Soviet attack were so persistent that SAC remained on continual atomic alert for years, Edmundson added that “We couldn’t think of any other way to keep it from happening.”⁸

But history might have turned out quite differently. Congressional investigation of Groves’s management of the wartime program might have given elected officials insight into military overreach and information that they could have used to improve peacetime oversight. Such an investigation might also have spawned the sort of deliberation that would have brought more information about the hazards of residual radioactivity to bear on the decision to approve an “experiment” on the scale of *Operation Crossroads*; maneuvers that established the precedent for the use of nuclear demonstrations and reckless testing practices that lasted throughout the atmospheric era. Had such knowledge about radioactive hazards that was known at the end of the war and that scientists learned over time not been buried by military officers ostensibly protecting the “atomic secret” or preventing public “hysteria,” it is likely that neither the American public nor policymakers would have endorsed either routine experimentation or the casual addition of nuclear weapons to the nation’s arsenal. Weapons tests that were necessary to preserve

⁸ As recorded in the PBS documentary, *Race for the Superbomb*.

national security might thus have been conducted at the PPG, a location so inconvenient that the expense of testing there would have prevented conducting any but the most critical of experiments. And that, in turn, would have significantly limited the amount of radioactive fallout produced to circle the globe. Given the history recounted here, such assertions are not as impressionistically naive as might be claimed by program apologists from the 1950s forward.

The lasting narrative anchored to the institutional rationalizations that masked the harm done to people and the environment by the AEC and the DOD shapes contemporary decisions about nuclear weapons use and experimentation. In 2006 Department of Energy historians writing a history of the Site to commemorate the opening of the Atomic Testing Museum in Las Vegas used the media event “Charlie” to illustrate the significance of testing in Nevada. Using the same persuasive techniques that were routine for 1950s AEC officials, the authors explained that “Charlie” provided a “spectacular display” that was “a relatively small device compared to the megaton weapons that would follow.” It gave “the American people [a] clearer notion of the significance of the events” taking place in Nevada. The authors’ retelling of the conventional narrative continued,

And significant they were. ... These tests directly contributed to the creation and manufacture of bigger, smaller, better, and safer nuclear weapons that greatly enhanced the capabilities of the nation’s security forces and helped deter an all-out hot war. Warheads from a few kilotons to multi-megaton yields, warheads for bombs, guided missiles, ballistic missiles, depth charges, and hand-held bazookas were developed, refined, and stockpiled.⁹

As Dean might have done, the agency’s historians discussed radioactive fallout as a public

⁹ Fehner, *Battlefield of the Cold War*, 7-8.

relations problem:

On the downside, nuclear weapons testing also produced airborne radioactivity that fell outside of the test site and, as the decade progressed, a worldwide uproar and clamoring for a ban on all tests. This combination of off-site radioactivity and an increasingly wary public ultimately would prove to be the undoing of atmospheric testing.¹⁰

By validating the disingenuous claims and practices of historical actors, official and agency historians have done more than to supply their own interpretation to historical events. Their downplaying of radioactive health effects influences contemporary thinking about the present-day value of nuclear weapons in war.¹¹

This was the case in 2005 when David Samuels published a thirteen page article about the Nevada Test Site in *Harper's Magazine*.¹² Samuels included atmospheric era photographs, interviews with Test Site workers, and wrote about what he learned about the as-yet-unopened Atomic Testing Museum in Las Vegas, recounted the purpose of a top-secret meeting Donald Rumsfeld scheduled, coincidentally, for September 11, 2001, with retired and current DOE administrators to discuss—according to one of the retired administrators—ways to reorganize the testing program to re-start nuclear tests in Nevada.¹³ Samuels discussed what he learned about the nature of plutonium and weapons from Los Alamos veterans; shared anecdotes from employees who tracked the edges of fallout clouds in cars by holding their meters out the window and who laughed about

¹⁰ Fehner, *Battlefield of the Cold War*, 8.

¹¹ As Wray notes of the Atomic Testing Museum's portrayal of the history of the site as though it were uncontested, "this is, at best, intellectually dishonest, at worst, intentionally misleading." Wray, "A Blast from the Past," 473.

¹² David Samuels, "Buried Suns: The Past and Possible Future of America's Nuclear-Testing Program," *Harper's Magazine*, June, 2005, 56-68.

¹³ Samuels, "Buried Suns," 65.

their hair being radioactive and who told him that “fears of radiation and atom bombs are so much nonsense,” and that “small amounts of radiation are beneficial to humans.”¹⁴ His themes included regret at the possibility that the practical expertise necessary to restart testing in Nevada was dwindling away with the retirement and death of those scientists and technicians once responsible for conducting those tests and a thinly veiled appeal to national security.¹⁵ What Samuels omitted from his article was information about the risks of nuclear weapons testing. Samuels also failed to include even the most casual mention to the radiogenic illness and diseases caused by Cold War era weapons production and weapons tests that have been recognized by Congress in the Radiation Exposure Compensation Act.

This national security mantra of official, DOE, historians has caused others to misread, or doubt documentary evidence that operates against it. President Clinton’s 1994 Advisory Committee on Human Radiation Experiments, for example, allowed their assumptions about the pull of the Cold War on historical actors to outweigh countervailing evidence. Over the course of its year-long investigation into the Human Radiation Experiments, and with unprecedented access and resources to investigate and gather records from the program, the DOD, and all of its affiliates, the Committee and its staff found relatively few references to national security—and none in defense related documents—to justify secret research (or atmospheric testing practices) while discovering that officials routinely insisted on secrecy to avoid legal liability,

¹⁴ Samuels, “Buried Suns,” 68.

¹⁵ Samuels, “Buried Suns,” 57, 60.

embarrassment, or public ridicule.¹⁶ The Committee's operational focus, however, limited its ability to understand the legislative responsibilities and boundaries of authority under which officials and officers operated. By ignoring the Atomic Energy and National Security Acts, they were unable to make sense of the relationship between the AEC and the DOD, representing it as an ad hoc negotiation between two actors operating independently and responding to forces beyond their ability to control. In the Committee's words, there were no "rules governing nuclear weapons tests," and that "they had to be created in ongoing interplay between the new Atomic Energy Commission and the new Department of Defense."¹⁷ This notion made it easier for the Committee to excuse as unavoidable the excesses that they uncovered about weapons

¹⁶ Advisory Committee on Human Radiation Experiments, *The Human Radiation Experiments: Final Report of the President's Advisory Committee* (New York: Oxford University Press, 1996), 16-17. "With regard to defense-related documents, in none of the memorandums or transcripts of various agencies did we encounter a *formal* national security exception to conditions under which these human subjects may be used." 120. This was the subject of one discussion of the Report: See Trudo Lemmens, "In the Name of National Security," *European Journal of Health Law* 6 (1991): 7-23, esp. 10-11.

Despite the Committee's efforts to get to the bottom of human radiation experimentation, it has drawn considerable criticism for an approach that completely sidestepped the issue of responsibility. The study's emphasis on operational evidence tended to absolve AEC administrators and military officials while the decision to compensate only those experimental victims who could demonstrate that they had suffered physical harm from the experiments had the effect of excusing the ethical violations committed by scientists, clinicians, and professionals involved in the experiments. As Allen Buchanan has argued, the Committee's reluctance to lay blame has implications for the present and the future: "it will be very hard if not impossible to explain and to justify effective proposals for institutional or professional reform without making clear references to particular instances of culpable action performed by identifiable individuals. Unless this is done, the specifics of reform proposals may appear unmotivated or of dubious relevance. For these reasons, we *should* make judgments of individual culpability about wrongdoings in the past, if we have sufficient evidence to do so responsibly." Italics in original. For Buchanan's critique of the Committee's investigative approach, the assumptions underlying its task, and its failure to find fault, see "Judging the Past: The Case of the Human Radiation Experiments," *Hastings Center Report*, 26:3 (May-June, 1996), 25-30, 30. See also Danielle Gordon who critiqued the panel and its conclusions, decrying especially the decision to award compensation on the basis of the consequences of the experiments instead of the ethical violations committed. "The Verdict: No Harm, No Foul," *Bulletin of the Atomic Scientists* (January-February 1996): 32-40, 37.

¹⁷ Advisory Committee on Human Radiation Experiments, *Roadmap to the Project, Part II, Ch. 10*. Available on the World Wide Web at http://www.hss.energy.gov/healthsafety/ohre/roadmap/achre/chap10_1.html (last accessed May 23, 2009). *The Final Report of the Advisory Committee* contains information about Atomic Veterans in Chapter Ten, 284-316.

testing. For example, they stated because of “the exigencies of the Cold War,” a “50-kiloton” upper boundary for testing in Nevada was sometimes “deliberately exceeded,” and that despite a dispute among AEC advisors about the hazards of weapons testing and fallout, “pressure of the Cold War determined that continental testing would continue.”¹⁸ In its *Final Report* submitted in 1995 and published in 1996, the Committee routinely genuflected to national security imperatives and insisted that national security drove classified research: “The history of human experimentation conducted in the interests of strengthening and protecting national security that the Advisory Committee has examined demonstrates how the rights and interests of citizens can be violated in secret research.”¹⁹ It is time to move beyond the national security, Cold War narrative.

Though written more than a century ago, Friedrich Nietzsche’s insights transcend time to serve as an atomic age reminder to look for ulterior motives and to consider how an overarching goal can be perverted to serve other interests:

[T]he actual causes of a thing’s origin and its eventual uses, the manner of its incorporation into a system of purposes, are worlds apart; that everything that exists is periodically reinterpreted by those in power in terms of fresh intentions. . . . But all pragmatic purposes are simply symbols of the fact that a will to power has implanted its own sense of function in those less powerful.²⁰

¹⁸ Advisory Committee Staff, Memorandum, September 7, 1994, to Members of the Advisory Committee on Human Radiation Experiments, re: Historical Background on U.S. Nuclear Testing, 2, 3. Tab F, Part III, ACH1.000006.006c.

¹⁹ Advisory Committee on Human Radiation Experiments, *The Human Radiation Experiments: Final Report of the President’s Advisory Committee*, 530. The case studies of experiments performed between 1947-1974 on children, prisoners, and critically ill patients without their knowledge and informed consent, documented the development of a parallel system of closed-door professional scientific activity devoted to nuclear research that ignored the ethical standards of conduct and legal boundaries that scientists involved in other sorts of experiments routinely employed to protect the rights of experimental subjects, a standard strengthened adoption of the Nuremberg Code. For the Committee’s evaluation of atomic veterans and the Nevada Test Site, see Chapters 10-13, 284-420.

²⁰ Friedrich Nietzsche, “‘Guilt,’ ‘Bad Conscience,’ and the like,” *Genealogy of Morals*, trans. Kaufman (New York: Viking Press, 1979), 2.12, 77.

This was a lesson not lost on Presidents Truman and Eisenhower, who during their terms each echoed variations of Nietzsche's abstract observations in discussing atomic science. In 1950, Truman spoke of the need to build a "moral and legal" framework to "insure that his [man's] new powers are used for good and not for evil." "Man has opened the secrets of nature and mastered new powers. If he uses them wisely, he can reach new heights of civilization. If he uses them foolishly, they may destroy him."²¹ As if to complement Truman's invocation of generalities to situate atomic science in a historical stream of innovation and progress, President Eisenhower constructed a more down-to-earth version that dealt with people, with their inventions and intentions. In September 1953 after nuclear war had become even more terrifying with the H-bomb, Eisenhower jotted down a sentence he had thought to include in an upcoming speech: "Every invention is susceptible of good or bad use," he wrote, "depending on the intentions of those using it."²² Both Truman and Eisenhower may have been most interested in how their words resonated on the international stage and foreign policy, but their insights are equally applicable to domestic policy, the political instrumentality of the bomb, and the process and personalities that together shaped the history of the program.²³

This study offers new avenues for future historical research. Its findings encourage continued historical investigations of the relationships that existed in what

²¹ Harry S. Truman, State of the Union Address, 1950. *Public Papers of the Presidents*.

²² Dwight D. Eisenhower, 9-28-1953, "Handwritten by President to be included in atomic speech," DDE Diary, Ann Whitman file, Papers of President Dwight D. Eisenhower, DDE Library.

²³ As Patrick J. McGrath's analysis demonstrates, political and scientific militarism evolved as the product of the contradictory ideologies of 1940s moderates and their opponents. The former promoted Hebert Hoover's belief in the value of a "scientifically driven prosperity and classless meritocracy." Their commitment to this philosophy created political opportunities that were exploited by their opponents who capitalized on a "sentimental" perception of warfare and soldiering in American society throughout 1940s. McGrath argues that these forces, when combined with militant anticommunism, caused a change in what it meant to be an American; that civic responsibility became inseparable from being "a good soldier." *Scientists, Business, & the State*, 126-127.

might have been the largest public-private partnership of all time. Much more could be learned about the lives and motivations of the scientists who served on advisory committees. Additionally, examinations of the interactions between individual scientists, advisory committees, and the establishment of workplace or safety standards, would contribute to historical understanding as well as contemporary problems faced by federal and state agencies.

This dissertation also makes an argument for the utility of historical understanding, opening up a number of avenues of inquiry for those interested in narrowing the gulf between the formation of policy and its administration. As a case study of institutional resilience, it demonstrates how structural and cultural resistances to change, including the tacit or intentional reproduction of institutional practices, may operate to impede an agency's or an organization's ability to respond to adjustments in policy goals and changes of circumstance. Additionally, this examination of decision making illustrates the extent to which participants aligned themselves with organizational norms and goals, sublimated personal ethical standards, and ultimately misled presidents and congressmen in the interests of those goals. Understanding how the tensions between regulatory oversight and institutional loyalty developed in this historical instance may, perhaps, guide policymakers as they evaluate mechanisms to preserve regulatory integrity. Finally, evaluating the interplay of favorable scientific opinion to hazardous experimentation highlights the needs for vigilance to guard against the unintentional narrowing of the advisory field of expertise and the muting of alternative approaches.

This analysis reflects my experiences as a duck-and-cover kid, an understanding that began to develop in 1972 through my work as a legal assistant helping Test Site

workers pursue their claims against the government, and what I have learned in archives and from historians who fleshed out the institutional and political contexts of the Cold War. As my study concludes, I like to think that it provides insight into the issue that most terrified E. B. White in 1954 about the atomic era: “the speed of man’s adjustment to it.”

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