Chain reaction: The tragedy of atomic governance

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CHAIN REACTION: THE TRAGEDY OF

ATOMIC GOVERNANCE

by

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Bachelor of Arts
University of Nevada, Las Vegas
1997

A thesis submitted in partial fulfillment
of the requirements for the

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ABSTRACT

Chain Reaction: The Tragedy of Atomic Governance

by

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An unprecedented combination of imagination and capital resulted in the most profound, and profane, achievement in modern history—the atom bomb—but the strategies that empowered its development caused inestimable suffering in peacetime America. Discrete practices of secrecy, media manipulation, and the devaluation of scientific opinion evolved and coalesced during the cold war, permeating institutions and pre-empting any protection of the unwary from exposure to radioactive fallout. While the atomic testing program and its consequences are often considered in light of national policy, this analysis alternatively reveals the character, fusion, and trajectory of practices that culminated in the collision of the government with the health and lives of the innocent.
# TABLE OF CONTENTS

ABSTRACT ............................................................................................................................... iii

ACKNOWLEDGMENTS ......................................................................................................... v

CHAPTER I  INTRODUCTION .......................................................................................... 1

CHAPTER II  THE NATIONAL SECURITY ACT ...................................................... 46

CHAPTER III  THE MANHATTAN ENGINEER DISTRICT ..................................... 109

CHAPTER IV  OPERATION CROSSROADS ............................................................... 152

CHAPTER V  THE ATOMIC ENERGY COMMISSION .......................................... 201

CHAPTER VI  THE NEVADA PROVING GROUND ................................................ 225

CHAPTER VII  CONCLUSION ........................................................................................ 267

BIBLIOGRAPHY .................................................................................................................. 273

VITA ...................................................................................................................................... 284
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CHAPTER I

INTRODUCTION

It is, perhaps, the little curiosities rather than the grand design that propel research. Those who study the cold war era, and particularly atomic testing, either become inured to roadblocks of security classifications and endless Freedom of Information Act Requests, or abandon the endeavor altogether. Those who adapt, however, cling to the hope that somewhere within the dusty boxes or microfilm reels they will find some little something that will point the way to, well, probably just another box or reel. Eventually, though, enough little somethings form an image of sorts; and then, like a neophyte struggling to make sense out of a Picasso, the researcher can finally stand back, perhaps cock her head to the side for a different perspective, and try to say what it all means. The whole process is set in motion by some little, curious something.

And so it was with the discovery of the muskrat.\footnote{Transcript, "Special Meeting of the Advisory Committee on Biology & Medicine to the Atomic Energy Commission, November 26, 1956; US DOE Archives; 326 US Atomic Energy Commission; Collection Secretariat; Box 1271; Folder O&M-7 ACBM BP ("Transcript"). See also Newsweek, November 26, 1956, 64.} Immortalized by a few brief remarks in the transcript of a 1956 meeting of the Atomic Energy Commission's Committee on Biology & Medicine and achieving momentary notoriety as an interesting tidbit in a Newsweek article, the muskrat's significance cannot be measured by either
brevity of reference or the fleetingness of his fame. The twenty scientists who discussed his future over forty years ago decided that he offered, perhaps, the best answers to their questions about strontium 90—a man-made isotope—and its relationship to diseases of the bone. Additionally, his presence, though minuscule, validates a historian’s haunting suspicion: that although the AEC issued constant reassurances from 1951 through 1956 that fallout and its associated radioisotopes posed no danger, those statements (at least as they pertained to strontium 90) were baseless. The AEC apparently initiated its investigation into strontium 90’s effect upon the biological chain only in 1956, and only with the fortuitous capture of the muskrat.

He had lived his whole life in a little pond just outside Oak Ridge, Tennessee, feeding and swimming in a stream that flowed out of the government facility, sleeping in a little mud and cattail hut just above the water line. Two Oak Ridge security guards trapped him, but whether for sport or the stew pot is not known. When the guards noticed the tumor on the muskrat’s hind leg, they turned him over to AEC officials who promptly classified the little fellow—his fate remains, as far as is known, a government secret (together, of course, with any documents relating to his contribution to science.) Though other creatures were available, and some had already been the focus of strontium 90 experimentation, government scientists preferred the muskrat. In so doing, they discounted data gleaned from the study of Oxford rabbits (they were English, after all) and ruled out examination of the two Canadian ducks of uncertain migration habits that had sickened hunters. The muskrat was a viable subject—the scientists could calculate the concentrations of strontium in his environment, he had a bone tumor, and he was
American, a very important factor during the cold war. *Newsweek* called the little fellow a “pioneer of progress” but Gioacchino Failla, the Chairman of the AEC’s Division of Biology & Medicine, called him a “piece of evidence.”^2

The muskrat is, however, just a “piece” of the transcript of that meeting in 1956, and just a single feature of a document that reflects an institutional hierarchical culture permeated with, and functioning, through artifice. Indeed, and as will become clear, although the AEC deceived the American public, that potentially (and, ultimately, actually) lethal practice was only the ending link in a chain of collaborative deception that originated within the institution itself, circulating between and through the AEC and (in this instance) its Advisory Committee on Biology & Medicine. It is clear that the AEC’s substitution of theatrics and illusion for honesty, a practice seeded in the wartime Manhattan Project and one that grew (both functionally and in its ability to adversely effect the population, in proportion with the extraordinarily-rapid development of ever-more-powerful atomic weaponry itself) had become, by 1956, normative.

Two factors in simultaneous operation, pervasive secrecy and the pursuit of a common goal, influenced decision-making and allowed the atomic testing program to assume its decidedly-hazardous nature. An unprecedented system of security and document classification guaranteed the anonymity, and thus encouraged the participation, of individuals who might otherwise have, at the very least, questioned the morality of decisions that so often cavalierly dismissed the safety and well-being of so many. In addition, since the two potentially-conflictive arms of the program shared a common goal-

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^2 Transcript, 46.
-the experimentation and development of atomic weapons—any chance that one might provide a check upon the other was simply an apparition. Such institutional collaboration, though invisible to the public, effectively obliterated the possibility that the Committee on Biology & Medicine (ostensibly designed to guarantee, as far as scientifically possible, safe parameters for testing) might temper or even curtail, in the name of safety, the intent of the AEC, an entity that existed solely to serve the government's need for atomic weaponry.

It is important, too, to recognize the influence that institutionalism had upon the operation of the program. In this regard, Robert Cover's analysis of state-sponsored violence, though situated within the realm of law and legal interpretation, can provide meaningful direction. I have already stated that members of the Advisory Committee and officials of the AEC practiced routine deception and that those untruths detrimentally impacted innocent, and otherwise unwary, individuals. That interpretation, however, should not be taken to presume that all who knowingly participated in such organized immorality were unprincipled beasts, utterly devoid of human compassion or professional responsibility. Instead, their participation as agents within a legally-authorized organizational system countered natural inhibition.

Cover held that through the hierarchical legal system—from the state, through law, to individual victims—a judge, by interpreting law, institutes, authorizes, and legitimates acts of violence upon individuals. As components of the system through which the judge operates, collaborators (wardens, executioners) carry out in unquestioning fashion the decision of the judge, and so perform in a manner which might otherwise be morally
repugnant to them. This analysis explains how the organization itself operates as a force upon participating individuals:

Persons who act within social organizations that exercise authority act violently without experiencing the normal inhibitions or the normal degree of inhibition which regulates the behavior of those who act autonomously. . On one level judges may appear to be, and may in fact be, offering their understanding of the normative world to their intended audience. But on another level they are engaging a violent mechanism through which a substantial part of their audience loses its capacity to think and act autonomously.  

The AEC itself, an organization that functioned as a legitimate agent of the state, with all its attendant authority--an authority that became enlarged, deservedly or not, during the troublesome years following World War II--existed solely to maintain the development of atomic weaponry; and, toward that end, subordinated the welfare of human beings to a legitimated goal. The actors within that organizational culture, by virtue of their participation, divorced themselves from the day-to-day needs and wants of those outside by virtue of their participation, perhaps also (even, as Cover suggests, unconsciously) divorced themselves also from the travesties that their participation engendered.

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3 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 an analysis of Cover’s insights by Austin Sarat and Thomas R. Kearns, “Making Peace with Violence: Robert Cover on Law and Legal Theory” *Law’s Violence* (Ann Arbor, MI: University of Michigan Press, 1995), and particularly the pointed comment that ethical queries (whether implicated within 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. Though similarities exist between arguments against law’s violence and a violence perpetrated by the atomic weapons program, the logical extension of the argument cannot be similarly applied. It is, for example, a simple matter to recognize the benefit afforded society by law—far more difficult (at least for me) to recognize many, if any, benefits afforded by atomic weapons or their testing as historically practiced.
The AEC developed methods to pursue its goals in ways that proved tragic for many, but it is, fortunately, not necessary to rely upon supposition or models of institutional behavior to posit that conclusion. For example, documents prove that the AEC knew in 1949 that the strontium 90 released through atomic weapons testing was accumulating and approaching levels that threatened some type of biological hazard, yet it persisted in testing weapons that increased the strontium 90 environmental burden exponentially. And yet, even with an identified potential for disaster, the AEC failed to investigate the potential consequences—no scientific studies ensued, no government scientists placed animals in cages for the sole purpose of testing the effects of strontium 90—indeed, only through happenstance, in the form of a wild muskrat near Oak Ridge in 1956, did the AEC scientists get their first opportunity to examine the relationship between strontium 90 and biological organisms. It is time to take another look at 1956, the year that Eisenhower defeated Adlai Stevenson, the Salk vaccine for polio went into distribution, and strontium 90 hit the headlines.

Strontium’s effects were not widely known in 1956, but one was undisputed—it caused members of the Atomic Energy Commission to squirm. Strontium became the issue of the year after the National Academy of Science announced in June that rising

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4 See 13 infra.
environmental levels might be more dangerous than the government had admitted. The questions surrounding strontium 90 loomed like thunderclouds in the summer sky and placed the AEC in the middle of a storm unlike any it had ever encountered. When sheep deaths in 1953 and fallout-induced injuries of Japanese fishermen in 1954 angered many, the AEC had reassured the public with denial, explanation and persuasion, successfully lulling the anxious back into complacency. This time, however, AEC reassurance carried little weight, for if the scientists who sounded the most recent alarm were right, the victims of strontium 90 would be children.

Researchers outside the government, and at least one from within, found that strontium 90 imitated calcium and concentrated in growing bone, posing the highest danger for the world’s children whose calcium requirements and consumption exceeded those of adults. In light of their admittedly preliminary findings, they warned that any

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6 See *Newsweek* June 25, 1956. Most of public’s education on radiation in the 1950’s originated with physicist Ralph Lapp. As devoted to his profession as he was to the public’s right to know, Dr. Lapp translated the always-complicated world of atomic science for laymen during the 1950’s. Lapp did not believe that testing of atomic weapons should cease, only that it be pursued in as safe a manner as possible. An outspoken critic of the AEC’s security policies, he was denied any direct participation within the atomic testing program and based his calculations and conclusions upon details gleaned from the eyewitness accounts of colleagues, published photographs and accounts. Nevertheless, on numerous occasions he embarrassed the AEC, catching them in egregious falsehoods and forcing retractions. When Louis Strauss vehemently denied that radioactive fallout had been responsible for the illnesses of Japanese fishermen, Lapp’s public admonitions forced Strauss to admit the truth. *The New Republic*, July 9, 1956, 5.

7 See Chapter 5 *infra*.

8 *Newsweek*, June 25, 1956, 70. See also the magazine’s November 12, 1956 issue, 90, about Dr. William F. Newman, an AEC biochemist who broke ranks with the government and his colleagues (AEC scientists) who consistently promoted the safety of strontium 90. Dr. Newman had studied radiation and bone metabolism since 1943, and claimed that it would take another ten years to establish the margin of safety of strontium 90. Taking his case to the press in New York, he said “There is a grim possibility that we will gain this information from human data.” *Newsweek*, November 12, 1956, 90.
continuation of testing, absent further research into the behavior of strontium in the biological chain, spelled potential disaster. The fears of the scientists spread rapidly through the public, assuming political prominence through election-year volleys as the Democrats accused the Republicans of "smug scientific optimism"; the GOP parried that the Democrats desired simply to frighten the electorate "out of its skin." Congress threatened an investigation into fallout and the policies of the AEC, and the United Nations accelerated and expanded its on-going international analysis of radioactive fallout.\(^9\)

Confronting mounting pressure, the AEC scientists struggled to convince the public that increasing strontium levels posed no danger. Though the AEC sounded the "all's well," independent researchers increasingly challenged that position with alarming mounds of data. The AEC was unable to retaliate in kind—its safety margin for strontium 90 was not based upon the exposure of a general population to strontium fallout.

\(^9\) *Newsweek*, November 26, 1956, 64. See also *The New Republic* 134, June 4, 1956, whose editor agreed with Adlai Stevenson and urged a moratorium on the testing of hydrogen weapons based primarily upon testings value as a deterrent and upon its enormous, and upward-spiraling, expense: "When small boys play at war, each one can be a winner. One may shout 'you can't shoot, you're dead!', but the 'dead' rise to shoot again, for in the make-believe world each is invincible. But in the real world of competition for nuclear supremacy, the law of diminishing returns robs us of invincibility." p. 3.

\(^{10}\) *Newsweek*, November 26, 1956, 64-66.
or even animal experiments, but upon industrial exposures of adults to radium. Faced
with the continuing deterioration of public trust despite their “daddy knows best”
assurances, AEC promoters made a strategic shift in emphasis.

11 Despite the fact that the AEC had investigated the worldwide distribution of strontium
90 since 1949, it did not institute any studies on strontium’s effect on health and based the
“maximum permissible” level upon dose and injury resulting from another radioisotope,
radium. In 1949, Shields Warren, then-AEC Director of Biology & Medicine, concluded
(based upon a one-man project from Oak Ridge) that “serious contamination” from
strontium 90 would result from the detonation of 3,000 20-kiloton bombs. The study,
renamed “Project Gabriel” in 1953, broadened its base to include the Rand Corporation,
and a sister study named “Project Sunshine” joined Gabriel. The participants were sworn
to secrecy and forbidden to discuss the project or its findings, even with other AEC
colleagues or officials seeking information about strontium and its effects. The project’s
existence surfaced officially only in 1958. Barton C. Hacker, Elements of Controversy

Hacker attributes the extreme (even by AEC standards) security of Project Sunshine to
a reluctance by project members to admit the comparison, by project members, of infant
bones collected from the US, India, Japan, South Africa, and South America, in an effort
to establish the worldwide levels of strontium 90 distribution. In addition, he concludes
that AEC Commissioner Willard F. Libby, a Manhattan Project and Biology & Medicine
veteran, University of Chicago geneticist and participant in Project Sunshine, continually
downplayed the significance of strontium’s biological effects in favor of continued
emphasis upon his own, professional genetic concerns. Throughout his career, Libby
never wavered and remained a staunch supporter of continued atomic weapons testing.
Though I am a grateful beneficiary of Barton Hacker’s devotion to the history of atomic
testing, his assertions that the secrecy surrounding Projects Gabriel and Sunshine
protected only the limited personal concerns of scientists seems naive.

It seems reasonable to at least consider what Hacker does not; namely, that the
continuation of the weapons testing program itself motivated stringent security measures.
Undoubtedly, secrecy guaranteed the insulation of researchers collecting baby bones and
protected the pre-eminence of radiation-induced genetic study; but secrecy also protected
the maintenance and acceleration of the testing program. With just a little fairy dust, one
could even imagine that the government instituted Projects Gabriel and Sunshine to
discover the dangers of strontium 90 in order to adjust the weapons development and
testing schedule in light of the projects’ findings—but fairy dust is hard to find these days.
It seems clear that the projects’ chief intent was to learn enough about strontium 90 to
mitigate any damage that might result from an ever-expanding weapons program.

Secrecy protected the ability of the government to continue its weapons program,
irrespective of the results of either project. The constituency of Gabriel and Sunshine,
the pace of atomic weapons development, and the AEC’s disregard for the conclusions of
its own scientists, like Dr. Warren, supports this assertion. The scientists recruited to
The AEC tried to channel public fears elsewhere, and officials unleashed alternative radioactive bugbears; namely, future power plants and sunlight at high altitudes. Dr. John Bugher, former AEC Director of Biology & Medicine, told health professionals in Atlantic City that strontium 90 was nothing compared to the radiation hazard that the world would soon face from atomic power plants. Merril Eisenbud, chief of the AEC’s New York office, predicted that the amount of radiation children would receive was “probably ten times too high,” but since a portion of that dosage depended upon geography, they could, if concerned, “move.” That this tactic was a dismal failure is (one hopes) unsurprising. It appears that AEC officials also recognized, probably as soon as they approved their advance copy of the *Newsweek* article, that they needed some new methods to deal with an anxious public. Months after independent scientists went to the press with their strontium fears, the heads of the AEC finally did what all organizations do when presented with crisis—they called a meeting.

work on the projects were heavily invested in atomic weapons development. Some, like Libby, had participated from the very beginning; others, like John Bugher, who served as the AEC’s Director of Biology & Medicine, had been long-time supporters of atomic testing. All, whether employees of the AEC or not, researched radioactive effects only at the continued imprimatur of the AEC. In addition, (and since even game theorists require hard data) the Rand Corporation, a think tank devoted to the development of atomic-age strategy, prospered because of atomic weapons testing and the arms race. Finally, it must be remembered that as early as 1949, the Oak Ridge study on strontium 90 predicted “serious” strontium 90 contamination from the detonation of an accumulated atomic kilotonnage of 60,000. In February 1954 (less than a year after Projects Sunshine and Gabriel were launched) the AEC detonated “Bravo,” a single 15 megaton hydrogen weapon equivalent to 250 times the kilotonnage that Warren predicted would result in “serious” worldwide strontium contamination.


13 It cannot be known exactly when the AEC reviewed, and granted authorization for, the article; however, the government required that any material published about the atomic testing program and/or radioactivity had to be submitted and “vetted” prior to publication. See Caute, *The Great Fear* (New York, NY: Simon and Schuster, 1979).
The conference on November 26, 1956, accomplished very little, but it demonstrates that the barriers imposed upon science and scientists in conjunction with the atomic age bred mistrust, disallowed meaningful evaluation, and prevented consensus. Within a governmental culture that ranked loyalty over competence and security over everything else, the twenty members of the AEC's Advisory Committee on Biology & Medicine belonged to a very exclusive club. Many of their colleagues had refused to participate in the persecutorial atmosphere of the cold war—some retreated to a more-liberal England, others to pursue their work in venues independent of federal support, still others simply gave up.\(^{14}\)

Those scientists who thrived, however, like the members of the Advisory Committee on Biology & Medicine, served as government functionaries and voluntarily isolated themselves from professional colleagues. The result was an insular existence as the government scientist transferred the cold war features of loyalty and security into his professional behavior. These characteristics typified the scientists who met to consider the strontium 90 problem in 1956. Each man trusted only the results of his own scientific

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\(^{14}\) In 1948, members of the American Association for the Advancement of Science came out "militantly" against loyalty oaths, and in 1950 demanded the protection of scientists from Congressional persecution. By 1951, and perhaps because the Fuchs case had fueled anti-communist hysteria, the Association dropped its appeals for scientific openness. A.G. Mezerik declared in a February 5, 1951 *New Republic* article that "The scientist's way of life is once again being challenged and his hopes dashed. The atmosphere of freedom in which science burgeons is to be supplanted once more with the atmosphere of classified information, interminable security investigations and secrecy." 12-13.

Loyalty investigations took a heavy toll on all scientists, particularly physicists. At the end of the war, over 3,000 scientists belonged to the Federation of Atomic Scientists. By 1950, fear of association with any organization had reduced that number by half. By December 1952, the AEC had investigated over "400,000 personnel." Caute, *The Great Fear*, 465.
investigations, rarely conferred with others, never with those outside America, and even
cast a suspicious eye toward his colleagues who joined him at the conference table.

The meeting started at 9:30 a.m., and discussion began on a paper circulated
previously to the committee members by Dr. Merril Eisenbud. Although Eisenbud had
participated since 1953 on two secret studies of strontium 90 distribution (and thus,
presumably, had a good deal of information he could have offered) he limited his input
into the committee’s discussions to the conclusions of his paper: a study of strontium
concentrations in a North Dakota milkshed. Even then, however, he did not readily
volunteer information that would have clarified the committee’s understanding of his data.
The following discussion began when scientists tried to assess radium uptake and
excretion, combined with the known half-life of strontium 90, in an attempt to estimate a
potential range of strontium 90 burden in the bone of a given organism. Though tedious,
the excerpt illustrates the reluctance of even key participants to rectify misunderstandings:

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.
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.
Dr. Glass: It is not a factor of ten anyway, is it? Didn’t you admit the
factor of two from the British data which would bring this to five?
Dr. Marinelli: Yes.
Dr. Glass: So it is a difference of five times.

\(^{15}\) See note 11 supra.
Mr. Eisenbud: There are relatively few numbers up there. This is very complicated.  

At the very least, Eisenbud could have clarified his own data. Instead, (but admittedly without proof since nothing but a transcript of the meeting exists) one is presented with an image of Eisenbud, sitting smugly while others argued and guessed about the characteristics of his control group. Similar misunderstandings characterized the meeting’s morning session, but before the lunch break they all agreed that a study of the muskrat might reveal (if only in muskrats) the biological effects of strontium.

The lack of verifiable research data on strontium 90 prior to the Committee’s 1956 decision to study a muskrat highlights the AEC’s general disregard for human health unless, or until, adverse public relations threatened its existence. As early as 1949, Shields Warren, Director of Biology & Medicine, warned that levels of strontium 90 posed certain environmental hazards. Warren’s “maximum” levels were based upon atomic, not hydrogen, weapons; and when hydrogen weapons entered the picture, those “maximum” levels

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16 See Transcript, 41-42.
17 Though the tone, and most of the content, of the scientists’ discussions is perfectly clear, there are portions of the transcript that are puzzling—at least to this writer. An example, including the comments on either end for context, is illustrative:

Dr. Marinelli: [on fish that eat strontium-rich plankton] Yes. They incorporated [sic] in the skeleton. Do we eat fish bone? Sometimes we do. Cats do.
Dr. Failla: Then we settle on 2.5 to 25, shall we?
Dr. Marinelli: The square root of 10 is 3.
Dr. Glass: Five to 25. You accepted that factor.
Dr. Marinelli: Yes. There might be a factor of two.
Mr. Eisenbud: There is a factor of four according to Colmar. That should be ten.
Dr. Marinelli: This is at the end of the lifetime, mind you.
Dr. Brues: I think you should use the same philosophy at both ends. If you are going to stretch everything at one end, you should stretch everything at the other.

p. 47.
levels were modified and increased. Nevertheless, the AEC soon exceeded even those higher levels, producing an enormous amount of strontium with 1954’s megaton-range hydrogen weapons. Thus, despite warnings from its own chief scientists, the AEC continued, and accelerated, the testing of weapons that would significantly increase, to dangerous levels, the amounts of strontium 90 within the environment. They failed to even investigate the biological effects of strontium 90 until forced to do so by an enraged public.

So, in 1956, and in the absence of precautionary experimental study, the muskrat was the scientists’ best hope for some answer to the questions surrounding strontium 90’s biological effects. Since they knew the concentrations of strontium released from Oak Ridge into the muskrat’s water, and could measure the levels of strontium taken up by the plants he ate, they might determine the “biological concentration” of strontium 90 through “some particular chain.” Although the transcript clearly reveals why the scientists were pleased that they had a muskrat in their classified knapsack, there is no overt suggestion of what they thought they would learn from the little mammal with the tumorous hind leg. There were, however, signs that they expected bad news.

A fair portion of the afternoon session was spent in the analysis of mortality tables and bone malignancy. Dr. John C. Bugher directed the presentation, punctuated with a table prepared by the Metropolitan Life Insurance Company charting deaths from “bone

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20 See Transcript, 146. Only at the end of the day did anyone ask why strontium 90 had become such a problem, and Eisenbud informed the group that testing conducted within two or three months of 1954 accounted for “75 per cent, I guess” of all strontium 90 in existence.
21 Transcript, 46.
cancer\textsuperscript{22} incidence in the United States since 1954. Bugher then estimated future deaths from strontium 90 upon the "maximum permissible" industrial standard for radium, and concluded that "in terms of death. . .would come in somewhere about half of what we kill with automobiles."\textsuperscript{23} It is impossible to extrapolate from the transcript whether the scientists were relieved, or alarmed, at Bugher's conclusions; but his presentation convinced them all that they could comfortably postpone any recommendation concerning an alteration of the existing, accepted, "safe" levels of strontium 90.

In the end, the scientists, purportedly meeting to review new data on strontium 90 and to consider an adjustment of the maximum permissible level of the radioisotope, decided only to initiate studies on the muskrat and postponed reaching any conclusions that might have altered the long-established maximum permissible levels of strontium 90. Had they actually attempted, and agreed, to thoroughly examine \textit{all} available evidence relating to strontium 90's ability to significantly increase the potential for diseases of the bone, it seems reasonable to assume that the extant levels might have been reduced. This assumption is further supported by the fact that legitimate research, readily available to scientists at that time, attributed a strong correlation between the high level of calcium requirements of growing children and, thus, an elevated potential for disease in the presence of strontium 90. It seems inconceivable that twenty accomplished scientists would, with full knowledge of the risks involved, refuse to reconsider an outdated value

\textsuperscript{22} A decidedly imprecise categorization that neglected the many types, and varied causes, of bone cancers.
\textsuperscript{23} Transcript, 81.
for strontium 90 burden that had been based upon a different element, radium, and a
different exposure group, adult industrial workers.

It is impossible to determine with absolute certainty the reasons why members of
the AEC's scientific board neglected to reduce an outdated, illegitimate, and even (given
their acceptance of mortality rates from strontium 90) lethal, value for the production and
dispersal of strontium 90. Certainties, however, are rare, and seldom the stuff of history.
Clearly, there could be many possible reasons why scientists failed to reduce maximum
permissible levels of strontium 90 on that 1956 day, or even shortly thereafter. Since a
probable reason may be the only one that can be found, it is worthwhile to look for it by
exploring the potential consequence of each decision that scientists might have rendered.
The scientists had two choices other than the one they settled upon: they could have
recommended the established strontium 90 level remain untouched or that it be reduced.
That they did not go so far as to certify, in 1956, the accuracy of the earlier standard
indicates that they were, apparently, unwilling to invalidate so much (outside) scientific
endeavor that already confirmed the hazards of strontium 90. Alternatively, a
recommendation to reduce the maximum permissible level would have, even in 1956,
doomed any future atomic weapons test that released strontium 90, and they all did. The
probable reason, then, that they declined to adopt this latter option is that it would have
affected, adversely, the testing of atomic weapons—the goal and purpose of the AEC and
indeed, the Committee.

Ultimately, it was the case that their deliberations mattered little, and their
unacknowledged though unassailable agreement with the purpose of the AEC,
insignificant. The transcript reveals that the Advisory Committee on Biology & Medicine was misnamed—it did not give advice, it took it. After Bugher's presentation of mortality rates, AEC Commissioner Murray entered the room. When Chairman Failla turned the meeting over to the Commissioner, he first praised the scientists, then warned them:

Murray: You appreciate, Doctor, that we have a series of tests coming up in the spring, and we must go ahead with those tests. The amount of contamination that we do in those tests will be, I think, insignificant after listening to this discussion. I would not want anything to happen that would disturb the going ahead with those tests in the spring. That is our immediate problem, and I don't think anything will interfere with us going ahead.\(^{24}\)

Apparently nothing the scientists might have decided that day would have dissuaded the AEC from their 1957 testing series, and in the end, nothing did. In 1957 thirty atomic weapons shook the Nevada Test Site.

* * *

An unprecedented combination of imagination and capital resulted in the most profound, and profane, achievement in modern history—the atom bomb—but the strategies that empowered its development caused inestimable suffering in peacetime America. Discrete practices of secrecy, media manipulation, and the devaluation and misapplication of scientific opinion evolved and coalesced during the cold war, permeating institutions and pre-empting any protection of the unwary from exposure to radioactive fallout. The illness and death that followed in the wake of atomic testing has often been explained as an

\(^{24}\) Emphasis mine. Transcript, 103.
unfortunate and unintended consequence of cold war policy. It is not surprising then, nor especially unreasonable, that historians assess atmospheric atomic testing in tandem with the accompanying expansion of state initiative that took place during the cold war; but to do so minimizes the role of individual actors within the structure of that ever-more-powerful postwar state structure. I suggest instead that the negligent, and thus hazardous, nature of atomic weapons experimentation can best be explained through the articulation of national policy; and that an analysis of the character, trajectory, and fusion of practices within the atomic program reflects that it was the habits and ritualized behavior of individually-powerful actors, not policy, that culminated in a lethal collision between the government and the innocent.

Policy, however, hatched and fledged atomic weapon and thus is not irrelevant. America’s atomic testing program, like its wartime predecessor the Manhattan Project, progressed under a shroud of secrecy and an unprecedented classification system that kept atomic information hidden from America’s enemies, citizens, and many government officials. Other factors, too, contributed to the evolution of the testing program and its treacherous consequences. The growing fear of communism replaced the wartime battle against fascism and military objectives increasingly dominated decision making, spawning the merger of military and civilian institutions. In addition, the internationalization of US interest pushed foreign policy into a dominant role, increasing the power of the executive proportionately.

The cold war actually began before the World War II ended and grew increasingly frosty during Truman’s administration. As vice president, Truman doubted Soviet
sincerity, and his suspicions only increased after Roosevelt's death when others substantiated his concerns. The Office of Strategic Services suggested to Truman that Russia was committed to hegemony and "may well outrank even the US in military potential." Against the advice of General George Marshall and Secretary of War Stimson, Truman set his course and picked at the frayed edges of American-Soviet diplomacy during his first official meeting with foreign minister Molotov.25 Later, George F.


It is true that the relationship between the US and the USSR had begun to deteriorate while Roosevelt lived, but Truman's dislike for the Soviets certainly exasperated the tension. That Truman's disregard for the Soviets was deep seated is clearly reflected in a December 1941 letter telling his wife Bess that the Russians were as "untrustworthy as Hitler and Al Capone." Harry S. Truman, Dear Bess, (New York, NY: Norton, 1983) Ferrell, ed. 471. Later, his admiration for Harry Hopkins' success with the Soviets, did not encourage him to smooth over any ruffled feathers: "...he knew exactly how to do it. He talked tough to them all the time." Merle Miller, Plain Speaking (New York, NY: Norton, 1974). Though analyzed in abundant literature, it is important to here review how Truman's dislike of the Soviets encouraged a pattern of antagonism and mutual mistrust that characterized the cold war itself.

On April 20, eight days after Roosevelt's death, Truman called a meeting to prepare for the arrival of Molotov. In Charles E. Bohlen's memorandum of the meeting, when the US Ambassador to the Soviet Union, W. Averell Harriman, suggested that US and Soviet relations had deteriorated since the Yalta Conference, Truman wasted no time in advising Harriman that "he was not in any sense afraid of the Russians and that he intended to be firm but fair since in his opinion the Soviet Union needed us more than we needed them." Although conceding to the necessity for a "give and take" with the Soviets, Truman undeniably expected to come out ahead on the bargaining: "The President said...we could not, of course, expect to get 100 percent of what we wanted but that on important matters he felt that we should be able to get 85 percent." FRUS 1945 Volume V, Europe, 321-334, cited in Schlesinger, ed., Dynamics of World Power, Documentary History of US Foreign Policy 1945-1973, (New York, NY: Chelsea House Publishers, 1973), 74-76.

According to Secretary of War Henry L. Stimson, at an April 23 meeting to discuss Truman's upcoming meeting with Molotov, Truman declined the advice of Stimson and Marshall. Secretary of War Henry L. Stimson disagreed with Harriman and urged restraint: "I said that in my opinion we ought to be very careful and see whether we couldn't get ironed out on the situation without getting into a head-on collision. He was evidently disappointed at my caution and advice and passed along the circle...nobody
Kennan's 1946 "Long Telegram" solidified the notion of fundamental ideological differences between the United States and the Soviet Union effectively precluding any promise of postwar cooperation. Perhaps most importantly, however, Kennan cut the preliminary path upon which his successor, Nitze, erected the manichean barrier that has divided capitalism and communism for decades. This polarization of ideology affected

backed me up until it came round to Marshall who wasn't called until towards the end. Then to my relief a brave man and a wise man spoke. . . he said that he, like me, was troubled and urged caution." "Papers of Henry L. Stimson," Stimson Diary, Monday April 23, 1945, Yale University Library, cited in Ibid., 76-78.

Truman set the tone for a terse and uncompromising meeting with Molotov, speaking forcefully and interrupting Molotov four times. As Truman rose to leave, he handed Molotov the text of a press release outlining Truman's position on the issue of Poland. Molotov immediately forwarded the document to Stalin. FRUS 1945, Volume V "Europe", 256-259; Schlesinger, Dynamics, 78-80. Truman's terseness shocked Molotov who complained that "he had never been talked to like that in [his] life." Walker, The Cold War, 20.

Compromise was not hopeless, but it was avoided. In 1945 then-Secretary of State Byrnes negotiated an agreement with Stalin and Molotov over the inclusion of opposition ministers and non-communists within Romania and Bulgaria, and the Soviet Union had agreed to Byrnes' insistence on UN control of atomic energy. Byrnes was elated that he had re-established Roosevelt's "wartime understanding" with the Soviets, but Truman, the Republican Senate, and Kennan (from Moscow) claimed he had "lost his senses." Walker, Ibid., 36-37.

The relationship between Kennan's philosophy and Nitze's in NSC 68 remains controversial. I do not believe Kennan should be held responsible for Nitze's alteration of the meaning of 'containment' as originally developed by Kennan—the reader will note, particularly in the next chapter, my debt to John Lewis Gaddis' analysis, Strategies of Containment (New York, NY: Oxford, 1982).

Kennan was clearly not responsible for the developments which have become associated with his interpretation of Soviet Communism, and he consistently (but somewhat unsatisfactorily) endeavored to adjust America's course away from the later interpretation of "containment." For example, he criticized the Truman Doctrine, see Atkinson, "America's Global Planner" New York Times Magazine, June 13, 1947. While serving as Ambassador in Moscow in 1952, Kennan still hoped to ease the tension that increasingly plagued the two powers. In a letter to the State Department he suggested that the Soviet people operated quite independently of Stalin and the party leadership, and counseled against the adoption (or maintenance) of irrevocable policy in reaction to Stalinist principles: "The spiritual breach between the rulers and the ruled is one of the things that most strongly strikes a person returning to Russia at this juncture after a long absence..."
more than foreign affairs—it stimulated domestic development that solidified America’s postwar position vis à vis the Soviet Union.

Congress anchored US strategies of communist containment to the withholding of atomic secrets through postwar legislation. In 1946, the McMahon Act mandated the absolute security of the atomic science, violating an earlier arrangement between the US, Britain and Canada for “full collaboration.” In 1947, diplomacy and military might would warn against drawing any...oversimplified conclusions from the observations I have just made. But I think they have sufficient force to stand also as a warning against the assumption into which many people have drifted: that the Soviet leaders have somehow found some mysterious secret of infallibility in the exercise of power and that it is not problem for them to hang on indefinitely and to mold Soviet society to their hearts’ desire. What is coming in this immediately approaching period may very well be a crisis of Soviet power quite comparable in scope and seriousness to the original civil war or the death of Lenin or the purges of the thirties—but entirely different in form.” Kennan to State Department, July 15, 1952, Sketches from a Life, (New York, NY: Pantheon Books, 1989) 151-157.

Domestically, however, few exercised any ideological separation between communism and stalinism. The political ramifications of communist infiltration have been adroitly addressed by Earl Latham, The Communist Controversy in Washington (Cambridge: Harvard University Press, 1966) 365.


28 Per the Quebec Agreement. See also claims made by the War Department that Great Britain had violated the Agreement when the Chancellor of the Exchequer Sir John Anderson talked with a “...politico-scientific representative of the French Government.” Secretary of War to President Roosevelt, 15 December 1944, “Correspondence (Top Secret) of the Manhattan Engineer District” National Archives Microfilm Publication M1 109, 1980, Roll 3, (“TSCMED”). Groves brought the violation to the attention of Stimson on 14 December 1944 and promised to postpone “insofar as practicable the passing of vital information concerning it to the representatives of any government other than our own” pending further instructions. Groves to Stimson, 14 December 1944, Idem.
became irretrievably linked with the passage of the National Security Act. Additionally, the Atomic Energy Commission, originally designed to assure civilian control over atomic development, became a valuable tool in the Armed Forces arsenal. All these efforts against communism caused the expenditure of enormous resources by those charged with the protections of America’s interests in a nation traditionally suspicious of peacetime military strength.

Additionally, domestic faith in the United States as an invincible superpower had gone up in flames with the ships in Pearl Harbor and joined fears of Soviet-style communism as an influential ingredient in the nation’s growing emphasis on national security. Even after victory in the war, the attack remained undeniable proof of US

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30 Operation Crossroads put the lie to the assertion that civilians controlled atomic energy, as evidenced by Truman’s adroit political appropriation of Congressional troublemakers. Military enthusiasm concerning the planned Pacific atomic weapons tests irritated an already-tense Congress debating the McMahon Bill, and when Commerce Secretary Henry A. Wallace joined with Congress to remove atomic energy from military control, Truman sensed a showdown. Receiving a letter from Wallace claiming that the Pacific Tests might reflect only what the military wanted them to reflect, Truman called a meeting in February 1946 with Secretary of State Byrnes, Secretary of War Patterson, General Eisenhower, Admiral Nimitz and Admiral Leahy (Truman’s Chief of Staff) to discuss criticism over the proposed tests. Leahy sharply criticized the McMahon Bill because it “carried an implication of distrust of the Armed Services” and would cause one of the most effective weapons of war to a civil commission which would dole out its product, if it decided to make any, as it saw fit.” Truman replied that although McMahon’s motivations were political he “had to be sure that this test met all of the crackpot criticism and that not only would it need to be objective but we had to convince the public it was objective.” They agreed to add House and Senate leaders to the already large contingent invited to view the tests as the basis of a Presidential Commission reporting directly to the president. Walter Millis, ed., *The Forrestal Diaries* (New York, NY: Viking Publishers, 1951), 133. See also Chapter 4, *infra*.
vulnerability, and undermined the confidence of American citizens and leaders. Later
decision-making reflects that the atom bomb only increased insecurity;\textsuperscript{32} and, in the
analysis of threats to the nation’s security, notions of ‘probability’ were increasingly
abandoned in favor of formulations of ‘possibility,’ with profound implications upon
domestic and foreign policy. This change in methodology eventually resulted in a desire
to protect America’s interests from every ‘worst-case’ scenario that could possibly be
imagined.\textsuperscript{33} When the nation’s enemies became conceptualized in terms of their

\textsuperscript{32} The bomb presented postwar American leaders with a peculiar set of circumstances.
While downplaying reports of radiation injury in Japan, the government had to convince
the American people that they should support: (i) peaceful development of atomic energy
through the establishment of international control; (ii) an extravagant military operation in
the Pacific to substantiate the necessity of a Navy and Army in a world of Superfortress-
delivered atomic weapons; and (iii) approve the Army’s planned development of three
national laboratories to support industrial development of atomic energy. In a transcript
prepared for the radio broadcast “You and the Atom” Secretary of War Patterson lobbied
for the public’s support of the Baruch Plan for international control of atomic energy,
among other things, and stressed the need for peaceful atomic utilization: “You must
decide—and quickly—that you are willing to enter into and live up to an agreement that this
universal force will not be available to any man or group of men for the purpose of war. .
. .” Planned for the July 22, 1946 broadcast, it coincided with the joint Army-Navy atomic
weapons tests in the Pacific (Operation Crossroads launched on July 1) the publicity
surrounding which caused an unexpected reaction in the minds of some, for Patterson
warned: “Don’t discount Bikini because ships continued to float. . .Remember that
America’s great centers of population, our concentrations of industry, and our ports are
vulnerable too. One atomic bomb would have done far more damage at Pearl Harbor than
did the massive two-hour raid which plunged us into war.” See “Remarks by The
Honorable Robert Patterson, Secretary of War” 7-19-46, TSCMED.

\textsuperscript{33} Policy constitutive of the memories of Pearl Harbor gained a normative quality by 1950,
when the Joint Chiefs of Staff (alarmed at Soviet superiority in terms of conventional
forces) advised the NSC 68 study group that based upon the tragedy at Pearl Harbor,
increase in domestic force was essential to avoid “a new type of Pearl Harbor attack of
infinitely greater magnitude than that of 1941.” Strobe Talbott, \textit{The Master of the Game}

This fits well within the analysis of Halperin who insists that this strategy not only
affects the product of an organization, but intra- and inter-agency relationships as well:
“Organizations constantly hedge against unforeseen consequences and the possibility that
potentiality, fear grew boundless and unchecked; and, in many ways, so did the institutions
that promised to alleviate that fear.\textsuperscript{34}

Certainly, the challenges posed by perceived threats to America’s interests were
enormous, and resulted in the growth of the “security state,” the development of the
military-industrial complex and a spreading fear that communism, from domestic as well as
foreign sources, threatened the nation’s very existence.\textsuperscript{35} A substantial body of
scholarship explains US strategy during this period through examinations of the diplomatic
breakdown in American-Soviet relations, the changes in American policy in reaction to
postwar Soviet activity, the divergent ideologies and capabilities of the two major
players.\textsuperscript{36} Those explanations may provide an authorizational framework through which

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their private estimates are wrong. This concern leads intelligence organizations
continually to predict crises, for when a crisis does occur, they can point out that they
predicted it.” Morton Halperin, \textit{Bureaucratic Politics and Foreign Policy} (Washington,
\end{flushright}

\textsuperscript{34} Eric Beukel encourages the re-evaluation of the pre- and post-atomic bomb decision
making and the interplay of imagination and objectivity. The nature of atomic weaponry
precludes analysis based upon anything but potentiality: “...nobody is able to establish
with certainty the borderline between wisdom and wishful thinking, between fact and
belief, between reality and myth; when decision-makers are attempting to establish some
tenable notions...the dividing line between their subjective beliefs and facts is blurred...”
\textit{American Perceptions of the Soviet Union as a Nuclear Adversary} (London: Pinter

\textsuperscript{35} George W. Ball sketches a disturbing scene: “Our first reaction...was irrational and
demeaning. How could we have suddenly become as subject to destruction as less
favored peoples?...What I found particularly repulsive in the ensuing hysteria was the
realization of how little we had progressed...now a new form of St. Vitus’ Dance
afflicted men and women...friend against friend, destroying trust in human decency and
producing a nation of informers.” \textit{The Past Had Another Pattern} ( New York, NY:
Norton, 1982) 470.

\textsuperscript{36} A representative sample includes John Lewis Gaddis, \textit{The United States and the Origins
\textit{We Now Know, Rethinking Cold War History} (Oxford: Oxford University Press, 1997);
the nation's atomic weapons program developed, but do not answer the questions that drive this study.

Why, for example, was the Navy so eager to use the atomic bomb against ninety-five of its own (and captured German and Japanese) ships and crafts, risking the health and lives of thousands of seamen? How did the military usurp Congressional authority and subordinate the civilian authority of the Atomic Energy Commission's to its own ends? And why was continental weapons testing conducted in such a dangerous fashion when simple precautions known at the time could have made it infinitely safer? Policy undoubtedly initiated, stimulated, and maintained atomic weapons testing, but to understand the channeling of national goals in the potent and poisonous directions taken by the program, one must push policy aside and locate the lethal trail of practices that flowed through atomic testing.

While not ignoring traditional rubrics, the paths I have chosen to follow have been illuminated in large measure by social theorist Pierre Bourdieu whose explanation of habitus and structures suggest an alternative exploration of atomic testing culture. The

reference to the weapons program as a "culture" is a sensible one since even the most elementary review of atomic testing reveals that its participants belonged to a very small club, many spending their entire professional lives within the enclave of government-sponsored atomic development. Those men then who developed, experimented, analyzed, and directed atomic weapons development—all within the classified cold war environment—provide perhaps a nearly-perfect example of a "particular class of conditions of existence [to] produce habitus, durable, transposable dispositions" and the program itself a system through which "structured structures [were] predisposed to function as structuring structures."\(^{37}\) Bourdieu's analyses offer an attractive rationale for the behavior of actors within the atomic testing program, explaining if only in part, why experimentation with atomic weapons (at least within the scope of this thesis) never lost the critical urgency with which it was invested at its inception.

I seek, though, not only an explanation of how the atomic program developed as it did, but also some understanding of how and why its participants allowed, even encouraged, its development to proceed down tragic courses. Two general characteristics distinguish the literature devoted to atomic testing: sterile accounts of the operation of state apparatus that ignore the individual actors except as to their performance as state functionaries; or, alternatively, highly impassioned chronicles by or about victims that demonize either the participants or the government itself. Both approaches are limiting because they either present a "top-across" or a "bottom-across" model which, even if placed together in an attempt to develop some cognitive sense of the whole picture, result

only in a compilation of two single-dimensional, yet parallel, trajectories. It is important though to neither absolve all participants of responsibility behind some protective shield of state power nor simply rage at the consequences of that power. This thesis attempts to answer the often unproductive fury of victims with an interpretation that neither ignores the responsibility of individual actors nor endows them with unlimited choice; and, additionally, to emphasize the (somewhat obvious but too often ignored) fact that the state is not composed of faceless automatons processing directives, but of individuals whose participation within given institutions and personal history act as limiting factors upon choice and therefore the articulation of state policy.

The insights of Bourdieu combined with those of Robert Cover offer a compelling bridge between the anger of victims ("How could they do this to innocent people?") and the straightforward declarations of process ("They did what they were told to do."). I think it useful to look at the ways that societal norms and values are transcended, to a greater or lesser degree, by the habits and practices of actors within a given culture and to also explore the determinative influence of both individual history and the systematization of patterns of behavior that become inscribed upon institutions and actors.

One of the fundamental effects of the harmony between practical sense and objectified meaning is the production of a common-sense world. The objective homogenizing of group or class *habitus* that results from homogeneity of conditions of existence is what enables practices to be objectively harmonized without any calculation or conscious reference to a norm and mutually adjusted in the absence of any direct interaction or, *a fortiori*, explicit co-ordination.\(^\text{38}\)

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\(^{38}\) Bourdieu, *The Logic of Practice*, 58.
It is unreasonable, of course, to succumb completely to the allure of institutional theory and reach for it as a soothing balm for each and every affront that might be attributed to the activity of the atomic testing program. To do so would merely transfer the erroneous notion of participants' slavish devotion from the state to institutions. It does, however, deliver an attractive and coherent model through which one might reach some understanding of individual participant behavior within an atomic testing program that is otherwise, in many ways, incomprehensible.

To understand a program which placed Americans at risk, it is necessary to look beyond the obscuring attributes of policy and into practice, spotlighting the philosophies and performance of the institutions and participants. Certainly fear of communist hegemony provided the impetus for institutional development; but, once those institutions were created, anti-communist fervor simply facilitated the maintenance, both in terms of intangible ideological support and Congressional appropriations of the nation's postwar institutions. Within the development of the institutions themselves, anti-communist commitment became subordinated to other, less idealistic and less national, motivations.

The study of institutions and their role in American government and society is worthwhile. First, the organizational complexities and motivational realities that permeated the cold war institutions have not faded. Second, and most important in

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It is impossible to ignore Mathews' point that the mechanisms of state administration and control, bureaucracies, exert enormous force in America, operating "as an equal partner with the President, Congress and the Judiciary." *The Darker Reaches*, 3.

The extraconstitutional authority and mechanized performance of bureaucracies have become increasingly problematical. Stanley Kutler's investigations disturbingly demonstrate that the explosion of the postwar bureaucracy that accompanied the development of anti-subversive law resulted in an (often abusive) exercise of arbitrary, delegated power. *The American Inquisition* (New York: Hill & Wang, 1982). See also
terms of this analysis, national security remains a vital component of our government and
atomic weapons a cornerstone of that protective framework. The need for natural
resources, the preservation and stimulation of our economy, and a desire to see
humanitarian goals implemented worldwide demand that America take an interest in
international affairs. The end of the cold war did not toll the bell on our fear of direct
atomic attack and, particularly as the international realm has continued to become ever
more sophisticated, at least in terms of weaponry, the indirect results of indiscriminate
atomic or nuclear weapon deployment are an increasing concern. The collapse of the
Soviet Union has resulted in mounting concern over the dispersal of atomic weapons and
critical material to nations (or terrorist leaders) viewed as far less stable or predictable
than the USSR.\(^40\) Indeed, the recent atomic weapons tests by India and Pakistan
demonstrate the (almost casual) use of weapons to threaten a long-standing foe with
something more impressive than taunts or outdated rifles.\(^41\)

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\(^{40}\) Though terrorism is an increasingly serious element of national security, (see Crabb & Mulcahy, *American National Security*, particularly 30-36), its prevention is undervalued by politicians who gear priorities to particular constituencies rather than to a national anti-terrorism crusade. Gideon Rose argues that Congress has been reluctant to invest money into a comprehensive agenda since it is patently “unusual, unsexy, and provide[s] few opportunities for pork” unlike, for example, missile defense. Gideon Rose “It Could Happen Here: Facing the New Terrorism” *Foreign Affairs*, March/April 1999, 131.

\(^{41}\) The countries with declared nuclear capability include the US, Britain, France, Russia, China, India, Israel, Pakistan, Iran, Iraq, North Korea, Libya, Algeria, Argentina, Brazil, Belarus, Kazakhstan, Ukrain and South Africa. “Tracking Nuclear Weapons” *Time*, May 25, 1998, 38.

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More importantly, however, the United States maintains a large arsenal of atomic weapons, the components of which are manufactured nationally, tested in the Nevada desert and in Alaska, and carried in the holds of Air Force planes on routine training flights over the nation.\textsuperscript{42} Weapons maintenance and development continues, as do the institutions designed to implement the government's atomic policy. Though the following reinterpretation opens only a window into a period where institutional practice jeopardized the health and lives of many, it may demonstrate the necessity for competent and ethical oversight of institutional design and behavior—a practical and moral imperative as long as the United States embraces its nuclear stockpile with unyielding arms and the threat of atomic warfare still haunts the dreams of many.

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Most scientists concede that atomic weapons development was, and is, a uniquely dangerous activity, and although they continue to disagree in their assessment of radioactivity's effects and whether or not there is any threshold below which no injury occurs, it is important to recognize, \textit{de principio}, that fallout from cold war atomic testing injured and killed thousands of Americans. Death lost no ground in the face of widespread fallout—the decade of the 1950s, when the government conducted atmospheric testing in the Nevada desert, has the distinction of being the only period in this century

when the nation's mortality rates did not decline; death lost no ground in the face of widespread fallout.\(^{43}\) It is a tragic irony that 'friendly fire' caused so many casualties in the prolonged 'war' against the Soviet Union; and, even more unsettling that fallout's devastating potential was known to the government at the time and, as such, was predictable and its consequences preventable. This examination explores the nation's development of atomic weapons from World War II origins through the 1956—a period generally and popularly distinguished as one of unprecedented and sustained military mobilization with profound global and domestic implications. In America, it was an age of growth and prosperity, and the surging economy counterbalanced fears of Soviet supremacy.\(^{44}\) It was also, however, the age of atmospheric atomic testing, the consequences of which may be economically analyzed but, I argue, must also be explored at a humanitarian level—one that ignores neither the individual responsibility of the participants nor the decidedly uneconomic consequences to its victims.

Though grass has not yet taken root over the grave of the cold war, its drama has lured scholars of every stripe. The cold war can be told as a straightforward history of the

\(^{43}\) Jay Gould and Benjamin Goldman have extrapolated some interesting, though unsettling and little-known information through their comparison of mortality statistics from the Center for Disease Control, states, and nation. Noting that advances in nutrition, sanitation and medicine have caused mortality rates to decline over time, they examine how that trajectory changed during atmospheric testing. Although wars and epidemics cause occasional spikes in a continuum of decline, the period of atmospheric testing accounts for the \textit{only} stable period of mortality in this century. In addition, from 1915 to 1985, infant mortality improved from ten percent per year to one; but, little improvement occurred during the period of radioactive fallout until the signing of the Test Ban Treaty. \textit{Deadly Deceit} (New York, NY: Four Walls, Eight Windows, 1990) \textit{passim}.

\(^{44}\) I am indebted to Paul Boyer for his work on the cultural transformation that took place during the post-World War II period. \textit{By the Bomb's Early Light: American Thought and Culture at the Dawn of the Atomic Age} (New York, NY: Pantheon Books, 1985).
readjustment of global power relationships or as a tangled bundle of ironies and perplexities—a curious mixture of security and insecurity; old ideologies pressed into the legitimization of new science; global transformations spawned by microscopic events; individuality and internationalism. It is indeed a unique period, but I propose that its novelty may contribute less to its popularity as a historical pursuit as its familiarity. No one can deny that, at some level, we are all products of our past, but for the curious of this age, the cold war is more than a focus of inquiry, it has been and continues to be, constitutive.  

Few can say that they have remained untouched by the cold war. Indeed, for much of the postwar period, the conflict with the Soviet Union filtered into every facet of American life. On a very concrete and quantifiable level, permanent mobilization and the military/industrial complex created a boom economy that lasted well into the 1970s, and government’s influence upon the academy cannot be denied, particularly given the impetus provided by the nation’s encouragement of science and engineering.  

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45 See Gaddis’ comments: “Historians chose, reasonable enough, not to await the cold war’s end before beginning to write about it. . . historians fell into the unusual habit of working within their chosen period rather than after it. . . [confusing] the cold war with the stream of time.” We Now Know (Oxford: Oxford University Press, 1997) 282. In this regard, I am a devout admirer of Robert Lifton and Greg Mitchell and their work on the effects of the bomb upon the collective psyche. “ . . . secrecy, concealment, and falsification have not been completely sustainable but have led to confused combinations of ignorance, insight, and cynicism toward authorities—along with a sense of the world as deeply absurd and dangerous.” Hiroshima in America, 335.

46 And ideology. Laura Nader speaks pointedly to the effects of the cold war upon all intellectuals (“As a class, intellectuals have been caught by the military-industrial bureaucracy. . . We oscillate between asserting our individualities and serving the ruling powers.”) and the attempts by anthropologists to overcome the government’s influence upon universities—the “seduction inherent in cold war tools.” In “The Phantom Factor” she argues for some ‘down-home’ anthropology, the recognition that the loyalty demanded by the national security state should be recognized as a taboo, and self-
but no less important, however, is the multiplicity of cold war impressions and memories that may have varied in their impact or intensity, but have, and continue to, shape cognition. How many historians today spent time under their school desks during air raid drills; went to local meetings for civil defense information; knew someone with a bunker in the backyard or a supply of food and water under a bed or hidden in a pantry; or, listened to the every-day-no-matter-what testing of the warning whistle at noon and prayed never to hear it at night? How many have watched a spy movie where all the ‘bad’ guys (with severe facial scarring or an eye patch) or ‘bad’ (but typically voluptuous) women spoke with stereotypical Russian accents; read a newspaper; listened to the news, political speeches, the radio, watched television? It is hard to imagine that any adult raised in America was not affected, in some way, by the cold war.

It is also important to recognize the ways that national security came to assume the dominant role in the American state, and that the public itself collaborated in that transformation. Although few authors use the term “governmentality,” the historical pattern of the cold war, including the development of a strong centralized state, increased national security measures, anti-communism, the crafting of the military-industrial complex and imperialist tendencies, may best be understood in the Foucauldian sense—as an active force combining totalitarianism with individuality and the management of state forces as they exist within relationships. The postwar state certainly employed “tactics rather than censorship the “emissary” of a taboo culture. Laura Nader, “The Phantom Factor” in The Cold War and the University, Noam Chomsky, et al. eds. (New York, NY: The New Press, 1997), 107-146.
laws...and laws themselves as tactics - to arrange things toward certain ends.\textsuperscript{47} In this regard, Colin Gordon's analysis of governmental rationality is an exceptionally lucid vehicle to approach an understanding of the unique characteristics of national security. As a "dominant component of modern governmental rationality," security may operate independently or combine with other governmental practices, namely "law, sovereignty and discipline" and form into multi-faceted, functional configurations.\textsuperscript{48} When the state began to exert ever more influence upon society, it required the complicity of the public and shaped opinion in accordance with its goals. Scholars must remember that they, too, were shaped by national motivation and the unique characteristics of the cold war.

We read, however, that the "past has another pattern"\textsuperscript{49} and the recognition of that pattern requires a diverse analysis; and, in an approach influenced by social theorists, the tracing of hazardous behavior woven into the institutions through practice and habituation to discover the effects of atomic governance. First, since the cold war was anchored in national initiative, the character and development of the state and its structure is a crucial element. Second, the function of policy as an authoritative, if not determinative, element of atomic weapons development and the literature surrounding this issue (though highly

\textsuperscript{47} Foucault "Governmentality" in \textit{The Foucault Effect} Graham Burchell, Colin Gordon, Peter Miller, eds. (Chicago, IL: University of Chicago Press, 1991) 95. It must be emphasized that public perception, shaped in grand degree by the state, all but guaranteed public ratification of oppressive governmental policies, for "ideas...may be more contingent, recent and modifiable than we think...the relation between government and the governed passes, to a perhaps ever-increasing extent, through the manner in which the governed themselves are willing to exist as subjects." Gordon, 48. See also Foucault "Security, Territory, and Population" and "The Ethics of the Concern for the Self as a Practice of Freedom" in \textit{Ethics, Subjectivity and Truth}, Paul Rabinow, ed. (New York, NY: New Press, 1994) 71, 300.

\textsuperscript{48} Introduction, Colin Gordon \textit{The Foucault Effect}, 1-47.

\textsuperscript{49} George Ball, \textit{The Past Had Another Pattern}.
combative) adds a necessary dimension. Third, the several chronicles of the atomic testing program serve as a guide to the often complicated relationship between the government, testing program, and citizens. In concert these topics allow the examination of the tragic pattern that lies embedded within the atomic testing program.

The single most characteristic feature of the American cold war period is the overwhelming tendency of the state, particularly the executive branch, to appropriate power in the name of national security. Under a constitutional umbrella granting discretion in matters of foreign policy, the president and his advisors instituted and directed policy that affected the domestic realm and reduced the legitimate prerogatives of congress. It is tempting to suggest that the strength of the American state in the postwar period resulted entirely from patterns of control established during wartime; but that type of analysis is more appropriately used in explanation of behaviors—individual activity and interpersonal relationships—than it is in explanation of state development. The state's ability to suppress the liberties of citizens during the cold war was not laid down during World War II; it was, instead, the result of a protracted process of political negotiation in the face of transformational events and ideology that pushed the power of the state to an apogee in the postwar years.50

50 There is general scholarly consensus that an increased centrality of the state emerged during the Progressive period, and though apparently dormant during the 1920s, found revival in the circumstances of the depression and Roosevelt’s New Deal reforms. On Wilson, see Richard Hofstadter, *The Age of Reform* (New York, NY: Knopf, 1955) 282-287. Alan Brinkley persuasively argues that the significance of the New Deal rests, in large measure, in public identification with the national government as a societal resource, reflecting a “long process of ideological adaptation.” “The New Deal and the Idea of the State” *The Rise and Fall of the New Deal Order 1930-1980* (Princeton, NJ: Princeton University Press, 1989) 268-269; and *The End of Reform* (New York, NY: Alfred A. Knopf, 1995); See also Stephen Skowronek who argues that the 19th century system of
The role of an enlarged centralized government, however, should not be solely understood in terms of its relational strength or weakness. William Novak reminds us that any analysis of the state, whether developed through discussions of its capability or impotence, or whether through the crafting of conceptual models identifying its function or form, is a patently irrelevant exercise unless those concepts and theories can be pressed into the service of an explanation. Novak’s recommendation to “[build] a public history around the intersection of policy and society and the actual everyday conduct and political negotiation, carried out through parties and courts, gave way to a burgeoning centralized national bureaucracy that resulted in an ‘extraconstitutional’ relationship between the polity and the government. Building a New American State: The Expansion of National Administrative Capacities 1877-1920 (Cambridge: Cambridge University Press, 1982). Bruce Ackerman, too, emphasizes the shift in executive influence during Roosevelt’s administration and argues that popular support enhanced the president’s ability to lead both Congress and the Court toward an “activist” state. We the People (Cambridge, MA: Belknap Press of Harvard University Press, 1991) 106.

Barry Karl, though, denies that any ‘progressive’ notions should attach to the enhanced centralization. Focusing on America’s diversity and emphasis on individuality, Karl asserts that consensus only develops in the glare of crisis and argues that the New Deal and its locally-managed programs demonstrate not centrality, but governmental sensitivity to an inherent resistance to strong centralized control. The crisis mentality that permeated the cold war would seem to support, at least in part, Karl’s thesis. The Uneasy State (Chicago, IL and London: The University of Chicago Press, 1983) passim but particularly 226-228.

Efforts to understand the relationship between social change and politics enriches the scholarship of state development. Theda Skocpol has expanded upon Skowronek’s work to especially assert that the state embodies two roles, one as an actor in its own right and another as the matrix through which policies are initiated, implemented, and that additionally restructure subsequent political possibilities and social identities. Curiously, though, while she argues that the analysis of institutions and political initiative suggest a congruence between theory and practice—“distinctive statelike contributions to US policy making occur exactly in those instances and arenas where a Weberian-Hintzean perspective would insist that they should occur”—she also denies that any theoretical model can be said to apply. Protecting Soldiers and Mothers (Cambridge, MA: Belknap Press of Harvard University Press, 1992); Evans, D. Rueschemeyer, T. Skocpol, eds., Bringing the State Back In (Cambridge and New York, NY: Cambridge University Press, 1995), 13.
consequences of government" coincides with the intent of this thesis; namely, to examine the impact of atomic governance upon society. So, what did the strengthened pre-war state mean to a nation on the verge of war? By the time American officially entered World War II after the Japanese attack on December 7, the nation's industries were already primed, a generation of young men (many veterans of the Civilian Conservation Corps) were ready to fight, and Americans had already accepted the authority of a strong centralized state and decisive executive. Roosevelt's reliance on technology and confidence in his authority as commander-in-chief led to his decision to fund, secretly, the most innovative and consequential endeavor ever attempted—the development of the atomic bomb. A hand-picked team managed the Manhattan Project, and except for these men and the scientists they employed, few others knew the project's purpose until the bombing of Hiroshima.

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52 For an analysis of how the administration and the social and cultural components of the 1930s contributed to national involvement in World War II, see Michael Sherry, In the Shadow of War (New Haven and London: Yale University Press, 1995).

The complicity of citizens in state functioning should be more often emphasized in historical application. In an interesting article, Meg Jacobs' illuminates the circularity between policy and society in an examination of the Office of Price Administration, a national initiative managed on the local level. She finds that during the war and early postwar period, national manipulation of the market in the form of price controls was effective and had public support as long as the system operated efficiently. When national controls proved ineffective or inefficiency interrupted supplies, the formerly-cooperative local coalitions coalesced into strong national alliances against governmental-controlled price schemes. "How About Some Meat? Consumption Politics and State Building from the Bottom Up, 1941-1946" The Journal of American History 84:3 (December, 1977).

53 The following are 'official' histories, developed under the auspices of either the Federal government or its contractors; a contingency unfortunately necessary in a field of classified documents—but one that raises important issues concerning the relationship between the state and scholarship. See Barton C. Hacker's The Dragon's Tail (Berkeley, CA:
By the time Japan fell, however, Truman had succeeded Roosevelt and wartime alliances had already begun to disintegrate. In an attempt to avoid the individualized and


In addition, Martin Sherwin offers a concise analysis of weapons development during World War II. This is a significant contribution to scholarship since Sherwin posits that the bomb solidified a connection between the 'real' war and the 'cold' war. *A World Destroyed* (New York, NY: Vintage Books, 1975).

For an 'insider' treatment of the Manhattan Project and one scientist's avoidance of military disciplinary strictures, see Richard Feynman's entertaining *Surely You're Joking, Mr. Feynman* (New York, NY: WW Norton, 1985).

See Melvyn Leffler and David S. Painter, eds., *Origins of the Cold War* (New York, NY Hill & Wang, 1994) and Martin Walker's *The Cold War*. Walker's many years as a reporter covering the cold war gives his work a unique perspective, and its insights are often a refreshing departure from other more sterile accounts. See also J. Dunbabin's encyclopaedic *International Relations since 1945: A History in Two Volumes* (New York, NY: Longman, 1994), particularly Vol. 1.


On Truman, see especially David McCullough's *Truman* (New York, NY: Simon and Schuster, 1992). In addition, and although Miller's account of his 'interview' with Truman is questioned by (at least one) scholar, (Robert Ferrell, *Review in American*
somewhat haphazard methods of his predecessor, Truman brought the State Department
back into the diplomatic fore and initiated plans for the postwar coordination of national
security.\textsuperscript{55} The breakdown of the US/Soviet relationship stimulated efforts against

\textit{History}, March 1990, 5\textsuperscript{th} he provides a good personal glimpse of Truman, and Miller’s
tapes have been recently validated by McCullough’s research, see Ferrell, \textit{Review}.
Timothy Walch and Dwight M. Miller, eds., \textit{Herbert Hoover and Harry S. Truman}
Those that focus upon other influential actors include David S. McLellan and David C.
Acheson, eds., \textit{Among Friends: Personal Letters of Dean Acheson} (New York, NY:
Dodd and Mead, 1980); James Chace Acheson: \textit{The Secretary of State Who Created the
Marshall Research Foundation, 1991); David E. Lilienthal \textit{The Journals of David E.
Lilienthal}, Vols. II, III (New York: 1964); Arnold A. Rogow, \textit{James Forrestal: A Study of
Personality, Politics and Policy} (New York, NY: Harper & Rowe, 1963); Walter Millis,

For an example of an approving analysis of the United States as a “reactor” rather than
a “motivator”, see William G. Hyland, \textit{The Cold war: Fifty Years of Conflict} (New York,
NY: Times Books, 1990); see also Janne E. Nolan, \textit{Guardians of the Arsenal} (New York,

\textsuperscript{55} See Melvyn Leffler, \textit{A Preponderance of Power}. Somewhat reminiscent of Arthur M.
Schlesinger, Jr.’s \textit{The Imperial Presidency} (Boston, MA: Houghton Mifflin, 1973) and C.
Wright Mills’ landmark study, \textit{The Power Elite} (New York, NY: Oxford University
Press, 1957) that proposed the development of a governmental troika composed of the
military, pentagon and executive in the face of a postwar power vacuum associated with
the abandonment of (traditional) domestic focus, Leffler argues that the cold war
extracted an enormous cost from the American economy and people: “[US officials] began
to plan for contingencies. The price of preponderance—the cost of linking Western
Europe, Japan, and their dependencies to a US-led orbit—was an unlimited arms race,
indiscriminate commitments, constant anxiety, eternal vigilance, and a protracted cold
war.” Leffler’s work suffers, however, from some contradiction, for the previous
statement is followed by the approving: “Not only did US officials show a shrewd
understanding of Soviet weaknesses... showed their grasp of economic geostrategic
realities... They correctly believed that open markets would fuel worldwide economic
growth...” 445, 499-500. See also John Gaddis’ most recent \textit{We Now Know} (Oxford:
Oxford University Press, 1997). Although it conforms with the current trend toward
more-inclusive scholarship, I am not in complete agreement with Gaddis’ ‘revised’
assertion that the early cold war was not bi-polar. Clearly, whether in terms of nations or
ideologies, the US/Soviet Union and democracy/communism distinctions are decidedly bi-
polar and were so recognized and characterized at the time. Certainly it was perceived as
domestic communism, and secrecy enveloped government even as the National Security Council entrenched a military component into executive decision making.

Although the Council provided notional approval for policies instituted during Truman’s

such, and although the reality may have been more complex, those multiplicities cannot override the fact that a belief in bi-polarism permeated the period.

The critical nature of the historiography and the emotional interpretation demonstrates the significance of the postwar period to American scholars. The debates over the function of the state and society are genteel affairs compared to the hotly-contested frays surrounding interpretation of American policy following World War II. The transformation of the nation’s government in the cold war years has scattered fencing academics on both sides (and underneath) a postwar bridge. See for example, the debates over diplomacy by John Lewis Gaddis, Bruce Cumings, Melvyn Leffler and Michael Hunt in *America and the World*, Michael J. Hogan, ed. (Cambridge: Cambridge University Press: 1995). There are, indeed, so many variations that the referents of analyses nearly equal the number of tomes: “consensus,” “orthodox,” “revisionist,” “radical revisionist,” “post-revisionist,” *ad particularum.*


Contemporary debates, and probably the cost of storage, has encouraged a governmental analysis of its own classification system *A Review of the Department of Energy Classification Policy and Practice* (Washington DC: 1995). By May, 1999, however, congressional concern surrounding Chinese espionage within the nation’s
terms, those policies were initiated and implemented according to the philosophies of Truman's chief Secretaries of State, General George Marshall and Dean Acheson.\textsuperscript{58}

The atomic bomb added a critical dimension to the necessity for accurate analysis, and posed difficulty for scientists wary of the bomb's overutilization in the face of a military establishment eager for new weapons development.\textsuperscript{59} The military won out, and

\begin{quote}
weapons laboratories prompted the Department of Energy to suspend its declassification of records pending a more 'comprehensive' review.
\end{quote}


even though many scientists warned of the dangers of atomic experimentation, the armed
forces asserted, and received, primacy. The Navy's Operation Crossroads and the Army's
insistence upon a continental testing site resulted in the exposure of many participants and
unwary civilians to radioactive fallout through the 1940's and 1950's. Because of policies
that demanded secrecy at all costs, however, much of the information of the early period
of testing came to light only through litigation.60

Putnam & Sons, 1995); On cognitive problems between scientists and bureaucrats, see H.
Less critical, but illuminating information concerning the foundational scientists and their
philosophies, both before and after the bomb, is found in a series of volumes developed by
the American Institute of Physics, particularly Rudolph E. Peierls' Atomic Histories
(Woodbury, NY: American Institute of Physics, 1997). A. Compton, Atomic Quest (New
York, NY: Oxford University Press, 1956) is a good overview of the US program. See
Andrew Brown's analysis of the British influence upon atomic science: The Neutron and
the Bomb (Oxford: Oxford University Press, 1997).

60 Shields Warren, The Pathology of Ionizing Radiation (Springfield, IL: Thomas
Publishers, 1961); Allan Favish, "Radiation Injury and the Atomic Veteran" Hastings Law
Journal 32: 1 (1981); A Department of Defense document: Samuel Glasstone and Philip
J. Dolan, The Effects of Nuclear Weapons (Washington D.C.: 1977); A Public Health
Service report, Radiological Health Data (Washington D.C.:1961); The Environmental
Protection Agency's Radiological Impact Caused by Emissions of Radionuclides into Air
Day We Bombed Utah (New York, NY: New American Library, 1984); H. Ball, Justice
Downwind (New York, NY: Oxford University Press, 1986); R. Miller Under the Cloud
(New York, NY: Collier MacMillan, 1986); Phillip Fradkin, Fallout, an American
Nuclear Tragedy (Tucson, AZ: University of Arizona Press, 1989); Jonathan Weisgall,
Operation Crossroads (Annapolis, MD: Naval Institute Press, 1994); Stewart L. Udall,
The Myths of August (New York, NY: Pantheon Books, 1994); A. Titus, Bombs in the

US House Subcommittee on Oversight and Investigations of the Committee on
Interstate and Foreign Commerce, The Forgotten Guinea Pigs--A Report on the Health
Effects of Low-Level Radiation Sustained as a Result of the Nuclear Weapons Testing
Program 96th Congress, 2d session, committee print 96-IFC 53, August 1980. US House
Subcommittee on Energy Conservation and Power of the Committee on Energy and
Commerce, American Nuclear Guinea Pigs: Three Decades of Radiation Experiments on
Certainly, the literature surrounding atomic weapons development and testing provides a depth of understanding often missing in other historical fields where multidisciplinary cooperation is less necessary. The intricacies of radiation and the peculiarities of its developers and experimenters have forced historians to slip into unfamiliar scientific territory to understand (at least a little) of the physical and social sciences. While the foregoing summary illustrates that commentary on the cold war crowds library shelves, those volumes are insufficient to answer the very basic questions that drive this study. The impotence of existing material as tools that might uncover the reasons for, and consequences of, fallout is, perhaps, a problem of barriers within the field of history itself where intradisciplinary studies are conspicuously absent.

American historians customarily focus upon one field (diplomacy, politics, culture, society, science) during a single time period (the Progressive Era, World War II, the cold war) and few feel entitled, or comfortable, enough to peer over their self-imposed walls. I suggest that these strictures, precluding as they do a progression from field to field or period to period, limit not only research, but even the ability to conceptualize a model that would emphasize practice—a component of governance with a distinct lack of respect for

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academic specialty. Thus, most interpreters rely upon a macroscopic paradigm, compounding and molding the matrix of cold war issues and institutions into a narrative form too often reliant upon the articulation of governmental policy. Clearly these explanations, though heuristic, are patently insufficient. None manage to situate the problem of radioactive fallout at its source. This analysis, therefore, leans upon traditional scholarship yet rejects the traditional explanations and barriers; and, alternatively, tracks the chain of negligence back to its source. By following the microscopic trail of determinative factors throughout the broader macroscopic field, this study locates the source of atomic governance—the trajectory and coalescence of institutional practice and behavior—that ultimately must bear responsibility for the hazardous nature of the nation's atomic testing program.

Since anti-Communist ideology drove institutional development, this examination will first explore the ways that the National Security Act thematized the development of the postwar bureaucracy, and discuss the influence of individuals upon the development and transformation of national policy during the early cold war period (Chapter Two). Once the philosophical base of the postwar period is established, this review will step back in time to follow the chronological development of certain institutional practices that characterized atomic testing. The Manhattan Project (Chapter Three) laid the foundation for a pattern of atomic secrecy which continues to this day. Media manipulation joined internal secrecy and scientific manipulation in a decidedly unholy alliance during 1946s Operation Crossroads. Some scientists, alarmed because those testing activities threatened the health and safety of workers and civilians, tried to intervene, but were
shunted aside in favor of those scientists willing to unconditionally cooperate with the government schemes (Chapter Four). Though Congress mandated civilian control of atomic energy with its Atomic Energy Act, the military exerted enormous influence upon the direction of atomic development and experimentation and Chapter Five illustrates that the military showed complete disregard for not only the Atomic Energy Commission itself but also vital health and safety considerations. Finally, Chapter Six shows how the congruence of extreme internal and external security measures, the egregious distortion of information, and the manipulation of scientists and misapplication of science played out in Southern Nevada with the advent of continental testing; and, additionally, how those practices contributed to the hazardous national dispersal of radioactive fallout, causing (I argue) illness and death.
CHAPTER II

THE NATIONAL SECURITY ACT

Turning and turning in the widening gyre
The falcon cannot hear the falconer;
Things fall apart; the centre cannot hold;
Mere anarchy is loosed upon the world. . .
William Butler Yeats

Yeats wrote "The Second Coming" before World War I's dead and wounded had been tallied, but its message is universal, disturbingly echoing passages from Thucydides' ancient account of the Peloponnesian War as well as the torment of Londoners barraged by the Blitz. Warfare is one of those curious features branded upon human existence that

1 The motivations and consequences of warfare, even those separated by thousands of years, justify the comparison. The Peloponnesian War began in 431 bc and, through the eyes of Thucydides, is an autopsy of an archaic power struggle littered with hoplites, triremes, seiges and plague. Thucydides' account of the battle between democracy and oligarchy betrays the tangled roots of imperialism and illustrates the more human (and inhumane) repercussions when states assert their superiority. "...the strong do what they can and the weak suffer what they must."

A revolution on Corcyra broke out during the fifth year of the war, "Death thus raged in every shape; and, as usually happens at such times, there was no length to which violence did not go...some were even walled up in the temple of Dionysus and died there." III:81-82. Thucydides, The History of the Peloponnesian War, (London: The Guernsey Press, 1993), V:89, III:81-82.

Beseiged Londoners sought sanctuary in bomb shelters, not temples. In June and July of 1944 at least 100 bombs a day fell on London, killing (on average) one person per bomb. The bombs could be extremely efficient— one demolished four square blocks, another 100 buildings. Londoners learned to estimate the danger by listening to the whistling "engine" of the bomb, which stopped just before it met its target. Before long though, even this technique proved unreliable because the Germans soon altered the bombs and set them to glide for varying distances before contact. Life July 24, 1944 19-21.

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encompasses immutable characteristics with kaleidoscopic variation. Each war, say the
chroniclers, rests in its own individual crypt, neatly segregated by era, scale and
technology; yet a single crimson niche cradles the poets’ ageless and seamless ribbon of
honor, bloodshed, and mothers’ tears. But the perspectives of scholars and artists meet at
a vanishing point: both have always agreed that wars end—people heal, and though
changes often follow, everyday cares slowly replace the anxieties fostered by insecurity.

World War II shattered that tradition. Its end hardly lived up to the expectations
of a weary nation; indeed, tickertape still littered Times Square when Americans realized
that the atom bomb might just have sealed a devil’s bargain. A year after Japanese
surrender, a pollster asked a 67-year old Virginia farmer whether an atomic bomb would
hit the US, he replied “I couldn’t tell you. Afeered it will.”

Even in the midst of postwar elation and prosperity, millions shared the Virginia
farmer’s lingering “feer” of the bomb, and emotions whirled as Americans emerged from

2 US society in the postwar period is too often characterized as a euphoric land of
prosperity. Paul Boyer, on the other hand, offers a compelling alternative analysis of this
new dimension in American life. “In the immediate post-Hiroshima period, one might
speculate...Americans [downplayed] their atomic-bomb fears...But as the wartime
climate faded...they may have become more willing to express openly the deep anxiety
that many cultural observers insisted was present from the beginning.” “This primal fear
of extinction cut across all political and ideological lines, from the staunchly conservative
Chicago Tribune, which wrote bleakly of an atomic war that would leave Earth ‘a barren
waste, in which the survivors of the race will hide in caves or live among ruins’...to...the
New Republic’s...vision of conflict that would ‘obliterate all the great cities of the
belligerents...[leaving only] scattered remnants of humanity living on the periphery of
civilization.’” By The Bomb’s Early Light, 15, 24.

Even before the bombing of Nagasaki, the Arizona Republic reported that the nation’s
capital “is more apprehensive than jubilant over the terrifying success...the entire city is
pervaded by a kind of sense of oppression...and fear.” Arizona Republic, August 8, 1945,
6.

3 Leonard S. Cottrell, Jr. and Sylvia Eberhart, American Opinions on World Affairs (New
war facing a world of new problems—horror at the inhumanity of the industrialized Holocaust, terror-tinged pride for the bomb that ended the war with Japan, and compassion toward Europe’s displaced and hungry. Domestic uncertainties joined these concerns, but in a world where assembly-line genocide competed for first place on an updated list of depravity with the potential for wholesale atomic destruction, isolationism offered no solution. President Truman and Congress developed a novel strategy to deal with a far more “modern” and frightening world than the one that existed prior to the war. The National Security Act, through its executive advisory component, the National Security Council, built a framework designed to secure America’s superiority in the international realm and (though unintentionally) cast the emotive nature of the postwar period into its structure. This is not to say that the visceral has ever been absent from the governments of men (the “seven deadly sins” have always been particularly popular) but suggests, instead, that in the face of widespread unease the Act marks a not-so-subtle adjustment of governmental policy: permanent mobilization.

Prior to World War I, national security remained a seemingly organic, function of government—its posture chiefly one of economic defense, its implications and

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4 The nation needed no impassioned pleas to support its European friends, for the hearts of Americans went out to Europe’s suffering people before the full extent of hardship became known. In a June 1945 poll, 85% of Americans agreed to continued rationing and 70% volunteered to even more extensive food rationing in the interests of feeding Europe; 57% assented that a two-year extension of domestic rationing to aid Europe’s hungry was appropriate. Public Opinion Quarterly, Summer 1945, 248.

5 As early as 1942, Truman said that the war was America’s opportunity to solidify its international relationships: “That German peace offensive worries me. If Britain were to run out on us, or if China should suddenly collapse, we’d have all that old isolation fever again and another war in twenty years. We must take this one to its conclusion and dictate peace terms from Berlin and Tokyo.” Harry S. Truman, letter to Bess, April 30, 1942, Robert H. Ferrell, ed., Dear Bess (New York, NY: Norton, 1983) 474.
consequences unseen and unconsidered by all but an handful. International bonds strengthened throughout the first half of the century, though inconsistently, and an awareness of the nation as a member of a larger community developed gradually as American participation globalized WWI and escalated when the Great Depression spread like a bacillus throughout the world’s developed nations. Yet, even as the domestic economic problems and New Deal solutions caused the nation to retreat inward, brittle European powers and politics again demanded American involvement. By the end of World War II, the future held uncertain, nightmarish, and unparalleled possibilities. A bundle of motivations far more abstract and primal than economic protectionism and support of allies shoved national security from its defense-centered perch onto a higher plane of recognition, consideration, and participation.\footnote{Ronald Steel holds Walter Lippmann and his 1943 book \textit{US Foreign Policy: Shield of the Republic} responsible for the ideological development of the National Security Council. Lippmann argued for policies based upon a calculation of a “national interest.” Dependent upon the anticipation and neutralization of potential dangers, national interest was limited only by the reach of national power. Steel offers an alternative, and enticing, explanation for the emotional nature of postwar decision-making based upon international power relationships. Since “the perimeter expands in relation to the amount of power available” security is “unmoored” and “becomes a function of power and an aspect of psychology. . .It is not a specific reality, and it does not exist entirely in space. . .It is an operating mechanism, and at the same time an abstraction.” He suggests that national security is too often confused with defense: “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.” “A New Realism” \textit{World Policy Journal}, Summer 1997, 1.}

The “top-down” model by Steel fails to consider, however, that the president and congress additionally relied upon (emotional) national support in order to construct the National Security Act and Council. See Meg Jacobs’ analysis that popular support was crucial to policy implementation and its eventual success or failure. “How About Some Meat? Consumption Politics and State Building from the Bottom Up, 1941-1946” December, 1977.
With the National Security Act, the nation’s leaders hoped to anchor America firmly (and safely) within the postwar world through a dramatic restructuring of the nation’s inefficient and outdated administrative structure. Truman claimed that the “only new thing new in the world is history you don’t know” but history failed Truman—World War II had unleashed a potent whirlwind for which there seemed no precedent—the features and problems of the new world had rendered the past a mute companion.\footnote{Merle Miller \textit{Plain Speaking} (New York, NY: Norton, 1974) 69. A voracious reader, Truman claimed that even as a child he almost always had his “nose stuck in a book...a history book mostly” and saved dimes to buy a copy of Plutarch’s \textit{Lives}. History seems to have functioned as a guide for Truman, and he credited Plutarch for helping him overcome a political opponent who reminded him of Nero. “And I noticed some of those same traits in old Stark...The only thing new in the world is the history you don’t know.” \textit{Idem. 9 and passim.}}

The ways that leaders have used, and misused, history in the twentieth century are exemplified by Richard Neustadt and Ernest May. The authors suggest that decision makers, with few exceptions, fail to use history to its best advantage—to interpret influences and predict outcomes. Using case studies in this work designed as a training manual for public and private policy makers, they praise some individuals as exceptionally cognizant of the history embedded within individuals, institutions, and nations. General George Marshall was one of these “gifted” leaders who thought in a time stream, he “looked not only to the coming year but well beyond, and with a clear sense of the long past from which those futures would come.” \textit{Thinking in Time} (New York, NY: The Free Press, 1986), 248.

The assumption that Truman and other national leaders made use of history when possible (for good or ill) is, perhaps, a bit naive and/or simplistic. In a recent work on the development of American social science, Dorothy Ross argues that the American ethos itself has seriously constrained historicism. Although Ross focuses on the profession of history and not on those lay individuals who might rely upon (or simply enjoy) history, her work illustrates that the atom bomb and other transitional aspects that accompanied World War II may have only reinforced traditional American notions of superiority and the nation’s “natural” tendency for progress. As she points out in her study of early twentieth-century social science development, American history is just now breaking out of the confines of a conventional liberal interpretational mode that focused upon American exceptionalism and was infused with nationalism. Under these broad interpretations, progress always accompanied transition and rendered historical comparison relatively useless: “Flux was contained by the liberal shape of American society, by economic, social, or political systems that rendered conflict harmonious, business downturns temporary, and progress likely.” 388. Though disenchanted by the overuse of theory,
novel and ambitious undertaking, the National Security Act promised to streamline the armed forces, coordinate policy decisions, and institute consistency throughout governmental agencies.

Historians and political scientists have not ignored the National Security Act; indeed, the literature is replete with analyses of its organization, function and production. Charting the waves and patterns of currents that flowed out of the National Security Council, these analyses emphasize international relationships and/or equally broad, domestic dynamics. In the process, however, they have ignored a dangerous undertow.

As the authorizing vehicle for atomic weapons development and testing, the National Security Act was a vital component of postwar governance. Officially, it provided organizational structure and its associated Council coordinated the foreign policy directives of the executive. Though the Act’s creation was clearly a response to governmental inefficiency and international realities, an examination of its official roles and intentions cannot explain the myriad behaviors that controverted the Act’s intent. First, it did not streamline government activity, it bred inefficiency. Second, although solidification of national interests against external foes underpinned its creation, close examination reveals motivations and assumptions strategically designed to enhance

“New” historians motivated Ross, leading her “to regret that so much of twentieth-century social science is historically vacuous and to see how scientism and liberal ideology have interacted to enforce political and ahistorical constraints on social thinking.” The Origins of American Social Science (Cambridge and New York: Cambridge University Press, 1991) xxi. In this regard, see also Michael H. Hunt’s critique on the state of “state” history and twentieth-century diplomatic historiographers, “The Long Crisis in Diplomatic History” America in the World, Michael J. Hogan, ed., (Cambridge and New York: Cambridge University Press, 1995).

See note 60, supra.
internal positions rather than achieve superiority in the face of external contingencies. These contradictions, then, suggest an unofficial, subterranean matrix of influence.

An examination of practices at the highest level of government decision-making requires a focus on individual activity and influences, and the following analysis gestures toward the personal rather than the political. By spotlighting internal relationships and comparing the ideology of George Kennan and Paul Nitze, the two most pivotal individuals in postwar American foreign policy, this inquiry explores the unique motivations that stimulated the Act’s creation and the assumptions that controlled its operation. This study proposes that the anxieties of the war years and its immediate aftermath both initiated and infiltrated America’s postwar organizational structure, and when embedded, those same anxieties limited ideological shifts and severely circumscribed the potential for innovation or modification.

Inherent within the National Security Council were two interlocking beliefs. First, despite a traditional reluctance to maintain a high level of peacetime preparedness, postwar America required a strong military presence; and, second, that the continuation of the nation’s vitality required coordination of its military, political and economic interests. More importantly, however, it rationalized the potential terror of atomic obliteration and directed it at an ever-present “enemy.” The Act shaped postwar institutions and solidified the peculiar characteristics of World War II into a governmental framework that innoculated peacetime policy and practice with an urgent, militaristic, imperative. The

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9 This is, admittedly, a convenient distinction for organizational purposes and does not dispute the fact that politics and personality are indivisibly bound.
National Security Council institutionalized the vulnerability of America, arguably the most powerful nation in the world. It institutionalized fear.\textsuperscript{10}

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During World War II when Roosevelt defined America’s strategic frontier at the Rhine River, he broadly signalled America’s intention to safeguard not only her borders, but her international interests and relationships.\textsuperscript{11} By the end of the war, the nation’s “interest” became irretrievably tied to “survival” as the realities of modern warfare became

\textsuperscript{10} In a nationwide poll, 85% of Americans agreed that the bombing of Hiroshima and Nagasaki was a “good thing”, but 27% also believed that “experimenting in smashing atoms will cause an explosion which will destroy the world.” Public Opinion Quarterly, Fall 1945, 385.

In 1946 (before Operation Crossroads), a survey for the Committee on the Social and Economic Aspects of Atomic Energy found that 64% of a sample answered “yes” to the question “Do you think there is a real danger that atomic bombs will ever be used against the United States?” Of those, 29% believed “the danger that you or any members of your immediate family will ever be killed by an atomic bomb” to be “fairly great” or “very great.” Hazel Erskine “The Polls: Atomic Weapons and Nuclear Energy” Public Opinion Quarterly 27, 1963, 107.

In May, 1946, 72% those participating in a nationwide poll believed that a world organization should pass and enforce a law so that no country could make atomic bombs, including the US. The same poll found that 56% of those believed that the same world organization should enforce the destruction of all existing atomic bombs, even though the US possessed all bombs in existence. 118. Asked whether he thought there was a danger that atomic bombs would be used against the US, a 67-year old Virginia farmer said: “I couldn’t tell you. Afraid it will.” Leonard S. Cottrell, Jr. and Sylvia Eberhart, American Opinions on World Affairs (New York, NY: Greenwood Press, 1969) 67.

Paul Boyer asserts that scientists (and other social groups) played upon the very natural fears of Americans and utilized every possible method to place their agendas before a vulnerable public. “The emotions they worked so mightily in 1945-1947 to keep alive and intensify created fertile psychological soil for the ideology of American nuclear superiority and an all-out crusade against communism. . . 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 possible escape from atomic fear; Truman offered another. Truman won.” By the Bomb’s Early Light, 106.

\textsuperscript{11} See Crabb & Mulcahy, American National Security.
all too apparent. Oceans and mountain ranges lost their status as strategic boundaries; the atomic bomb obliterated its targets along with those barriers—rendering them insignificant features on the world’s map. Technology had dissolved America’s traditional reliance upon its relative geographic isolation. When potential destruction was limited only by the range of the B-29 Superfortress, the notion of national security achieved primacy, but not without profound domestic consequences.

The long-standing sibling rivalry between the Army and Navy reared its ugly head when Truman proposed a re-organization of the military to accommodate the new reality. Congress and the Army backed the unification of the military, but the Navy was less enthusiastic. Sensing that the Army and its Air Corp held the high ground (owing to General Marshall’s successes and the delivery system of the new atomic bomb) the Navy cast a wide and persuasive net, claiming boldly that the Army’s plan would “weaken

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12 This reality constituted a frightening new feature in the postwar world, and was emphasized by Truman when he submitted the NATO treaty to the Senate on April 12, 1949: “...The world has grown too small. The oceans to our east and west no longer protect us from the reach of brutality and aggression.” Cited in The American Foreign Policy, Ernest R. May, ed., (New York, NY: G. Braziller, 1963).

13 Radiation wasn’t the only invisible danger in the postwar world. The Superfortress amazed official spectators and reporters with a tale rivaling The Emperor’s New Clothes. In a demonstration, “flying so high it was out of sight” and carrying a supersonic, armor piercing bomb “too fast to be seen or heard” the government “kept secret” the bomb’s mission and effectiveness. New York Times, July 24, 1947, 6.

14 Though enchanted with the potential of the bomb to revolutionize warfare, the military faced an uncertain future in the wake of World War II as more than two-thirds of individuals in a poll agreed that the atomic bomb made a large army and navy unnecessary. Public Opinion Quarterly, Fall 1945, 384.

In June, 1946, Forrestal threatened to resign should the president back the “mass play--steam roller tactics of the Army.” Truman admitted that Forrestal’s “misgivings” had foundation and would “see that any such tactics were not successful.” The Dairies of James Forrestal, “Meeting with President” 19 June 1946, 169. See also Lord, The Presidency and the Management of National Security, (New York, NY: Free Press, 1988), 69.
civilian control. . .[leading] to expanded military influence throughout American life.”

The Navy finally acquiesced when Secretary of the Navy James Forrestal agreed to serve as the new Secretary of Defense at Truman’s request. With the Navy’s objections laid to rest, Congress finally reached a compromise and passed the National Security Act on July 26, 1947.

The Act signaled the beginning of a new era. “The most sweeping reorganization of national security policy” created a Department of Defense, the National Security Council to advise the President on all matters relating to national security (foreign or domestic), the Joint Chiefs of Staff to represent the armed forces and provide military advice, and the Central Intelligence Agency. The National Security Act, however, did more than attempt the coordination of previously-fragmented governmental components—

15 Crabb & Mulcahy, 12. See also Chapter 4, infra, for the Navy’s battle for vitality.
16 James Forrestal provided a link between the Navy and the philosophy of consolidation. In 1945, Forrestal commissioned the Eberstadt Report that suggested a military council would avoid repetition of FDR’s haphazard strategic maneuvering. In a meeting held before the Japanese surrender, Forrestal and Eberstadt envisioned that centralized policy should emanate from a Cabinet-level, bifurcated board that would create and define national policy (not surprisingly composed of a joint State-War-Navy contingent) and maintain information on military resources for war. James Forrestal Diaries, 87; See also Lord, The Presidency and the Management of National Security, 69.

17 The New York Times hailed Forrestal’s appointment as “the best guarantee that could be given the unification of the services will be carried out intelligently and efficiently. . .It has been painfully evident all through the long hearings and debate in Congress that there are many in the Navy who still distrust the whole idea.” July 27, 1947, 8.
18 The Act did not eliminate duplication of intelligence, for the Department of State, the Army, the Navy, and the Air Force continued to maintain their own intelligence services. See, for example, the CIA’s “Review of the World Situation” dated 10 March 1948, Harry S. Truman Papers, Truman Library “President’s Secretary File,” microfilm collection, Georgetown University Library.
it entrenched a military component into all presidential decisions and symbolically affirmed the worst postwar fears of Americans.

The illusory nature of a military unified (and more efficient) under a Secretary of Defense shielded the duplicitous reality of a new system that did not temper, but rather accommodated, long-standing competition. Eager to avoid controversies in his new position, Forrestal sought conciliation, but thereby unavoidably rewarded the inter-service competition. Forrestal undoubtedly assuaged some of the anxiety the branches held toward the new system, but the multiplicity engendered by the new Secretary’s policy of appeasement harbored implications that ranged from the ludicrous to the disastrous.

During a 1948 meeting, two agenda items found the Navy nearly swamped with the potential superiority of the other forces. Fearing Soviet insurgency in Greece’s civil war, the Council discussed alternative methods to determine the extent of Soviet involvement. Secretary of the Navy John L. Sullivan ridiculed a State Department proposal that all branches share in an intelligence survey, claiming “that the Council could

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19 Charles E. Neu has characterized the military struggles as “open political warfare” and claims that even though Congress strengthened the authority of the Secretary of Defense and reduced the authority of the military in 1949, “parochialism . . . remained strong.” “The Rise of the National Security Bureaucracy” in The New American State, Galambos, ed., 88.

20 Greece’s civil war provided the perfect opportunity for an early Cold War scrimmage between capitalism and communism. The CIA reported in September 1947 that the Greek government was in danger of falling because of Soviet sponsored communist guerrillas, and posited that “At any time US armed intervention may be required to prevent its collapse and to restore the situation” thus salvaging a strategic Eastern Mediterranean presence and preventing “profound psychological repercussions throughout Western Europe and the Near and Middle East.” “Review of the World Situation as it Relates to the Security of the United States” dated September 26, 1947. Harry S. Truman Papers, “President’s Secretary File,” microfilm collection, Georgetown University Library.
get all the information it wanted from Admiral Sherman without any formal action."^21

The Council rebuffed Sullivan's offer and subsequently introduced an item concerning air intelligence. Forrestal anticipated Sullivan's resistance and quickly diffused the escalating confrontation. Stating that he had already issued a directive to the CIA that gave the Air Force the primary responsibility, Forrestal immediately announced that he had decided to modify his earlier decision and protect the Navy's interests in the field of air intelligence.^22 Clearly this conciliatory behavior undermined one of the purposes of the Act: efficiency.

When applied to atomic weapons development, the duplication of responsibility strategically employed by the Army, Navy and Air Force in the early years of consolidation under the new Secretary of Defense resulted in a multiplication of testing and risk.^23 The compromising Forrestal established an arena through which the military might maneuver for position to solidify its own authority; yet, the continuing influence of the armed forces was also contingent upon the nation's emerging philosophies that were intended to secure US superiority and European stability.

The atom bomb decreed an urgent investment in the successful implementation of foreign policy, and it is an excellent vehicle through which to explore the effect of individuals (and personality) upon national policy. Dismayed by Roosevelt's ad hoc

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^22 Ibid.

^23 See Chapter 4 for an example of the Navy's contribution to atomic testing and Chapter 6 for the Army's role in continental testing at the Nevada Test Site, infra.
diplomacy and disregard of the State Department during the war; and, in light of perceived
Soviet designs in Europe, Truman tried to establish a coherent and effective foreign policy
during the postwar years. 24 US policy, Truman believed, should reflect a schematic
expression of behavior developed pursuant to an objective and unified sense of purpose.
This reassuring plan may describe the intent of policy formation; however, it bears little
relationship to the articulation or expression of policy in the years following WWII when
the “objective” became an ephemeral manifestation, transformed by both personalities and
politics with little reward or consideration afforded innovation or perception.

A strengthened State Department and National Security Council fostered the
illusion (among citizens and Congress) that the policies adopted with regard to the
deteriorating US/Soviet relationship were joint and consentual endeavors. To all
appearances, the new cooperative venue would stifle the misconceptions of individuals yet
encourage successful planning through intelligent and inventive solutions forged
(purposefully and necessarily) through reasoned and enlightened consideration. The truth
is that the postwar policy of the Truman administration was only notionally a committee-
generated effort. But we cherish our myths, and the fantasies that spring from them were
as comforting during the early atomic age as they were to the throngs who carried gifts to
the oracles at Delphi or waited patiently while Apollo’s priests interpreted the entrails of
sacrificial bulls. 25 Behind the phantasm of institutional decision-making based upon an

24 The arena of foreign policy is a good example of the notional characteristics of a more
“efficient” postwar government. By 1949, twenty-one different agencies maintained
25 This is not to suggest that the leaders and public of the Truman era (or the ancient
Greeks and Romans) were necessarily “primitive,” unsophisticated or unenlightened; but
to emphasize that during the various (and on-going) crises of the post-World War II
expanded information-gathering system, consideration, compromise and consensus, postwar US/Soviet policy was driven by a handful of individuals as prone to human error, inflexibility, and personal motivations as the ancient oracles and soothsayers.

The content of the National Security Council’s US/Soviet policies was highly dependent upon the philosophies of the State Department’s Policy Planning Staff, particularly its directors. During the scope of this examination, George Kennan and Paul H. Nitze were responsible for the development of America’s positioning against its former ally and future nemises, the Soviet Union. Both Kennan and Nitze shared the view that communism and capitalism were incompatible and both believed that, given such extreme polarity, the challenges posed by the Soviet Union required active resistance. They differed, however, on the form that resistance should take. Since the crucial shifts in US policy during this period may be traced upon the paths carved by Kennan and Nitze, a study of their personalities and motivations is essential.

* * *

*But the towers of the Kremlin cast a long shadow... the more I see of the life of this international society the more I am convinced that it is the shadows rather than the substance of things that move the hearts, and sway the deeds, of statesmen.*

George F. Kennan, 1947

period, the belief that a small group of individuals would choose wisely among a multitude of alternatives undoubtedly eased mounting anxiety. See Bourdieu, *The Logic of Practice*, 93-97.

26 Kennan’s final lecture at the War College, *Memoirs 1925-1950* (New York, NY: Pantheon Books, 1967). George Kennan is often confused with his grandfather’s cousin, the Russian scholar George Kennan, who wrote *Siberia and the Exile System*, published in an abridged edition by the University of Chicago in 1958, for which the subject of this examination wrote an introduction. A spiritual thread seems to link the two men who shared a name and an appreciation for Russia—they were both born on the same day of the year, played guitar, owned the same type of sailboats, and both founded organizations to assist Russian refugees. *Idem*. 8.
In 1947 when Marshall became Secretary of State he chose George Kennan to head the State Department's new Policy Planning Staff. Impatient with the weak character of committee-produced “policy papers,” Marshall appreciated Kennan’s decisiveness and ability to clearly articulate his views. Kennan’s ideology soon permeated postwar strategy. He looked beyond Soviet “shadows” and investigated the motivations of Stalin’s Soviet Union, bringing to the fore his extensive knowledge of the character of the Soviet Union and the aims of Soviet communism. In addition, he developed and promoted a postwar strategy intended to facilitate, in the absence of any cooperative mechanism, the coexistence of the two nations.

Kennan’s childhood provided excellent preparation for his later career. Shortly after his birth in 1904, Kennan’s mother died and he was raised by his father, older sisters

27 See May, op. cit. For a compact description of Kennan’s ideology and influence, see Crabb & Mulcahy, American National Security, particularly 67-72.

Walker is critical of Kennan and claims that Kennan’s “Long Telegram” resulted in the growth of totalitarian methods at the expense of democracies. It seems, however, that Walker has failed to distinguish whether responsibility falls in Kennan’s lap, or in the laps of those who chose their own interpretation(s) based upon segments of Kennan’s analysis rather than one that Kennan designed as a philosophy rather than as a set of unrelated maxims.

Kennan’s personality is complexly illusive and Walker might have been too readily influenced by Kennan’s unorthodox pre-war musings. In 1931 he wrote that the Soviets were “unalterably opposed to our traditional system, there can be no possible middle ground or compromise between the two... the two systems cannot even exist in the same world unless an economic cordon is put around one or the other of them.” Interestingly, despite the fact that Kennan abhorred socialism, he was not enchanted by democracy, either. In a 1938 book he wrote that “benevolent despotism” in America would relieve the “shrill disorders of democracy” and suggested that “immigrants, blacks, and “trivolous” women should be denied suffrage. He was, however, not completely disenchanted with women, and he praised his wife for “the rare capacity of keeping silent gracefully. I have never seen her disposition ruffled by anything resembling a mood.” Walker, The Cold War, 31-33.
and eventually a austere stepmother in an “eighteenth-century puritan” household in Milwaukee. He grew up resourceful and introverted, but gained an appreciation of social grace and deportment in a community imbued with a “tremendous universal respect for respectability.”28 His father, a farmer turned successful lawyer, spoke French, German and Danish, and when Kennan was four, temporarily installed the family in Kassel, Germany to introduce his children to the “purest” German.29 In Milwaukee, Kennan joined his father in the rich German culture of the Wisconsin city, and warm memories of Europeans comforted him at Princeton where he found himself “hopelessly and crudely Midwestern” and uncomfortable with “Easterners.”30

After graduating from Princeton in 1925, Kennan applied for one of the few jobs open in the new Foreign Service because he “did not know what else to do”31 and found himself serving as vice consul in Hamburg by 1927. At ease with the language he had learned at eight, curiosity and an adult recognition of his own inadequacies drove him to consider leaving his position for post-graduate study in the US. A supervisor thwarted his planned resignation when he offered Kennan a chance to keep his post while pursuing graduate work at the University of Berlin—if he would immerse himself in Russian language and history. Kennan jumped at the offer, and while in Berlin met and married Annelise Soerensen, a Norwegian woman. In 1933 when the United States officially recognized the Soviet Union, Kennan and other specialists set up the Moscow Embassy, where Kennan served until his removal in 1937. He returned to Moscow in 1944 and

29 Kennan, Memoirs, 19.
30 Ibid., 9-10.
31 Ibid., 17.
remained until 1946, sympathetic toward the staggering sorrow of the Russian people in the wake of the war and also perplexed by official Soviet attitudes towards himself and others in the diplomatic corps who were so eager to serve in Russia—it was, he said “doubly hard...to find ourselves treated as though we were the bearers of some species of the plague.” He harbored a profound distaste for Stalin’s regime and wrapped Stalinism, communism, and the Russian people into three distinct packages, remaining hopeful that Stalinism and its associated oppression would eventually fail.

Kennan attracted the attention of Washington before Marshall became Secretary of State. Increasingly frustrated with the seeming inability of US leaders to set aside their own assumptions and appreciate the fundamental differences between the two countries, Kennan did not miss his first opportunity to try and enlighten the naive. Left temporarily in charge when Ambassador W. Averell Harriman was away from Moscow, Kennan used the relatively-minor incident of the USSR’s failure to adhere to the directives of World Bank and International Monetary Fund, launching a “pedagogical” diatribe at Washington. The “Long Telegram” springboarded Kennan’s career as well. Even as

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32 Ibid., 190-195.
33 Kennan’s “Long Telegram” was dated February 22, 1946, and in it he sought to correct the “naive” behavior of Washington. “Here was a case where nothing but the whole truth would do. They had asked for it. Now, by God, they would have it. . .I composed a telegram of some eight thousand words—all neatly divided, like an eighteenth-century Protestant sermon, into five separate parts. (I thought that if it went in five sections, each could pass as a separate telegram and it would not look so outrageously long.)” Ibid., 293.

Kennan had little patience for those he believed instituted short-sighted policies. He later criticized the Truman Doctrine, and used it as an excuse to promote a “working planning staff...an organization for thinking” that he believed the Truman administration lacked. Under Kennan’s influence, the Truman Doctrine “might have had a more general and positive character in the public mind—not to resist Soviet aggression but to restore to Greece and Turkey the stability that will make them independent enough to choose their
Kennan received a Commendation from the State Department, Secretary of the Navy Forrestal ordered the now-famous paper reproduced and distributed to thousands of high-level officers of the armed forces, declaring it required reading. Kennan told Washington what it wanted to hear; and, with the help of a supportive President and Cabinet, he proposed policy that he believed would curtail the spread of communism while avoiding the complete alienation of the Soviet Union.

Kennan held that the Soviet Union represented the antithesis of a liberal democracy and that the only method available for the survival of the Soviet’s totalitarian state was to “undermine the general political and strategic potential of major western powers.” His proposed solutions to the threat of the Soviets involved containment of own governments and preserve their national integrities.” Kennan in “America’s Global Planner,” New York Times Magazine, July 13, 1947.

Kennan, Memoirs, 295. Kennan had no way (at that time) of knowing that the future Secretary of Defense, James Forrestal, had already commissioned a similar study through Professor Edward F. Willett of Smith College who had contributed to the Eberstadt Report. Sending a copy of “notes” for the study to Walter Lippman, Forrestal acknowledged that a December article by Walter Lippman December article prompted the study. Millis, ed., Forrestal Diaries, 128.

Kennan later admitted that timing, rather than a unique insight, stimulated the positive response to his beliefs: “It was one of those moments when official Washington, whose states of receptivity or the opposite are determined by subjective emotional currents as intricately imbedded in the subconscious as those of the most complicated of Sigmund Freud’s erstwhile patients, was ready to receive a given message. . . Six months earlier this message would probably have been received in the Department of State with raised eyebrows and lips pursed in disapproval. Six months later, it would probably have sounded redundant, a sort of preaching to the convinced. This was true despite the fact that the realities which it described were ones that had existed, substantially unchanged, for about a decade, and would continue to exist for more than a half-decade longer.” Kennan, Memoirs, 194-195.

Kennan “Long Telegram” cited in May, American Cold War Strategy, 3.

A favorable 1947 New York Times Magazine article entitled “America’s Global Planner” characterized Kennan as something of a renaissance man: “. . . he has had twenty years of foreign service in western Europe, Portugal, the Baltic States and Soviet Russia, he has not lost his enthusiasm for philosophy, and instinctively in his conversation he.
the Soviet sphere and a tactical informational campaign designed primarily to encourage
domestic support for the interception of Soviet designs. Since popular sentiment toward
the Soviet Union had been influenced by the wartime alliance, American perceptions
needed to be shifted toward an alternative that affirmed the domestic threat of Soviet
communism. Kennan also argued that the best weapon against Stalinist totalitarianism
was capitalism. Particularly since, to him, totalitarianism was only a temporary condition,
a “device of despair, arising from specific and particularly painful problems of adjustment
at given stages in the development of individual peoples.” Though Kennan proposed a
military presence to “contain” the Soviet sphere, it would only be necessary until the
United States could prove the superiority of capitalism as an economically superior model.
A united front composed of domestic support, military readiness, and the prosperity
through capitalism, Kennan believed, would force a “break-up or the gradual mellowing of
Soviet power.”

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Plato’s ‘The Republic’ [is] a favorite of his." Highlighting the traits prized by Marshall, the article praised
Kennan for his steadfastness, a quality that may have resulted in his inability to shift gears
once Acheson replaced Marshall as Secretary of State. “Mr. Kennan’s knowledge,
temperament and character make him particularly well suited to a job that combines the
long point of view with hard-headed thinking.” July 13, 1947.

Halperin discusses the problems faced by “ideological thinkers” such as Kennan when circumstances change. “Staff men who have had a long period of involvement in a particular area and become committed to a doctrine. . . tend to see all issues in terms of a particular value, to disregard conflicting information and roadblocks, and to press hard for the particular solution which would support the dominant variable.” Halperin, Bureaucratic Politics, 23-23.


Devastation in postwar Europe presented the perfect opportunity for the application of Kennan’s strategy. When the guns fell silent, the wartorn populace faced yet another enemy as nature’s caprices stifled the 1946 harvest and brought on the worst winter in living memory during 1946-47. Compassion for millions suffering food and fuel shortages lent vigor to intervention in European recovery. Since US support was essential not only for humanitarian reasons but also to stifle communist influence in marginalized countries, Marshall’s national campaign for the European aid package efficiently accommodated the goals of the Kennan strategy for peaceful coexistence. In a speech before the Annual Conference of Governors, Marshall warned that if the United States did not help Western Europe reassert itself economically, they would “drift into the Russian orbit.” Marshall claimed that his short speech was written on a plane to the conference, but “with public opinion divided” its content was actually carefully crafted to incorporate State Department philosophy into the minds of the American public.

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39 Walker’s compact description of the problem bears inclusion: “Even before a wave of blizzards struck Britain in January, the government had been forced to cut coal supplies to all industries by half. Unemployment rose to six millions, double the peak of the Great Depression of the 1930s, and electricity was limited to a few hours each day. Food rationing was more severe that it had been during the war.” Walker, The Cold War, 47.


41 Marshall was, after all, a graduate of his Under Secretary’s crash course—Acheson’s ‘Shaping Public Policy 101.’ Shortly after his appointment and before a speech to the National Press Club, Acheson suggested to Marshall that he work with an established text, saying: “the Secretary of State was never off the record, and that his speeches were never directed to swaying an audience to a specific result, but to putting out ideas for thought at home and abroad. It was important, therefore, to say exactly what one meant to say, clearly—no more, no less. Substance was more important than manner of delivery—within, of course, reasonable limits.” Marshall demurred, preferring his informal method of relaying ideas situated only in his head. Confident of his ability to effectively deliver a speech without a text, he agreed that a small group of aides, including Acheson, could serve as a “jury” to assess his performance before the Press Club. Their verdict came as a blow to the General (he was “as disappointed as a small boy”) and although he continued
Although Marshall did finish the speech on the plane, it was a joint effort of Marshall, Kennan and Chip Bohlen, Marshall’s Special Assistant. At Marshall’s request, both advisers submitted independent speeches, and, in the meantime, the impatient Marshall began one of his own. Marshall merged the best of each; and, without clearing his final product with the President, took his case to the people.

Marshall’s speech outlined three points that formed the kernel of America’s ripening ideology of international influence: That communism posed an immediate threat to the free world; and, that the public might often become confused with the issues because the delicacy of the situation required diplomatic phraseology which was often unclear; and third, that despite the public’s “need to know,” much information could not be divulged. Thus, American leaders required only immediate public support and faith.

to argue that he believed his performance exemplary, Acheson told him “This was not the way to put out policy proposals...I reminded him that he had asked us for the ungarnished truth...sadly he agreed to the use of texts.” Acheson, *Present at the Creation*, 215.

Kennan, *Memoirs*, 342. Bohlen and Kennan were both Russian specialists, but Bohlen had been schooled in Paris instead of Berlin. “Intellectual and professional brothers” Kennan praised Bohlen highly and proclaimed “no friendship has ever meant more to me than his.” Idem., 62.


The speech itself is very clear. In an attempt to convince any fence-sitters, Marshall played upon his audience’s sympathies and resurrected the ghost of the struggling American colonies. Marshall noted that details would have to wait because “studies” were being made to bring out the facts; until then, those facts couldn’t be divulged: “...peace has its difficulties...it is necessary that I be very careful in what I say publicly and when I say it. If it had been practicable for me to talk to you off the record and in great confidence, there is much that I would like to discuss with you.” *New York Times* “Text of Address by Marshall” July 15, 1947, 6.

American leaders increasingly relied upon “faith” as espoused by the Christian ethic and subsumed it into nationalistic goals as the struggle against communism began to resemble a medieval crusade. Harold E. Stassen (a Republican candidate in the Presidential primary with Dewey) believed that religious faith was also necessary to avoid
Kennan's formal policy prescription went to President Truman as NSC 20/4, and in 1948 Congress rewarded Marshall for his convincing arguments and fully funded the European aid package.\textsuperscript{45}

Kennan incorporated into NSC 20/4 his belief that, over time, the Soviet Union would abandon radical communism in favor of a less aggressive system based upon the economic advantages of a capitalist economy. He did not deny that military strength might be necessary to protect free nations from Soviet takeover, but suggested that "readiness" would suffice as a "deterrent" and as a "source of encouragement" to friendly


Faith played an enormous role in the two most frightening features of the early Cold War: communism and the bomb. The bomb was proof that America contained God's chosen people, and this belief tempered American fears of the atomic bomb, including those of the President, "enfolding" the bomb within the nation's traditions. Truman asked for guidance even as he announced the success of the Hiroshima weapon: "We thank God that it has come to us, instead of to our enemies; and we pray that He may guide us to use it in His ways and for His purposes." Boyer, \textit{By the Bomb's Early Light,} Ch. 18.

\textsuperscript{45} Kennan drafted the plan for European recovery and presented it to Marshall on May 23--justifiably proud of this endeavor, Kennan claimed it "finally broke through the confusion of wartime pro-Sovietism, wishful thinking, anglophobia and self-righteous punitivism in which our occupational policies in Germany had thus far been enveloped, and placed us at long last on what was, and for six years remained, a constructive and sensible path." Kennan, \textit{Memoirs,} 335.
nations. Kennan argued strenuously against policies that supported aggression against the USSR, characterizing such viewpoints as the "sheerest nonsense."  

Kennan made a significant distinction between the official threat of the Soviet state and that posed by the Communist party, and it is this subtle (though critical) understanding that supported his belief the Soviets posed (primarily) a political rather than a military threat. Though disagreement abounds, a careful reading of the Long Telegram and consideration of Kennan’s recommendations support this assertion. Bolstered by international Marxism, the Soviet state clung to a "dogma" influenced by Russia’s traditional fear of invasion together with a centuries-long development of insecurity based

46 Kennan ventured that military preparedness directed toward a "peak of war danger" would be less effective than a moderate force because "this type of effort would be effective only for the period toward which it was directed; for the subsequent period it would have the reverse effect. If the Soviet leaders knew that we were undertaking a defense effort of this nature (and it is certain that they would know it), they would be able to plan for maximum military and political pressure at a date when our own military effort might be expected to have subsided." NSC 20/2 D(2)(a). See also, generally, NSC 20/2

47 Kennan’s forthright analysis was unambiguous: "To speak of possibilities of intervention against USSR today, after elimination of Germany and Japan and after example of recent war, is sheerest nonsense. If not provoked by forces of intolerance and subversion "capitalist" world of today is quite capable of living at peace with itself and with Russia. Finally, no sane person has reason to doubt sincerity of moderate Socialist leaders in Western countries. Nor is it fair to deny success of their efforts to improve conditions for working population whenever, as in Scandinavia, they have been given chance to show what they can do." NSC 20/4 (II).

48 There is academic disagreement on this issue, and this analysis generally follows the conclusions of John Lewis Gaddis in Strategies of Containment, particularly Chapter 2. cf. "The Question of Containment” Foreign Affairs 56, no. 3 (January 1978) 430-1. For a brief discussion of the controversy surrounding the scope and intent of Kennan’s analysis, including the 1947 criticisms by Lippman, see John Lamberton Harper, American Visions of Europe, Chapter 5. Harper makes a distinction between “passive” and “active” military components, and holds that Kennan’s containment strategy sought to establish an American passive military subservient to political control; and thus, a more effective tool of diplomacy. Idem. 192-193.
first upon fear of invasion and secondly upon fear of more modern organized societies surrounding them.

For this reason they have always feared foreign penetration. . . And they have learned to seek security only in patient but deadly struggle for total destruction of rival power, never in compacts or compromises. 49

According to this model, then, communism supported the power of the Soviet state rather than vice versa, and thus it was the ideology, and not the Soviet military, that demanded American attention. Kennan’s proposed solution was not militaristic, but political. “We must see that our public is educated. . . It must be done mainly by Government. . . World communism is like malignant parasite which feeds only on domestic and diseased tissue. . .” 50

Upon Truman’s reelection, he appointed Dean Acheson to replace the sixty-nine year old Marshall, and Kennan’s influence waned. 51 His replacement, Dean Acheson, had distinguished himself over many years in Washington, beginning as under-Secretary of the Treasury under Roosevelt. Though they had differences of opinion, particularly over Keynesianism, Roosevelt and Acheson held each other in high regard. Roosevelt had fired Acheson in 1933 when he disagreed with FDR’s gold purchase program, but Acheson remained staunchly supportive of the President and operated behind the scenes as an.

50 Ibid. 30-31. Time has, perhaps, offered some support for Kennan’s analysis of Soviet motivations. A 1946 telegram prepared by Soviet Ambassador Nikolai Novikov stresses America’s imperialistic tendencies, offensive military buildup and economic superiority as threats to the Soviet Union itself: 3-16.
51 Marshall faced surgery to remove a kidney. McCullough, Truman, 725.
“interventionist” throughout 1940 and 1941. In 1941, the President proclaimed that Acheson was “without question the ablest lawyer in Washington.”

Like Kennan, Dean Acheson was a complex man whose sympathies did not always seem to lie in twentieth-century America. An American “blade of steel” with an English Victorian mindset, Acheson and his sister were raised in Connecticut, the “most English” part of America. Acheson’s environment—his parents, governess, maid and cook were all British subjects—resulting (quite naturally) in a tendency to exhibit both English mannerisms and a certain anglophilia, characteristics that he found occasion to both celebrate, and defend, during his lifetime.

Acheson was put on the fast track early and he did not stop until he had neared the pinnacle. In 1903, at age ten, he entered Groton to prepare him for Yale, and had earned his law degree from Harvard by 1918. Armed with a recommendation from Felix Frankfurter, Acheson began his career in 1919 at an envious level, as clerk for Louis Brandeis. In 1920, Acheson joined the firm of Covinton and Burling, and soon traveled

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56 After Acheson publicly announced his support of Alger Hiss in January, 1950, the comments of a Republican Senator from Nebraska focused not on Acheson’s support of Hiss, but his deportment: “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 want to shout. . . . You stand for everything that has been wrong in the United States for years!” cited in McCullough, *Truman*, 760-761.
Europe in "sophisticating" advocacy against the US government, representing Norway and Sweden in their World War I claims, and Arizona in its suit contesting Boulder Dam.58

Though privately influential throughout the 1930's, it was the coming of war that brought Acheson back firmly into the official Washington fold. In 1941 Acheson became Assistant Secretary of State for economic affairs and during the war years served as a planner for the Food and Agricultural Organization and the United Nations Relief and Rehabilitation Administration. Between 1945 and 1947, Acheson served for a time as Undersecretary of State for Marshall, after which he enjoyed a brief 18-month hiatus practicing law before he returned in 1949 to serve as Secretary of State for Truman's second term.59

During his stint away from the nation's service, Acheson participated as an advisor and consultant, promoting changes he believed would result in better government. While serving on Congress' Commission on the Organization of the Executive Branch, he favored strengthening the Secretary of Defense and the combination of the higher echelon officers of the Foreign Service and Department of State into a single unit. These were not the only changes he believed necessary, and when confirmed as Secretary of State, Acheson implemented administrative modifications within the Office of the Secretary itself. Once Acheson began to shift responsibilities and procedure, Kennan found the mantle of Director of Policy Planning an ill fitting garment.

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58 Ibid., 250
Although Marshall and Acheson were both decisive, their approaches to decision-making were extremely different and after Acheson took over, the Secretary of State’s Office was a vastly different place for Kennan. General Marshall relied on military methods. He chose men on the basis of their ability and expertise, and believing that it was impossible to plan and operate at the same time, necessarily relied upon others for one or the other function.\textsuperscript{60} Marshall’s methods were honed by many years of reliance upon others; Acheson’s were shaped by a lifetime of success proving others wrong.

Acheson was not inclined to accept either Kennan’s experience or ideology. The stature that Acheson enjoyed among Washington’s power brokers may have given him too much confidence in his own ability to direct foreign policy, efficiently foreclosing other (perhaps more reasonable) alternatives. According to Kennan, Acheson showed no confidence in opinions that did not coincide with his own plan of action.\textsuperscript{61} While

\textsuperscript{60} When Marshall took over the State Department, he was appalled that there was no “planning” resource, “I found out that there was nothing, no planning agency at all. You can’t plan and operate at the same time. They are two states of mind... You just had a hit or miss affair going on around there.” Bland, \textit{Marshall Interviews}, November 20, 1956, 562-563

Henry Stimson praised General Marshall, and among the many reasons why Stimson believed Marshall ‘great’ was his 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. Henry L. Stimson with McGeorge Bundy, \textit{On Active Service in Peace and War} (New York, NY: Harper & Brothers, 1947). 662-663.

\textsuperscript{61} See Kennan \textit{Memoirs}, “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 this would have been strange to him.” 450.

See also McLellan who analyzes the Kennan/Acheson relationship, but note that in discussing the Acheson transformation of the State Department, even McLellan seems to recognize that Acheson’s style encouraged the same problem Marshall and Kennan had tried to solve; namely, the successful separation of planning and operation as separate functions: “The problem of blending daily operations with long run prognostications,
Kennan's appraisal of US/Soviet relations was based upon his Soviet experience and his own personal understanding of Soviet history whose proposals were based upon American goals informed by his own individual interpretation. Acheson, on the other hand, relied completely upon second-hand information. He had not been in Europe since 1939, and his understanding was predominantly shaped by discussions with ambassadors from England and France, those most willing to dramatize Europe's situation to secure aid. In addition, according to one of his biographers, Acheson was not inclined to consider the unique characteristics of Soviet culture because he was a pragmatic man who "did not become a prisoner of a priori moralistic, deterministic, idealistic or Manichean images and states of mind." Acheson himself later admitted that his perspective was, perhaps, narrow. In 1957 he acknowledged that his legal experience had been a double-edged sword while he served as Secretary of State—that although logic was an essential element in both the practice of law and foreign policy, the habits of advocacy narrowed a lawyer's perception to that of his client's interest. It is unclear, however, whether Acheson was referring to a specific instance of "narrow perception" or whether this was a general comment upon his secretaryship.

International and domestic crises meant that Acheson had a number of interests to protect when he took office: the nation's, his President's, and his own. The Berlin Airlift

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62 McLellan, *Dean Acheson* 172.
was in its seventh month, the new Republic of South Korea faced a threatening North, and
the NATO treaty was still being hammered out. Before he had completed a year in office,
the Soviet Union tested its first atomic weapon and China had fallen to the communists.65
Domestically, HUAC’s attack on the Truman administration picked up steam with
Whittaker Chambers’ denouncement of Alger Hiss, an Acheson friend and brother of
Acheson’s protege Donald Hiss.66 Though temporal proximity was the strongest link in
this chain of events, in combination they certainly appeared to many as a signal of a world­
wide, Soviet-driven, conspiracy. The man who had, in 1947, counseled Truman to boost
anti-communism and “scare the hell” out of the country to gain support for Turkey and
Greece, was now caught up in a whirlwind he had, at least in some measure, unleashed.

Not surprisingly, a shift in the philosophy of the administration, and thus, the NSC,
accompanied the 1949 personnel change. When Dean Acheson changed Kennan’s
position to “Counselor” and Paul Nitze assumed the role of Director of the Policy
Planning Staff.67 Since Kennan believed that the Soviets posed a political, rather than

65 According to Acheson, Communist success in China was “expected.” Ibid., 192.
66 In 1946, the names of Acheson, Alger Hiss and Henry Wallace all showed up on an FBI
list of “high government officials operating an espionage network.” Harper, American
Visions, 266.
67 There are several different reasons proposed for Kennan’s relegation to “counselor.”
Kennan himself indicates that his resignation resulted from a requirement that all his views
be run past a committee for their approval before reaching the Secretary of State, and that
given these circumstances, he resigned. He does note, however, that differences between
his “long-term” outlook and the “short-term” views of “his friends in Washington,
London, Paris and The Hague” played a role. Of particular interest is Kennan’s statement
that he did not believe in the reality of a Soviet military threat in Western Europe.
Kennan, Memoirs, 464.

Acheson asserts that Kennan “left the Planning Staff to devote himself to the duties of
the Counselor to the Department” but it is clear that Acheson had little regard for
Kennan’s views, claiming they “were of no help.” Acheson, Present at the Creation, 346,
151.
military threat, he no longer fit into an administration "content" (to use Kennan's term) with the division of Europe and a militaristic fear of the Soviet Union. Concordant with Acheson's philosophy, Nitze was less apt than Kennan to rely primarily upon economic development to contain the Soviet influence and was "more inclined that Kennan to approach the cold war as a war." 68

* * *

On January 1, 1950, Nitze took his seat at the head of the Policy Planning table and, as an economist, brought a different package of skills to his position than his predecessor. While Kennan savored the cultural distinctions of the international community and devoted his entire life to an examination of international relationships, Nitze had cast a more-critical eye toward Europe believing that the turmoil following World War I forever threatened stability. Nitze's confidence (in all endeavors) was

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Nitze says that soon after he became Deputy Director in 1949, Kennan "made it clear that he would like to step down. He was convinced that his usefulness as policy director was near an end and that he should leave the Foreign Service to do research and write. Nitze, From Hiroshima to Glasnost, 86.

May suggests domestic politics rather than ideology played the major role in the change, and asserts that Acheson, under fire from conservatives as a "striped pants snob" who served as a "lackey of British lords and communistic radicals," needed a dynamic leader who might help quell animosity with direct action. The heat must have been intense after Acheson proclaimed his loyalty to Alger Hiss on January 25, 1950 for Acheson later indicated that the methods employed within Washington "would have aroused the envy of the Borgias." See May, American Cold War, 7-9 and Caute, The Great Fear, 42-43. Republicans in both houses had called on Truman to fire Acheson even before Hiss was convicted of perjury. McClellan, Truman, 759.

68 May, 9. Elitism peppers Nitze's comparison of Marshall and Acheson: General Marshall was a "man of impeccable character, who represented the best that middle-class America can offer," but Acheson "had the grace and bearing of an Aristocrat." Nitze, From Hiroshima to Glasnost, 85.
undoubtedly spurred by successes gained outside the political or governmental realm, for he became independently wealthy in 1935, a major coup during a time which many suffered. His memoirs reveal glimpses of a man at ease in the world of numbers, a realm where shades of grey are equated with mistakes, not nuance, and extremely confident in his ability to recognize those muted hues wherever they appeared.

Nitze’s childhood seems to have been a somewhat eclectic one. His father graduated from Johns Hopkins at eighteen and earned his degree in philology at twenty-three. An attraction for economics did run in the family, however, and Nitze’s grandfather, a German who settled in America following a vacation, opened a bank in Baltimore and profited professionally from the growth of the railroad industry. In 1909, when Nitze was two, his father accepted an appointment as head of the University of Chicago’s Department of Romance Languages and Literature, a position he maintained for thirty years. Nitze describes his mother, “the greatest influence” in his life, as somewhat of a rebel—a unique woman who divorced herself from the typical duties of a professor’s wife, preferring instead the company of the dancer Isadora Duncan and crusading lawyer Clarence Darrow. She was, he says, “a favorite... on the more fashionable North Side of Chicago.” Nitze’s childhood was certainly rich with variety, but one period in particular seems to have been formative.

The outbreak of World War I made a lasting impression upon a seven-year old Nitze, and perhaps influenced the course of his life (and ideology) more than even he

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69 Ibid., xx.
70 Ibid., x-xii. Curiously and disappointingly, Nitze names only his sister Polly, identifying the rest of his family only through their relationship to him.
recognized. Six months out of every year, including the fateful one of 1914, the Nitze family lived in Europe. The young boy found himself watching as Germany mobilized against Russia, standing at the window of their rented apartment even as troops marched to the front. Despite his father’s best attempts, they were unable to leave Germany before England declared war and moved in with relatives in Frankfort. There, Nitze became attached to an older cousin who was passionately interested in the war, and who was, before the year was out, killed by Russian soldiers at Tannenberg.\(^1\)

Whether because of his youthful impressions or measured adult rationality, Nitze found World War I vastly more significant that World War II, proclaiming:

I would say that the emotional dedication of the people on both sides in the First World War was far greater than it was in World War II. Even though more lives were lost in the Second World War, the impact of the First on the structure of civilization, the disillusionment and brutalization of man and his humanity, were such that the civilized world was never again the same.\(^2\)

Again, it is difficult to say whether the experiences of a small child—trapped in Germany at the very beginning of war, a charged moment when routine disintegrates and a mixture of fear and exhilaration permeates the very air, and who wears, sewn onto his clothing, a replica of the American flag to distinguish him from an (English) enemy— influenced the adult more than later education and experience. It is, however, easy to see that it could.\(^3\)

It must be remembered that that very same small boy who lost a friendly cousin to Russian guns and who was harassed by Germans because he spoke English, later influenced,

\(^1\) Ibid., xii.
\(^2\) Ibid., xiii.
\(^3\) My suggestion here is influenced primarily by the emphasis that Nitze himself places upon this period in his life.

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developed, and articulated the policies of his nation during volatile post-World War II
relations with both Russia and Germany.74

Finishing high school at the age of fifteen, Nitze went to preparatory school in
Connecticut and then entered Harvard, graduating summa cum laude with a degree in
economics and an interest in sociology. It was his mastery of economics that led, in 1929,
to a misadventure with the Soviet Union. When an investment banker agreed to fund the
freshly-graduated Nitze's passage to Germany in exchange for a report on German
investments, Nitze toured Europe and ran into a friend in Berlin. On a trek through
Finland, they lost their way and hiked aimlessly for three days:

Unknowingly, we had crossed the border into the Soviet Union
and might still be there, buried in a Soviet prison, if we had not
run into a Good Samaritan, a Russian fishing on a desolate lake.

The Russian showed them the trail back to Finland and suggested that they run: "And run
we did until we had recrossed the border!"75

By 1940, he had formed opinions not only about the Soviet Union, but also about
Germany. His views toward Germany coalesced when he read Oswald Spengler's The
Decline of the West. For Nitze, the book condensed the "faults of the German
temperament; it was brilliant, full of profound feeling and thought, but dogmatic, rough,
tactless" and he believed that the Germans possessed "tendencies toward cultural decay,

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74 In a review of Nitze's biography, David S. Patterson, touches upon Nitze's "pessimism of
human nature" and suggests that his memoirs are worthy of note because he is "almost by
default, a symbol of the continuities of American foreign policy." See "Quintessential
Cold Warrior" Diplomatic History, Winter 1992, 150-151. In so saying, however, Patterson
completely overlooks a more significant issue: namely, that Nitze is not just a "symbol" of
continuity—but one of its architects.
75 Nitze, From Hiroshima to Glasnost, xvi.
socialistic Caesarism and war.\textsuperscript{76} It seems clear that it was easier for Nitze to approach the cold war as a "war," because he tended, unlike Kennan, to subsume cultures into nationalities and then transformed those nationalities into enemies.

Nineteen-forty-nine was a year of transition for Nitze, the State Department, and the world. On September 3, the crew of an Air Force B-29 picked up airborne radioactivity. They traced the cloud over the United States and across the Atlantic, where planes from Great Britain's Royal Air Force continued the monitoring. By September 19 the US leaders knew that the radioactivity came from the Soviet's first nuclear device, code-named "Joe One."\textsuperscript{77} On September 23, the American public learned that the frightening power to obliterate entire cities with a single plane and a single bomb would forever be shared.

The Soviets' atomic capability, combined with reported economic development, prompted Truman to order the reevaluation of national security policy.\textsuperscript{78} Nitze shaped

\textsuperscript{76} Ibid., xx-xxi. The reader might note that Nitze considers "brilliance" a fault, though perhaps this is only an inadvertent grammatical error.
\textsuperscript{77} Miller, Under the Cloud, 71; Neuse, David E. Lilienthal, The Journey of an American Liberal, 221.
\textsuperscript{78} It is important to note that had Kennan still held a position of influence, and had he been correct, (a regrettable double assumption), American strategy in the years following the Soviet detonation of an atomic bomb might have taken a completely different form. In 1948, NSC 20/2 suggested that diplomatic difficulties with the Soviets might rest in their lack of atomic capability: "The fact that they have not been able to dispose over atomic weapons, whereas we have, has probably been, if anything, a contributing factor in Soviet intransigence in the past in matters of the international control of atomic energy and possibly in other matters as well. . .To the Soviet mind it is unthinkable that we, enjoying this factor of military superiority, are not taking it into account in our plans and attempting to exploit it for political purposes. They therefore must assume that our international positions, particularly in matters of the control of atomic energy, are predicated on this superiority and contain a margin of excessive demand, which would not be there if a better balance existed in the power of disposal over the weapon. For this reason, they may actually prove to be more tractable in negotiation when they have gained some measure of
that review, NSC 68, and thereby infused his philosophy into the framework of policy--transforming the character of atomic age strategy into the form it would hold for much of the cold war.

In NSC 68, Nitze agreed with Kennan that communism and capitalism were not compatible, but Nitze apparently doubted Kennan's assertions that coexistence was possible. Concerned that European nations might risk economic instability if forced to expand militarily, Nitze sought the expansion of US military capabilities to complement NATO. In addition, Acheson was convinced that since the Soviets had proved their atomic capability, "massive conventional rearmament" was required. In order to accomplish this goal, Nitze and his assistants turned to the same tactic Truman had used to great success, they inflated the crises to cataclysmic proportions. "The issues that face us are momentous, involving the fulfillment or destruction not only of this Republic, but of civilization itself." Though its architects hoped that its public release would "rally" America and the West, it was (officially at least) kept under wraps until Kissenger

power of disposal over the weapon, and no longer feel that they are negotiating at so great a disadvantage." NSC 20/2 B(4) The accuracy of this analysis can never be known, for before it could be tested a new philosophy enveloped in and articulated through NSC 68 dictated policy.

79 See also Harper, who suggests that Nitze formed "basic assumptions about European intentions that were rooted in his interwar isolationism-cum-hostility toward the Old World" and agreed with Acheson that Europe could not be left to the Europeans. op. cit., 294. Even Kennan's colleague and friend, Chip Bohlen, harbored concerns about European strength in the shadow of NATO, with tendencies to "drift back to its former bad habits of disunity." FRUS, 1950, 3, 620.

80 Walker, The Cold War, 73.

81 NSC 68. See also May's engaging discussion of the process of policy management and the 'adroit' maneuvers necessary to convince President Truman and Secretary of Defense Johnson. May, American Cold War Strategy, 9-15.
declassified it in 1975. Despite Truman's order to keep the document secret, however, knowledge of it spread through the Washington rumor mill.

Acheson unabashedly claimed that NSC 68 was designed to "bludgeon the mass mind of 'top government' resulting in "action" instead of "decision-making." The council was eager to implement NSC 68. Since Truman's hesitation rested primarily with the expense of the proposals contained in the document, as the first order of business on April 20, the Council recommended the immediate (by April 25) appointment of an ad hoc committee to be designated by the Secretary of the Treasury, the Economic Cooperation Administrator, the Director of the Bureau of the Budget and the Chairman of the Council of Economic Advisors. In addition, the committee didn't want to allow any time for second thoughts should the President approve the documents conclusions. Rather than postpone action, the Council also established a separate committee and authorized it to make recommendations regarding the re-organization of the government called for in NSC 68.

In response to calls for interim action pending an executive decision, (including one by James E. Webb, Acheson's under secretary, for the president to "say something to the country . . .some time in early June") only three members voiced restraint. Secretary of Defense Johnson suggested that since the project already had priority it "should not be the product of haste," Secretary of the Air Force Symington "felt that the whole job should be done properly, not in any half-measures" and Maj. General J. H. Burns, the Assistant to the Secretary of Defense "said that the whole military establishment was working on this as a priority project and that the military program could not be expected before the middle of June." Rather than prepare an interim report, the Council decided to "expedite" a response to the president. "Minutes of the 55th Meeting of the National Security Council" April 20, 1950. Harry S. Truman Papers, "President's Secretary File," microfilm collection, Georgetown University Library.

Even as Acting Secretary of State, Acheson was not shy about exerting his influence upon the President. In January 1946, he bypassed customary coordination between the Secretaries of War, State, and Navy, inducing the President to agree to a request made by Byrnes at the first meeting of the United Nations in London. Byrnes planned to announce the change of status of certain Pacific islands into either Trusteeships or under special arrangements for strategic areas—upon the President's assent, Acheson immediately cabled the approval to Byrnes. The Secretaries of War (Kenneth Royall) and Navy (Forrestal) requested an immediate audience with the President and Forrestal bluntly stated that
document itself proves that Acheson, in his memoirs, did not rely upon exaggeration.

NSC 68, with all the nuance of a club, was (as Acheson had so carefully planned) extremely effective.\(^8^5\) Its persuasiveness resulted from three factors: a warning that destruction would follow the absence of an aggressive foreign policy, an appeal to history, and manichean representations of the conflicting ideologies of the United States and the Soviet Union.\(^8^6\) Although one can place NSC 68 under many different lights and reveal its

\[\text{Acheson's action was "a desertion of the general idea of cooperation by getting hasty decisions out of him on a particular point of view, and I told him I propose to make such a representation to Acheson in very strong terms." Millis, Forrestal Diaries, 21 January 1946, 131.}\]

\[\text{85 The role Acheson played as Secretary of State was different than he had earlier conceived it. As Under Secretary, he had advised Marshall that the Secretary's speeches were "never directed to swaying an audience to a specific result, like voting in an election, but to putting out ideas for thought at home and abroad." By 1950, under fire in the Senate as a communist sympathizer, Acheson traveled promoting support for the philosophy of NSC 68 and had clearly abandoned using ideas for bait—deciding instead to dynamite the pond. He "made points clearer than truth" and deemed that "Qualification must give way to simplicity of statement, nicety and nuance to bluntness, almost brutality" in order to convince his listeners. In yet another link between foreign policy and religion, Acheson referred to his various engagements as "preaching." Acheson, Present at the Creation, 374-375.}\]

The text of Acheson's speech at the University of California at Berkeley combined his avowed "bluntness" with moral righteousness: "Good and evil can and do exist concurrently in the whole great realm of human life. They exist within every individual, within every nation, and within every human group...The struggle will go on, as it always has, in the wider theatre of the human spirit itself..." Turning to capitalism versus communism, he continued: "...it also does not follow from this coexistence of good and evil that the two systems, theirs and ours, will necessarily be able to exist concurrently."

Ironically, and although the government's loyalty programs silenced critics under the guise of subduing communist subversion and began a massive system of classification restricting information to all but a handful of individuals, Acheson praised the principles of US free society: "It does not fear, rather it welcomes, diversity and derives its strength from freedom of inquiry and tolerance even of antipathetic ideas." Acheson, cited in Schlesinger, Dynamics of World Power, 410-416.

\[\text{86 Curiously, the "politico-centrism" of cold warriors seems, even today, as an acceptable (and preferred) ethos (patriotic); while ethnocentrism appears (we hope) on the wane. The two, however, are logically (and morally) equivalent. Emily S. Rosenberg, a cultural historian, argues that the "binary structure" which characterized NSC 68 "fit comfortably"}\]
skeleton and inherent discursive strategy (as many already have) it is important to analyze
NSC 68 in relational terms, particularly through its shift in emphasis and the implications
of that shift upon the more limited, though vastly consequential, question of American
atomic policy.

While Kennan’s NSC 20/4 relied upon general ideological principles that separated
the United States and the Soviet Union as independent, though interrelated actors, NSC
68 instead compared the two and claimed that in the event of atomic warfare, the Soviet
Union might hold the high ground, at least initially.\textsuperscript{87}

A police state living behind an iron curtain has an enormous advantage
in maintaining the necessary security and centralization of decision
required to capitalize on this advantage.\textsuperscript{88}

within American culture and suggests that attitudes about Native Americans, World War
II, and the Truman Doctrine are all examples of such symbolic formation. “Rosenberg’s
Commentary” in May, American Cold War Strategy, 161-163. In applying her thesis to
twentieth-century international expansion, she observes that the nation’s “exporters” of
culture fail to recognize “That the advance of international liberalism could generate its
polar opposite—entrenched conservatism and a narrow range of options. . .There could,
American liberal-expansionists believed, be no truly enlightened dissent against the
ultimate acceptance of American ways, and this faith bred an intolerance, a narrowness,
that was the very opposite of liberality.” Rosenberg Spreading the American Dream 1890-

\textsuperscript{87} This is not to say that Kennan had not already considered the implications of Russian
atomic weapons. Indeed, in 1945 he prepared an ominous statement outlining his belief
that the Soviets would not hesitate to use an atomic weapon, should they be given the
opportunity: “There is nothing—I repeat nothing—in the history of the Soviet regime
which could justify us in assuming that the men who are now in power in Russia. . .would
hesitate for a moment to apply this power against us if by doing so they thought they
would materially improve their own power position in the world.” Written admittedly in
haste, Kennan asserted it was a “reflection only of an anxiety lest this matter be handled
on the basis of the same effort to curry favor with the Stalin regime that seemed to me to
have inspired our other policies up to that time.” Note, however, that Kennan’s
statement, however frightful, is qualified (as are others contained in the entire document.)
See Kennan, Memoirs, 296-297.

Nitze decided that the significance of the bomb lay in the fact that it “enormously
enhanced the effectiveness of a single bomber.” Nitze, From Hiroshima to Glasnost, 42.
\textsuperscript{88} NSC 68, “VIII Atomic Armaments”.

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Kennan had certainly believed (and NSC 20/4 asserted) that capitalism possessed logical advantages over a communist system in the postwar world, and that the Soviet Union would move in the direction of capitalism if given an opportunity (and time) to recognize the advantages of such a transition. It is important to look at the ways the two advisers pointedly differed upon a seminal issue; namely, how superiority was to be measured, and even, defined.

Clearly, between Kennan’s analysis and Nitze’s, a fundamental change had occurred in the fulcrum of the relationship between the two nations. The Soviet development of an atom bomb obviously obliterated America’s ability to threaten (if not use) a weapon only it possessed. Kennan’s faith had rested not in weaponry, however, but upon an abiding trust in democracy; a trust that superceded his fear of communism. It appears that Nitze took an opposite view; that is, that US survival depended upon an increased military presence and a corresponding shift away from fundamental democratic principles.

NSC 68 posited Soviet “advantage” in terms of security and centralized decision making, and reinforced the reliance upon those elements of governance that already existed and infringed upon the rights of Americans. At the time NSC 68 was crafted, the United States did not lack security precautions, particularly in the case of atomic workers. Truman had already seized on the issue of communists in government and issued three far-reaching Executive Orders that enhanced the state’s ability to act against communism.
through the denial of rights to citizen workers. In addition, there seems to have been no lack of "centralization of decision" though Nitze considered that characteristic only of the Soviet Union. Was Nitze actually, though rather covertly, proposing that the United States become further "totalitarianized" in order to increase her chances in a war fought with atomic weapons? The answer cannot be known. What is clear is that NSC 68 clearly influenced the direction of atomic policy, and that direction veered sharply away from traditional guarantees in a democratic nation.

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89 E.O. 9806, 9835, and 10241. An (admittedly liberal, nearly radical) analysis of the issue of anti-communism during Truman's administration can be found in Caute, The Great Fear. See also Earl Latham for a more in-depth analysis, though one that lacks examination of the implications of the Soviet's first atomic weapon detonation upon the fray. The Communist Controversy in Washington.

The expansion of state power against workers coincided with the state's need for workers. By 1954, plants operated by government contractors were entitled to fire any employee believed to threaten security—a dicey situation for employees. One factory fired over 250 employees based upon "anonymous letters, phone calls or personal visits." By 1956, over three million workers were employed "at will" (unprotected by either union contract or employment agreement) and required to hold security clearances. The New Republic, September 10, 1956, 8.

90 The National Security Council and the Atomic Energy Commission both served only in an advisory capacity to the President, who ultimately rendered his decision unilaterally. "It is recognized that, in the event of hostilities, the National Military Establishment must be ready to utilize promptly and effectively all appropriate means available, including atomic weapons, in the interest of national security and must therefore plan accordingly. The decision as to the employment of atomic weapons in the event of war is to be made by the Chief Executive when he considers such decision to be required." NSC 30, September 16, 1948. See also "Use of Atomic Weapons" approved September 10, 1952: "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." 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, Secretariat collection; Box 1277, Folder O&M 12 National Security Council.
Though not even completed, the philosophies shaping NSC 68 influenced one of the most momentous decisions of the century, the development of a “super” weapon—the H-bomb. On November 10, 1949, President Truman, in the wake of the Soviet atomic detonation, asked Dean Acheson, Secretary of Defense Louis Johnson and AEC Chairman David Lilienthal to examine the possibility of a hydrogen weapon. Confident in his own belief that the weapon should be developed, and perhaps confident also of his ability to control the committee’s recommendation and Truman’s decision, Acheson told Nitze to coordinate the H-bomb decision with the “broader inquiry being gestated by the National Security Council”—NSC 68.91

Kennan, who had been working on the problem of international control of atomic energy, was denied a voice in the deliberations, but he tried to make a contribution nevertheless. No longer director of a staff, Counselor Kennan alone formulated a memorandum that he considered “one of the most important, if not the most important, of all the documents I ever wrote in government.”92 Kennan’s analysis challenged a foreign policy that he considered “ambiguous and inconsistent”—one that ostensibly supported an international decision to abolish atomic weapons whilst political and military leaders based their defense policies on the use of atomic weapons. Stressing a moral imperative, Kennan

91 Acheson, Present at the Beginning, 346. Nitze erroneously cites November 19. The date, of course, represents only the official beginning of the inquiry—moral and practical questions about the development of a “super” weapon had divided scientists and others with “inside” information since the end of the war. More formally, Lilienthal suggests that the issue began to pick up steam in October, 1949 with Lewis Strauss’ recommendation that the General Advisory Committee “make an intensive effort to get ahead with the Super.” David E. Lilienthal The Journals of David E. Lilienthal: The Atomic Energy Years, 580, 576.
92 Kennan Memoirs, 472.
did not propose the abandonment of atomic weapons, but urged that the United States develop and articulate publicly a determination that atomic weapons would never be used in a first-strike capacity. Acheson derided Kennan’s iconoclastic analysis, and told him to “go out and preach his Quaker gospel but not push it within the Department” and then turned to Nitze for a study that proposed a massive military expansion bolstered by conventional and atomic weapons. Acheson could not act (at least officially) unilaterally on the H-bomb decision, and although the committee suffered from the outset from a

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93 Kennan’s recommended a substantive declaration, and his passion and eloquence deserve inclusion: “We deplore the existence of all weapons of indiscriminate mass destruction. We regret that we were ever obliged to make use of one. We hope never to have to do so again. We do not propose ever to do so, unless we are forced to it by the use of such weapons against us. Meanwhile, we remain prepared to go very far, to show considerable confidence in others, and to accept a certain risk for ourselves, in order to achieve international agreement on their removal from international arsenals; for we can think of nothing more dangerous than a continued international competition in their development.” In hindsight, Kennan hypothesized that Acheson’s only reaction was probably “one of bewilderment and pity for my naivété.” Memoirs, 474.

It seems clear that Kennan’s belief that Soviet fear, not militarism, posed the greatest threat was an influential factor in his belief that the US should demonstrate a certain amount of public good faith concerning atomic weaponry.

94 Cited in McCullough, Truman, 757

95 Acheson, Present at the Creation, 347. Kennan and Acheson also disagreed over the rearmament of Germany. Kennan believed that NATO acceptance of West Germany would threaten any attempt at conciliation with the Russians, and “most incongruous and unpromising: namely, the effort to operate a democratic political system on a territory occupied by Soviet troops and under the control of an inter-Allied body that included a Soviet commander.” Their disagreements grew as the years passed reflecting, according to Kennan “the differences in our respective backgrounds. He, having never lived in Eastern Europe or Russia (and perhaps sharing Sigmund Freud’s view that the people east of the Elbe were ‘baptized late and very badly’)…” Kennan Memoirs, 446-447.

Pressed by his responsibilities to the president, Acheson notes that he wanted risks measured on a “different scale” than that delivered by the Soviet experts. “From the outset, in trying to outline with these groups the field of inquiry relevant to the decisions, I became aware, without full comprehension, that our colleagues Kennan and Bohlen approached the problem of policy definition with a very different attitude and from a different angle from the rest of us.” Acheson, Present at the Creation, 347.

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collision of ideologies and temperaments and the members of the AEC advised against it, he orchestrated his hoped-for escalation.

Truman's hand-picked trio of theorists could not have been more disparate.\(^{96}\) Given Acheson's impetus in the development of the premises outlined in NSC 68 and his reluctance to accept any risk in terms of foreign policy and defense development, he surely began deliberations already convinced that no "moral argument" should hold sway.\(^{97}\)

Secretary Johnson, determined not to exceed the President's budgetary restrictions on defense, and perhaps as equally determined to remain contrary, was a cantankerous and disagreeable participant, unwilling to discuss anything that might not reduce the budget.\(^{98}\)

Lilienthal, on the other hand, opposed vehemently any enhanced atomic weapons development. It is likely that none of the three men relished their task, but when the Soviet Union detonated its first atomic device, the postwar musings about a massive, almost unimaginable weapon turned from a whispered chorus of "can we's?" into a steady refrain of "should we's?" and those voices could not then be denied.

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\(^{96}\) The three men met officially only twice, once on December 22 and again when their report was presented to the President, on January 31, 1950. McCullough, \textit{Truman}, 758.

\(^{97}\) See Acheson, \textit{Present at the Creation}, 348. If Acheson shared what might be called "moral" qualms about the H-bomb, he certainly didn't express them, stating that such restraint had no place in government, and noted of Kennan that he "had no right being in the Service if he was not willing to face the question as an issue to be decided in the interests of the American people under a sense of responsibility."

\(^{98}\) Since Johnson played little other role in the decision, this abbreviated analysis will not delve further into Johnson's participation.
Before proceeding to an examination of Lilienthal and the AEC’s role in the negotiations on the “super,” it is important to note that the consequences of decision-making may have been as, or more important, than the consequences of the bomb’s development and experimentation. In this visual age, it is no surprise that the bomb itself overwhelms our imaginations and has concealed the significance that I argue must be attached to the shifts in personnel, and therefore policy, that immediately preceded the bomb’s development. Many are at least glancingly familiar with the development and experimentation of the H-bomb and few have not been awed (or stricken) by photographs or film as monstrous mushroom clouds of radioactive steam, sea water, and vaporized coral proclaimed the breadth of American science and power. It is important though, to pause for a moment and consider how the very contemplation of a thermonuclear weapon resulted in fractures that rent the customary rubrics of science and politics; and, ultimately, because it resulted in a limitation of perspective, contributed to a dramatic transformation in the development (and articulation) of policy itself.

Certainly, disagreements abound within those fields concerned with governing man and nature, and the early atomic age was no exception. From the first public detonation in Hiroshima, scientists argued about atomic weapons development, short- and long-term effects, and shared with politicians the debates surrounding international control, strategies of deployment, and related policy issues. Conflicting individuals in both groups, of course, drew upon their own personal expertise, but also linked that wisdom in a functional equilibrium with motivations that were both purely personal but also relational.

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99 See Chapter 4, infra.
Status and prestige, both within society and within one’s profession, can only be developed and expressed through relationships; and, although it is impossible to discern the extent to which these motivations stimulated the decision-making of the 1940s, they are often such determinative features that their roles should not be ignored. It is, perhaps, enough though to note that up until the thermonuclear question entered their lives, the advisors and scientists maintained the balance between knowledge and status— they ‘stayed in the game’ for reasons as indeterminately varied as their histories.

When asked to consider the vastly-exaggerated thermonuclear weapon, however, some, after registering their refusal to endorse the plan, retired to the sidelines— others left the field. It is hard to imagine that a decision to proceed with the “hell bomb” was easy for any of the participants; for some, however, the reaction was visceral— a nearly instinctive abhorrence for anything connected with increasing (much less expanding exponentially) the power of the already-dreadful atomic bomb.¹⁰⁰ For these men, there was no balancing act— neither politics, ambition, nor status figured in a decision unassociated with relationships. And although Truman optimistically stated as he ordered the development of a thermonuclear weapon that the world would not come to an end,¹⁰¹ it must have seemed to some men that theirs already had.

¹⁰⁰ One is tempted, perhaps pace Kennan, to attribute “morality” to those decisions objecting to the development of the H-bomb; this would be, however, simplistic and unfair to both objectors and proponents alike. Certainly, those who chose to support the new weapon did not consider themselves immoral. The detractors’ perceptions differed: at least one AEC member, Hartley Rowe, objected to the hydrogen bomb because the atomic bomb was monster enough (p. 98, infra). Oppenheimer doubted its feasibility. In regard to the h-bomb decision, then, any discussion of “morality” will only be used herein when the participant himself interjected that component into his arguments for or against.¹⁰¹ McCullough, 763. The bomb did, however, have its casualties.
The famous mushroom cloud results from the creation of a vacuum, and the
decision to develop a thermonuclear weapon caused a vacuum within the realm of national
policy, a condition that resulted in a dramatic transformation of the intellectual and
ideological base that had driven policy since the end of the war. The void was filled with
only those who supported atomic and military escalation. It may be argued, of course,
that the men who left (or, like Kennan, were pushed out of) government service at the
time of the decision to develop the "super" had outspent their usefulness, or had become
outmoded ideologues. But who can suggest that their experience and knowledge, indeed,
their intimacy with the features of the rapidly-changing postwar world, would not have
been valuable assets as the nation confronted a world where it alone did not own the atom
bomb? Consider the abilities of the men who could not endorse the H-bomb: Kennan,
whose influence in the postwar field of foreign policy was, and is, undisputed;
Oppenheimer, whose objection to the bomb forged the basis for his later removal and trial
as a communist,102 and Lilienthal, a man who during his tenure as Chairman of the Atomic

102 Caute provides and thorough and well-documented account of Oppenheimer’s
persecution, The Great Fear, 476, 477. Oppenheimer entered the Manhattan Project as
an admitted “fellow traveler” but Groves’ influence had him cleared for the top secret
project in 1943. Highly decorated after the war, Oppenheimer was the “most politically
influential scientist in the nation” and although J. Edgar Hoover asked Lilienthal to have
him investigated in 1947, the AEC cleared him unanimously. Oppenheimer’s opposition
to the H-bomb aroused the ire of the weapon’s major proponent, AEC committee member
Lewis Strauss; and Oppenheimer’s 1952 suggestion that the US diversify its armory
(implementing warning stations and guided missiles) meant a decrease its reliance upon
atomic weapons that pushed Strauss over the edge. As Chairman of the AEC, Strauss
accused Oppenheimer of disloyalty and revoked his security clearance; but magnanimously
offered him a position as a consultant if he wished to avoid a loyalty hearing. When he
refused, Oppenheimer faced not a hearing, but an inquisition.
The travesty that was Oppenheimer’s hearing is a shameful example of political
persecution. Not, certainly, on a par with Stalin’s infamous “show trials” but,
nevertheless, a disgraceful example of a perversion of American jurisprudence. When
Energy Commission was an influential spokesman and guardian of civilian control, and the peacetime development of atomic science.

* * *

David Lilienthal preferred to focus on the "ordinary affairs of men" and as the head of the civilian AEC, he insisted upon it. Under his direction, the Commission promoted the atom's peaceable possibilities, including medical research and power generation, that he believed could help the lives of ordinary people. Since the military's preoccupation with weapons development absorbed young scientists, the AEC established hundreds of fellowship programs for students eager to explore the less destructive side of atomic science. He resisted, sometimes successfully, military requests for ever-increasing amounts of scarce atomic material, and fought those who sought to broaden the already oppressive secrecy rituals of the government through its atomic arm. He traveled

Oppenheimer requested his hearing, "his phone was tapped, his home and office bugged, his mail opened and even his conversations with his attorney recorded." Though attorneys for both sides required the highest level security clearances (the hearing, of course, entailed testimony and discussion of sensitive, classified issues) only the government's attorney received his; Oppenheimer endured his walk over the coals without benefit of counsel because despite repeated requests, his attorney was never granted clearance. The government's attorney enjoyed another advantage: when the three-judge panel examined the record, they did so with the assistance of government counsel. When the panel entered a ruling against Oppenheimer; they based their verdict upon issues never covered in the hearings.

It is impossible, of course, to know whether Oppenheimer was truly guilty of anti-American activity. It is possible, though, to recognize that he did not receive a fair hearing—a recognition apparent to the AEC who offered him a new hearing in 1962. The unfair conditions that Oppenheimer endured bubbled higher than the AEC, however, for although Oppenheimer refused a second hearing, President Kennedy offered him the Fermi Award in 1963—an award Oppenheimer accepted and later received from the hands of President Johnson.
endlessly delivering speeches throughout the nation: to women’s groups in Utah, the American Library Association, Iowa State College. Nineteen-forty-nine proved a difficult year and he had had but little chance to garden or write when his one vacation was interrupted.

It was close to midnight on September 21 when David Lilienthal returned to his borrowed cabin on Martha’s Vineyard and the last thing he expected to find was a candle burning in his window and a man standing in his driveway. “As if I frequently found him on a windswept moor, in the dead of night, on an island, outside a goat field” Brigadier General James McCormack, the AEC’s Director of the Division of Military Applications, appeared nonchalant while he waited for Lilienthal’s return. Within minutes, McCormack and Lilienthal sat in the little cabin under the light of an antique kerosene lamp and Lilienthal learned that the Russians now shared the world’s most modern secret. The two men drank a beer and looked at the stars through the kitchen window.¹⁰³

It could not have taken Lilienthal long to realize that the new international problem promised the enhancement of military influence and heightened governmental secrecy—two things Lilienthal had worked to overcome as Chairman of the AEC. In a curious twist, the Soviets had actually given the military the ammunition it needed to thwart both Truman’s proposed defense cuts and Lilienthal’s attempts to channel the resources of atomic science into the private sector.¹⁰⁴ Certainly, too, the Communist weapon

¹⁰³ Lilienthal, Diaries, 569.
¹⁰⁴ Lilienthal accepted the Chairmanship of the AEC only after he was assured by Truman that he would be allowed to promote civilian applications. When Truman met for the first time with the entire committee in December, 1946 (Lilienthal and his “little flock”) he agreed with their plans for the transfer of Manhattan facilities from military to civilian hands: “. . .the sooner the better. . .we must understand that atomic energy wasn’t just a

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threatened to stifle all of Lilienthal's arguments for more openness in government and an end to atomic secrecy.\textsuperscript{105}

weapon of destruction—it could be a boon to mankind.” When Lilienthal asked for the President’s help in combating the War Department’s angst toward the civilian commission, Truman said “I expect that. The Army will never give up without a fight, and they will fight you on this from here on out, and be working at it in all sorts of places. But you can count on it, I am your advocate.” Lilienthal, Diaries, 118.

Truman was right, the Army (and the rest of the military) kept fighting, and by 1949 the strife between the armed forces and Lilienthal had reached critical mass. The strain of budgetary woes only heightened the tensions that had been building since the end of the war, a situation not lost on Lilienthal: “...the situation within the Military Establishment is chaos and conflict and carnage confounded. ...The Joint Chiefs are at each other’s throats, no decisions can be made, and even Eisenhower is discouraged and now ill.”

When the Army lashed out at the AEC for supposedly exposing military secrets to Congress in its annual report, Lilienthal prepared for a “showdown” against the military—one precipitated by Lilienthal’s refusal to fulfill the “requirements” of the Joint Chiefs of Staff for atomic material. “...there is nothing sacred about any of their pronouncements. They are made by men, and damned vulnerable men at that, and I doubt if their statement of their ‘requirements’ for atomic weapons material had any background that would stand up to inquiry.” \textit{Ibid.}, 494

\textsuperscript{105} Though later infuriated, Lilienthal was at first a little bemused by the elaborate strategies to shield atomic science. On a whirlwind 1946 tour of atomic facilities, the plane carried the Commission, a five-foot-long “hope chest” full of top-secret documents, and an armed West Pointer, Lt. Col. Noble, to guard the chest. “Some of the documents are such that Noble never lets them out of his sight, off the plane, and he goes around carrying them on him, also with a revolver. I think if we did crash, what the Army would be really worried about wouldn’t be recovering us, but the contents of our hope chest.” \textit{Ibid.} 110. By 1947, Lilienthal had become appalled at the “hysteria” that threatened freedoms: “we should have a group of distinguished men study the problem of security in the light of our traditions of civil liberties. ...it is not only civil liberties but our position of leadership in science that could be swept away by a wild nightmare of fear leading to drastic and dumb limitations on scientific men and standards of ‘personal clearance’ that are impossible and that assume that scientists can function behind barb-wire compounds.” \textit{Idem.} 176

The problem continued to escalate. Lilienthal came under attack from Congress in May 1949 because he refused to require the AEC’s fellowship recipients to undergo security clearances and a closed chamber of the Senate resounded with accusations that Lilienthal was giving away scholarship money to Communists or those who “had leanings.” Lilienthal didn’t back down “Seemed to me an important principle was at stake, the extension further of this awful dossier system, beyond any necessity or security justification.” \textit{Idem.} 529.
The crucial battle, however, that Lilienthal was so soon to lose was one he did not want to fight at all. It was not lack of courage that deterred Lilienthal. Never one to shirk a stand-off, Lilienthal had successfully built and later championed the TVA against all critics, and had triumphed repeatedly against unwarranted attacks as Chairman of the infant AEC. Business records, documentation, and uncontrovertable testimony had generally been enough, especially combined with Lilienthal’s uncompromising penchant for standing his ground, to prove the legitimacy of TVA management practices or to stave off congressional bloodhounds looking for communists who had repeatedly tried to tree the AEC. Those older problems centered on accountability or legal right; they could be concretely charted, mapped, audited, analyzed, and justified. To address his critics, he had opened the books of the TVA and backed up his defense of his AEC with reams of documentation—to answer the H-bomb question, however, he would reluctantly have to bare his soul. On November 1, 1949, he told Dean Acheson that it was “essentially a question of foreign policy for [Acheson] and the President.”

By the time Lilienthal went to Acheson hoping to avoid participating in the decision, he had already spent a month pondering the H-bomb. In early October, Lewis Strauss, one of the more contentious members of the AEC, proposed that the Commission

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106 In his journal, Lilienthal defined courage: “What is it? Isn’t it the capacity to hang on? I have thought of it... as something active, a positive action of some sort. There’s a good deal of comment these days about my standing up to bullies and hatchetmen, and the editorial writers and commentators and the writers of letters to me use that word ‘courage.’ If it should be applied to this thing, then all it means is just that quality of hanging on, of not giving up no matter what.” March 15, 1947. Diaries, 160

107 Ibid., 583.
“make an intensive effort to get ahead with the ‘Super.’”

Lilienthal invited the General Advisory Committee, and its Chairman Oppenheimer, to present a military, technical, and operational analysis to the Commission. Both committees met on the last weekend in October, and Lilienthal’s journal reflects that the only ambiguity was on behalf of the military, which seemed to have been “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 launched difficult questions toward the General

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108 Ibid., 580. See also Dean’s self- and Strauss-serving January 27, 1950 memorandum entitled “Sequence of events leading to the decision on the ‘super’ bomb.” US DOE Archives, 326 Atomic Energy commission; Collection 1947-51 Secretariat, Box 4942, Folder 471.6 (10-5-49) Sec. 1.

Lilienthal found Strauss not a little disagreeable, but even, sometimes, despotic. When Strauss sided with his Congressional ally Bourke Hickenlooper against cooperation (and maintenance of the long-standing agreement) with the UK on atomic material and development in September, Lilienthal was not surprised at the natural British assertion of their “pride and pace in the world” against Strauss’ and Hickenlooper’s “pecking away at technical cooperation...a shameful record of the tyranny of a tiny minority.” Lilienthal, Diaries, 575. Strauss was joined in his opposition by Leslie Groves, Acheson, Present at the Creation, 314. A special Committee of the National Security Council later recommended full cooperation. Idem. 315.

As Chairman of the AEC, Strauss became embroiled in controversy in 1954 over the unfortunate “Lucky Dragon” incident where fallout from a March 1 hydrogen bomb sickened Japanese fishermen and caused such high levels of radioactivity that a large portion of the ‘catch’ from fishermen in the Pacific during that time were destroyed. Strauss initially denied the incident and when presented with evidence of the very sick crew, decided that “chemical activity of the converted material in the coral” was the cause rather than their exposure to high levels of radioactive fallout. Hacker, Elements of Controversy, 150.

109 This was a tall order since the Committee planned to meet again on the last weekend in October. 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?” US DOE Archives, 326 Atomic Energy Commission; Collection 1947-51 Secretariat, Box 4942, Folder 471.6 (10-5-49) Sec. 1.

110 Lilienthal, Diaries, 580.
Bradley. He, though, was unable to answer whether the United States would attack Russia if London would suffer the reprisal, suggesting only that he believed the "Super" would offer a "psychological" edge. Enrico Fermi believed that the nation should go ahead and develop the weapon, but he qualified his approval, recommending that the government consider later (and more carefully) whether to use it. The others shared opinions obviously honed long before the meeting began. Some, including James B. Conant\(^{112}\) ("translucent, so gray") and Hartley Rowe, believed a refusal to recommend the development of the H-bomb might somehow rectify past sins: "We built one Frankenstein."\(^{113}\)

When the GAC submitted their written report, no member of the Committee was willing to step out and recommend the H-bomb's development. Among their reasons, one seems to reflect a measure of contrition, if not downright guilt, over A-bomb technology. Their refusal addressed primarily the "grave contamination" problems involved, but they also noted that the proposed weapon promised too much devastation and that its cost could not accurately be determined. Most interesting, however, is that the GAC would not approve the weapon because there was "no foreseeable non-military application."\(^{114}\) Given the rigor with which the nation's leaders, particularly scientists, sought to assuage


\(^{112}\) Former President of Harvard University (Acheson, 152) and friend of the Manhattan Project's Leslie Groves (Lilienthal, 82). Conant also served on a board known as the Interim Committee during the war that helped formulate the bomb's development and use, and played a major role in urging Truman to combat the postwar bomb debate. See also Stimson, *On Active Service*, and Lifton, *Hiroshima*.

\(^{113}\) Lilienthal, *Diaries*, 581.

\(^{114}\) See Gordon Dean's summary, US DOE Archives, 326 U.S. AEC, RG Commission, Collection 1947-51 Secretariat, Box 4942, Folder 471.6 (10-5-49) Sec. 1.
their burdened consciences after Hiroshima and Nagasake, this segment of their explanation seems to leave no doubt that endeavors toward alternative, peacetime uses of atomic energy soothed their souls enough that they considered it an essential condition for the development of an even greater weapon.\textsuperscript{115} In addition, two physicists (Fermi and Rabi) thought that consideration of the H-bomb might serve a beneficial, auxiliary purpose and that the Russians, presented with the threat of possible US development, might agree to a joint non-development agreement.\textsuperscript{116}

Given the highly personal nature of any decision to proceed with the H-bomb, Lilienthal abandoned any search for a unified decision, urging "individual" answers.\textsuperscript{117} During the Sunday afternoon session, the Commission learned that groups of scientists at Los Alamos and Berkeley were "drooling" and "bloodthirsty," and that E.O. Lawrence had already decided that there was "nothing to think over." It is impossible to say whether the images of atomic scientists actually savoring the possibility of an H-Bomb while others dreaded its very mention altered the final outcome, but the Commission did not hesitate to vote against further development. The vote was not as unanimous as it might have appeared (or as Lilienthal hoped it would appear)—six AEC Commission members voted against the H-bomb, and two half-heartedly made concessions to the majority view. Lewis

\textsuperscript{115} Certainly, military historians (and others) might disagree with this analysis; however, it seems unreasonable to assume an opposite theory (absent evidence) that military weapons are considered in light of some potential peacetime applications.

\textsuperscript{116} Dean's summary, US DOE Archives, 326 U.S. AEC, RG Commission, Collection 1947-51 Secretariat, Box 4942, Folder 471.6 (10-5-49) Sec. 1, 3.

\textsuperscript{117} See, for example, Lilienthal's 1947 comment that "There have been matters on which we did not agree but which I kept plugging and pushing and polishing around sometimes over a period of several weeks until an answer agreeable to everybody developed...it is sometimes a very strenuous thing to manage, but it is worth all the work that goes into it and is a record from which I get very great satisfaction." Lilienthal, Dairies, 177.
Strauss and Gordon Dean alone refused an unconditional recommendation against
development.\footnote{Ibid., 582.}

Strauss had posed ever-increasing (and ever-disturbing) problems for Lilienthal, and although they had been together on the committee since its inception, the early friendly and respectful relationship between the two had become strained. "Lewis has made it almost impossible to enjoy the Commission as a family, as we did when we started out, something I worked hard to develop."\footnote{Ibid., 459-461.} Lilienthal was accustomed to disagreement among the members of the Committee, but those disagreements remained, at Lilienthal's insistence, a private matter between committee members. Lilienthal and the committee members had in the past presented a united front to the public and the President, rendering decisions based upon majority vote. In the year leading up to the H-Bomb decision, however, Strauss had begun to violate the sanctity of the AEC family. With a Republican

\footnote{Ibid., 568.}

\footnote{Ibid., 568.}
Congress aiming at the Truman administration, Strauss seemed determined to put the AEC in the crosshairs, and adroitly curried favor from Congress by criticizing the Commission and its members and sidestepping the Committee, complaining directly to the president or his immediate advisors.

Strauss' underhanded behavior was no secret, and it became a topic of discussion in the hallways of the White House when the president decided (upon Acheson’s recommendation) that the news of the Soviet detonation be kept secret, even from Congress. Though the Joint Chiefs of Staff, the AEC, and Truman’s Defense Secretary Johnson thought that the President should make an immediate public announcement, they also agreed that the decision was the president’s to make. As Lilienthal and Admiral Souers discussed the President’s refusal, Souers asked: “. . .what about Lewis. . .will he feel bound to report this to Republican members?” At that time, Lilienthal still had some faith in Strauss, for he assured Souers that although Lewis agreed with the majority of them, Strauss would not betray (at least this) confidence. Having known Strauss for a number of years, Lilienthal was fairly certain that he could, with a fair degree of accuracy, predict Strauss’ reactions—he was less sure of the Commission’s other dissenter, Gordon Dean.

Dean wasted no time in validating Lilienthal’s original reluctance to see him join the Committee. Lilienthal had opposed Dean’s 1949 appointment to the Committee because of his relative inexperience and because it appeared that his only qualification was

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120 Lilienthal, 573. Oppenheimer saw only one good thing in the detonation of a Soviet weapon; and that only if the President would announce it immediately—namely, a “chance to end the miasma of secrecy—holding a secret when there is no secret.” Idem., 572
the administration's desire to capitalize upon a political appointee. Although Lilienthal was (at the time) assured otherwise, it became clear that Dean supported only Strauss and and the Republican militaristic viewpoint. Dean's sponsor, Senator Brien McMahon of Connecticut had disturbed Lilienthal with his announcement that the United States should "blow [the Russians] off the face of the earth, quick, before they do the same to us--and we haven't much time." Clearly, a decision to develop the H-Bomb suited Senator McMahon. Lilienthal knew that his, and others', opposition to the further development of the "super" was in serious jeopardy.

Lilienthal feared the results of a rushed decision. When he reported to Acheson on November 1, he presented the Committee's preliminary opposition and stressed that since the Joint Committee was "steamed up" on the subject, due consideration might be neglected in favor of a quick decision. By mid-November, the committee was openly divided with Dean and Strauss in the minority. Dean decided that he could not "go along with the GAC recommendation . . . to forego the development of the weapon and to announce that fact publicly" and in an undated memorandum (but catalogued in the archives as January 27, 1950) stressed the importance he and Strauss had placed upon not only the development of the H-bomb, but a complete conjunctional reevaluation and overhaul of the military.

By January 31, 1950, contemplation of the worst possible scenario had overridden all objections to the development of the "super" and the Special Committee of the

121 Ibid., 584.
122 Ibid., 583.
123 Dean Memorandum; US DOE Archives, Record Group 326 US Atomic Energy Commission; Collection 1947-51 Secretariat; Box 4942; Folder 4716 (10-5-49) Sec. 1.
National Security Council, Acheson, Lilienthal and Johnson delivered their official report to the president that recommended the development of the H-bomb. And all due speed, as Lilienthal had feared, drove not only the decision, but its implementation. Attachments from the Department of Defense and the Atomic Energy Commission addressed some of the concerns of the detractors, but the report suggested that the President direct the AEC to determine the "technical feasibility" of the H-bomb concurrent with the military development of "ordinance" and "carriers." Also, that the Secretaries of State and Defense re-evaluate "strategic plans" in accordance with the addition of an H-bomb to the nation's armory—a reevaluation Acheson had already instigated. Finally, the report confirms that the president's closest advisors, particularly Acheson, had foresworn probability in favor of possibility. The report admitted that there was evidence that the USSR did not want an escalation of hostility and that it would not use atomic weapons without the first use by the United States, but warned,

we cannot safely assume, however, that these hypotheses are correct. Even if they are correct, it cannot be assumed that the Soviet Union would forego development of this weapon any more than she has been willing to forego the development of the fission bomb.*

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124 "Development of Thermonuclear Weapon" US DOE Archives RG 326 US Atomic Energy Commission, Collection 1947-51 Secretariat, Box 4942, Folder 471.6 (10-5-49) Sec. 1. Researchers are denied a complete review of the report since some sections remain under restriction despite a conditional declassification in 1987.

For a similar treatment of the decision to use the H-Bomb, see James Chace, *Acheson*, 229-236. Though Chace’s treatment documents handily the problems between Acheson and anti-communists in Congress, he does not link those two events with the decision to go ahead with the H-bomb, though he does include Acheson’s remark that seems to reflect Acheson’s concern for Truman (politically) since Acheson could not “see how any President could survive a policy of not making the H-bomb.” *Idem.*

This is, however, only part of the report delivered to President Truman. The attachment of the AEC’s conclusions also emphasized “possibilities,” and ones which were, perhaps, even more dire than the Soviet threat Acheson feared.

The theoretical analysis of the AEC’s scientific “Staff Report” provides the chilling chain of unknowns upon which the development of the H-bomb proceeded. The scientists estimated that an H-bomb had a “better than even chance of being technically feasible” if the nation made an immediate investment of 150 to 200 million dollars in construction and materials. While they ventured a guess as the the feasibility of the bomb itself and its initial cost, they refrained from announcing any odds they may have calculated as to the weapon’s effects; namely that with an air burst “the possibility would arise that the blast damage might be limited by part of the atmosphere being blown out” or that the “tremendous quantity of radioactive products could be generated and might have significant effects on personnel down-wind” or even that “whether neutrons from a small number of Supers, when absorbed in the nitrogen of the atmosphere, could produce enough radioactive carbon-14 to be a general hardship.” In the end, the only possibility that mattered was the chance that the Soviets might develop a thermonuclear weapon.

Exactly when Truman made his final decision is unclear, but he did not wait until he received the official, written, report from his Special Committee. Within seven minutes of receiving the Committee’s report he ordered the bomb’s development asking only, “Can the Russians do it?” When Acheson, Lilienthal, Johnson and the Executive Secretary of

\[^{126}\text{Ibid. B-1, B-2. Though this last statement is qualified by a distinction between the number of supers detonated and whether their individual energy release was equivalent to ten million tons of TNT or forty million tons of TNT.}^\]
the NSC all nodded their heads, he signed the statement approving the recommendations of the Committee. The decision to proceed with the development, of course, was not a decision to actually use the weapon, and Truman stressed this when Lilienthal’s lonely voice argued against its development. The president told him that he believed that United States should never “use these weapons.” That conviction did not outlive his term.

Truman eventually did consider the use of atomic weapons, and NSC 68 played a role in his change of heart. The plan remains a contentious topic among historians, but whether it is recognized as an example of anticipatory genius or as a self-fulfilling prophesy, it seems clear that it played a significant role in the direction of foreign (and domestic) policy. By April, 1950, Nitze had finished NSC 68, and although it received the support of the Pentagon, State Department, the CIA and the president’s staff, Truman refused endorsement based upon its enormous cost. NSC 68 called for a military buildup estimated at $50 billion, but Truman insisted that the line be held at $13.5 billion. In

127 See Chace, *Acheson*, 234. Acheson himself explained that although he was sympathetic to the objections raised by Lilienthal and Conant (and other members of the GAC), his individual participation as limited by Truman’s request that the committee deliver a decision on one question—Whether or not to develop the hydrogen bomb—and those other objections could not play a role in his decision. Although he cited other justifications, the role of a statesman compared to that of a citizen, etc., the almost apologetic emphasis he himself and his biographers place upon Acheson’s steadfast obedience to Truman’s directive is simply not persuasive.

Acheson had enormous influence within the Truman administration and had, on other issues, managed quite easily to get his own way even if it differed from Truman’s original conception; e.g., intervention in Greece and later, the massive increases in the defense budget. There seems to be no reason why he could not have here, except that he was, himself from the beginning committed to the expansion of atomic weapons.

128 McCullough, *Truman*, 763. Numerous caveats along this same line pepper the AEC and Defense addendums to the official report.
June, with the invasion of South Korea, he changed his mind. By September, Truman ordered the full implementation of NSC 68, and by 1952, Truman had adopted a chillingly cavalier attitude with regard to atomic weapons:

> It seems to me that the proper approach now would be an ultimatum with a 10-day expiration limit, informing Moscow that we intend to blockade the China coast from the Korean border to Indochina, and that we intend to destroy every military base in Manchuria by means now in our control—and if there is further interference we shall eliminate any ports or cities necessary to accomplish our purposes.

This means all-out war. It means that Moscow, St. Peatersburg, Mukden, Vladavostok, Peking, Shanghai, Port Arthur, Darien, Odessa, Stalingrad and every manufacturing plant in China and the Soviet Union will be eliminated.

Truman’s frightening proposal resulted from nearly a decade of aggression, stalemate and fear. Its morality and strategy was rooted in the militarism that permeated postwar American and conformed with NSC 68. Prior to its acceptance and implementation, many had attempted to justify the development of atomic weapons with a promise of peaceful utility. That desire to reconcile oneself with the heinous reality of atomic weapons may, perhaps, have resulted from a sympathetic reaction toward the victims of Hiroshima and Nagasake, and a growing fear that American itself might someday be targeted for destruction. Acheson’s State Department and National Security Council under Nitze managed, however, to create a new contextual reality for US

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129 Interestingly, although the CIA predicted in March that an invasion would be launched in June, “it came as a complete surprise to Washington.” Walker, The Cold War, 72-73.

130 May, American Cold War Strategy, 204.


132 William R. Lawrence (the reporter chosen to cover the Manhattan project) wrote in a 1948 article that atomic energy held enormous potential for a “promised land...flowing with milk and honey.” Hilgartner, Bell, O’Connor, Nukespeak, 39.
policymakers. The dehumanization of communists and the inherent evil of communist tradition negated any immorality or indecency that might have previously been attached to annihilation. NSC 68 thus intensified the development of anti-communist ideology and the progression of atomic weapons development.

Though the influence of national policy upon atomic science and scientists is discussed later, it will be useful to here consider the influence of NSC 68 upon scientists. After the war, scientists pursued their profession under governmental authority, and that authority became increasingly oppressive and burdensome with NSC 68. There were certainly a number of reasons for the well-documented persecution of Oppenheimer, but at least one reason pertains to NSC 68. After all, the document was stimulated by the consideration of a thermonuclear weapon in the shadow of a Soviet atomic weapons test. The suggestions for atomic weapons development contained within NSC 68 placed scientists at the core of national security and they became increasingly instrumental as the government implemented Nitze’s recommendations. A policy based upon fear—articulated, accepted, and solidified within the federal system under the auspices of “national security”—clearly compromised the scientists it depended upon. Nitze characterized the Kremlin’s relationship with its citizens as one based upon “universal suspicion, fear, and denunciation,” but that same statement seems to also characterize the treatment of US scientists which, whether by design or dereliction, increased after NSC 68 and was far removed from Kennan’s hopes for success through democratic example.

133 NSC 68 (V)(a).
It may be argued, of course, that my emphasis upon the internal dynamics of the National Security Council and its advisors is wrong—that the entrenchment of fear within the executive’s highest advisory arm, and the increasing focus upon an ever-more-demonized enemy was caused by external forces and that the shifting ideological characteristics of the early postwar period were understandable and legitimate reactions to increased danger. There is, certainly, ample evidence that transitional international situations—the fall of China, the Soviet’s demonstration of atomic capability, and the Korean War—legitimately risked US interests and consequently necessitated the shifting of priorities. It is, as Dr. Eisenbud explained to his colleagues in 1956, “very complicated” and a definitive solution as to whether external or internal forces exerted more pressure upon national philosophical transitions may remain forever just out of reach. It is reasonable, though, to suggest also that shifts in the *personalities*, and the different perceptions that those men brought to the table caused or contributed to shifts in policy.

In this chapter I have tried to demonstrate that domestic realities, together with the internal structure and philosophies of the president’s advisors played a significant, if not primary, role in the development of US policy toward the Soviet Union during the early years of the cold war. The experiences of World War II shaped the National Security Council, and the institutionalization of those experiences shaped aggressive anti-communist attitudes, the progression of atomic and thermonuclear weapons development, and eventually resulted in the silencing of moderate voices within the executive branch. In
the next, this study will begin an analysis of the nations atomic testing program by looking at its conception— the Manhattan Project.
CHAPTER III

THE MANHATTAN ENGINEER DISTRICT

"Surely some revelation is at hand
Surely the Second Coming is at hand
The Second Coming?
—William Butler Yeats

"Trinity" reached its apogee on July 16, 1945, in a place the Spanish had, for the own particular reasons yet so unknowingly apt for ours, called the Jornada del Muerto, the Journey of Death. The conflagration that represented years of work went unseen by most of the scientists—only one refused to follow the orders to wear dark glasses and lay face down.¹ Twenty-seven-year old physicist Richard Feynman protected his eyesight from ultraviolet rays behind a car windshield, then witnessed:

this tremendous flash out there is so bright...and I see this white light changing into yellow and then into orange. Clouds form and disappear again—from the compression and expansion of the shock wave—finally a big ball of orange that starts to rise and billow a little bit and get a little black around the edges, and then you see it's

¹ The scientists were twenty miles away from the shot tower and given welding glasses and ordered to lie face down with their feet toward the bomb. Edward Teller took the extra precautions of gloves and sunscreen. James Gleick, Genius: the Life and Science of Richard Feynman (Pantheon Books: New York: 1992) 153-154. Fourteen years later while promoting a hydrogen bomb cratering experiment in Alaska, Teller had apparently become less cautious about radiation and fallout, telling the University of Alaska’s 1959 graduating class that “fallout...carefully controlled by the work of many conscientious people...contributes to radiation less than the wristwatch.” Dan O’Neill, The Firecracker Boys (New York: St. Martin’s Griffin, 1994) 90.
a big ball of smoke with flashes on the inside of the fire going out, the heat.\cite{2}

As the cloud drifted up and out in the pre-dawn hours of July 16, 1945, the rest of the scientists finally peeked—some stood in awe, some worked—Enrico Fermi calculated the pressure of the explosion by dropping bits of paper—and some may have prayed.\cite{3}

If one believes the later tales, the physicists conjured a splendid pantheon to join the remnants of Trinity that would have filled, one might imagine, the very cosmos. Some called upon their western God, at least one called upon the titan Prometheus, Oppenheimer invoked the Hindu’s Death—destroyer of worlds. Feynman?—he danced.\cite{4}

And why not? The bomb was not yet a symbol of destruction, but of victory.\cite{5}

They had teased life into an abstract theory and their brainchild rose at least 50,000

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\begin{itemize}
  \item Feynman, *Surely you’re joking Mr. Feynman!* (New York: W.W. Norton: 1985) 134.
  \item Fermi was so absorbed in this task that he could not recall hearing the bomb. Laura Fermi, *Atoms in the Family* (University of Chicago Press, Chicago: 1954), 239.
  \item James Gleick, *Genius*, 154-155.
  \item I remain unconvinced by retrospective pangs that deny the scientists enjoyed their initial triumph. It was, after, still two weeks before the new weapon would be demonstrated on the human population of Hiroshima. Though the report cannot legitimately be denied, it is certainly difficult to look back and believe the the words one reporter put into the mouths of scientists at Trinity, in a story written after Hiroshima: “‘This is it!’ the scientists whispered. ‘Atomic fission. . .a great new force to be used for good or evil.’” *Arizona Republic*, August 7, 1945, 1.
  \item On a recent television program (April 1, 1999) chronicling the development of the bomb and its use, physicist Philip Morrison asserted that the goal of the Manhattan Project was to prove that the bomb could not be built. “The American Century” American Broadcasting Company. (Morrison sat at the side of Louis Slotin until he died after an accidental radiation overexposure on May 21, 1946 and threatened to expose the real cause of his death “as a symbol of responsibility” when the government tried to suppress the information for fear that it would cause fear of radiation to spread across the nation. The Army re-wrote the release. Lifton, *Hiroshima*, 62.)
\end{itemize}
feet above the New Mexico desert to spread out over three miles of sky. 6 Years of
sharing ideas and frustrations, cutting through the tangles of physical science with
thousands of transitory chalkmarks, long nights thinking, arguing, re-thinking. Against
war’s oppressive clock, they worked first to beat German science, then they worked to
tear through their own boundaries, and they won. So first they partied—got drunk,
sang songs, and, like Feynman, danced. 7 In retrospect, the perfectly spontaneous and

military confines of Los Alamos, Oak Ridge, and Hanford) Leo Szilard in March 1945
sent a memorandum to Roosevelt urging that the bomb not be used without
substantive notice to Japan, and also warning of the dangerousness of a post-war
world of atomic weapons. Roosevelt died before the memorandum reached the
presidency, so he requested a meeting with Truman. He met, instead, with James
Byrnes on May 28, but received nothing but “frustration.” Szilard turned to the
scientists themselves, and sixty-seven signed a petition to Truman that asked the US to
agree not to use the bomb until Japan had been informed of the bomb’s potential and
offered a chance to surrender. Another petition that asked that the US submit a clear
“statement of intent” to the Japanese before use of the bomb generated another eighty-
eight signatures from the Met Lab and Oak Ridge before the Army blocked its further
circulation because it revealed the “state of the progress” on the bomb. Oppenheimer
refused to allow the circulation of the petition at Los Alamos because “he doubted the
right of scientists to influence political decisions.” It is not known whether Truman
ever saw the petitions. Powaski, March to Armageddon, 17-18. Another petition,
discouraged but not snuffed out by Oppenheimer asked for a “demonstration” use of
the bomb at some unpopulated location. U.S. News & World Report, “Brotherhood of
the Bomb: Two Flinty Physicists Struggle over their Terrifying Legacy,” August 17,

Whether Oppenheimer’s opinion about the “right” of scientists to affect political
decisions is correct or not, it is clear that they had not power to do so, at least after
scientists managed to develop the bomb. Ironically, when the tables were turned,
many politicians did not hesitate to exert their “right” to influence science and
scientists, particularly Oppenheimer. See note 5, Chapter Two, supra.

6 Letter from Colonel Stafford L. Warren, Chief of Medical Section, Manhattan
District to Major General Groves, July 21, 1945, Top Secret Correspondence of the
Manhattan Engineer District 1942-1946, National Archives Microfilm Publication
M1109 [hereinafter TSCMED]. The “reported” cloud height was less than the
“official”—the Albuquerque Journal reported the cloud’s height at 40,000 feet, August
7, 1945, 1; and The New York Times August 7, 1945, 1.

7 Feynman remembers only one man who did not share in the “parties” and excitement.
Bob Wilson, the man who had recruited Feynman for the Los Alamos project: “It’s a
communal celebration seems oddly out of place, a normal and a particularly usual occurrence within the otherwise particularly unusual Manhattan Project.

There was, certainly, no lack of the unusual, the peculiar, or the simply mystifying within the range of physical complexes and mental complexities that we now call the Manhattan Project. The fascinating story has been told and retold—with the suspense of a Hitchcock thriller, enough loyalist heroes to inspire Kipling, and the pathos of a Euripidean tragedy—it remains, year after year, a "hit." Revisionists might even consider broadening the audience and investigate more thoroughly ingenuity of a different sort and look into the brothel that thrived, for a time, in the women's dormitory at Los Alamos.\(^8\) The widespread fascination with Manhattan indeed stems from the fact that it all seems so extraordinary: a handful of people made decisions and directed the building of three huge facilities that employed tens of thousands of people and funded the bomb with $1.9 billion taxpayer dollars, all while managing to keep the whole business mum from 1942 until Hiroshima. Like those many people whose demand for news caused the *Santa Fe New Mexican* to burn up its presses with a first terrible thing that we made.' I said, 'But you started it. You got us into it.' You see, what happened to me—what 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, it's 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." Feynman, *Surely You're Joking*, 135-136.

\(^8\) When the Army learned that scientists were not spending all their time on "approved" physical science, they stationed shifts of MP's around the perimeter. The scientists signed a protest and picketed. Gleick, *Genius*, 193.
run, I am also intrigued by the details of the project but would here suggest that one
interesting and very important feature of the whole story is almost always overlooked.

The very physical isolation of the facilities from American society seems to
have inspired the decontextualization of the Manhattan Project itself, and many,
historians included, seem remarkably content to view its features (with the exception
of the bomb, of course) finitely. It is as if the whole splendid and sordid business took
place in some other dimension, occurring in isolation with a beginning, a middle, and
an end. There are at least two factors that have played a role in the relegation of the
Manhattan Project to its own special place and time: human nature and the
government. Perhaps primarily (because it is, after all, customary) categorization
seems to be a fundamental feature of the assimilation of knowledge; it is simply
convenient for humans to impose periodization for understanding and explanation.
The government, itself, though, also must take a good share of the blame, for the
information it released and the headlines that appeared led people to believe (if only
for a time) that the magnificent deception had ended: “Atomic Bomb Held ‘Best-Kept
Secret’” and “Now They Can Be Told Aloud, Those Stoories [sic] of ‘the Hill’.”
The project delivered enough tantalizing detail to both justify its cost and the

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9 After sending a plane to Albuquerque for a new unit, the paper promised its readers a
second edition with a re-run of “all the Los Alamos material.” August 7, 1945, 1.
Mexican, August 6, 1945, 1. The latter an example, perhaps, of one of the pitfalls of
haste.
deception, and somewhere amidst all the headlines, the billion or so dollars, and vaporized metal,\footnote{See, for example, just one page of the Arizona Republic: “Two Billion Spent on Project, Force Vaporizes Metals,” “Bomb Work is Secret to Builders,” and the nearly-miraculous “Flash ‘seen’ by Blind Girl.” 1.} few realized that the project \textit{really} did not end.\footnote{The Corps of Engineers was eager to continue its participation, and on February 2, 1946, K.D. Nichols sent a memorandum to Groves to brief him for a February 4 meeting with General Eisenhower: “In order to avoid disintegration of our research organizations, it is absolutely essential that we make commitments for research for the next fiscal year. . .we should be spending from 20 to 40 million on such research and development work during. . .1947. . .Commitments must be made in the immediate future prior to passage of atomic energy legislation. . .” “Memorandum to Major General L. B. Groves,” 2 February 1946, TSCMED.}  

One must not think about the Manhattan Project as though it was but another “period room” in a museum of Americana between, say, a dust-bowl farmstead and postwar consumerism. Its very purpose was to develop a \textit{new thing}, and to do so quietly, during wartime, required new techniques of governance: secret accounts through which to channel unappropriated funds, private contractual relationships between the government, industries and universities, innovative bargains for raw materials on the international market, manipulation of the media. It changed, too, the relationship between government and science. There was nothing new in using science to fulfil a national goal (it was the scientists, in fact, who approached the government even before the United States entered the war) but with Manhattan Project, scientists were \textit{enlisted}, they became ‘Government Issue’ and their product government property.\footnote{Even as the government ‘used’ the scientists, they (and their families) slept under blankets stamped ‘USED’ A feature that bothered Laura Fermi as long as she believed the blankets were second-hand. She later learned the initials stood for United States Engineer District. Laura Fermi, \textit{Atoms in the Family}, 207.} The government borrowed private industrial methods of research and
development and, not unlike the policies of Bell Laboratories or Proctor & Gamble, claimed sole ownership in the interest, here, of “national security.” It deposited the physics of fission and the science of its radioactive by-products to a vault more sheltered than that which holds the secret formulas for commercial mouthwashes and off-the-shelf puddings; but, obviously, with significantly greater risk and without the controlling effects of a free market—consumers simply did not get an opportunity to decide whether or not to purchase the product. After Manhattan, those scientists in America interested in fission and radiation worked only at the pleasure of the government, or they did not work at all. The nation entered the atomic age on the Project’s path and though the road widened, it stayed there—the behaviors adopted


Frisch wants to visit his parents who are quite old, and at present are refugees in Sweden. We agreed that we did not want to prevent his seeing them, but it would be much better to see them in England or some other country such as Denmark or Norway. Incidentally his Mother is quite badly crippled due to an accident and is unable to travel with ease.

Pontecorvo wants to visit his parents in Italy, who are also quite aged. He is still an Italian but expects to become an English citizen. I told Sir James that I felt the same about him as I do Frisch. I hate to see him go and wish it were possible to do it in some other country, and possibly special precautions would have to be taken to prevent him from making undesirable contacts.

It is important to remember that the scientists were absolutely unable to travel during the war, and this was probably their first chance to visit their respective parents.

“Notes taken after meeting between Sir James Chadwick and Gen. Groves on 1 April 1946” TSCMED.
during wartime constituted a massive, and lasting, shift in the relationships between the government, scientists, and people.

The purpose of this chapter, then, is not to ignore the "unusual" that so infiltrated the entire Manhattan Project, but to look carefully at those extraordinary features that were so useful they became "usual" and commonplace as atomic weapons development continued.\(^1^5\) Two features in particular, an overwhelming investment in secrecy and an equally intensive military objective, permeated the Manhattan Project and saddled atomic experimentation with the baggage it would carry for decades. As will become clear, the government continued, throughout the testing program, to use these two features to carve for itself an extraconstitutional, and nearly unassailable, block of authority and isolate it from the legitimate interests and rights of citizens. This is not to say that at the beginning of the Manhattan Project secrecy and/or military objectives were envisioned as though they would offer some later panacea against opposition. An example from the waning hours of the war, though, reflects that by then, at least, these principles had become entrenched.

After the bombing of Nagasaki on August 9, 1945, the War Department released to newspapers and radio commentators the Smyth Report: "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" prepared

\(^{15}\) I am convinced that Bourdieu's observation that these practices become 'natural' makes them decidedly more dangerous, particularly in the realm of atomic testing: "It is because subjects do not, strictly speaking, know what they are doing that what they do has more meaning than they know." Habitus causes practices "to be none the less 'sensible' and 'reasonable'". Pierre Bourdieu, *Outline of a Theory of Practice*, trans., Richard Nice (Cambridge; New York, NY: Cambridge University Press) 79.
by Manhattan consultant and Chairman of the Department of Physics at Princeton, H.D. Smyth. The cover sheet on the document offered standard requirements of release ("after 9:00 P.M. EWT, Saturday, August 11, 1945" for radio, and the day following for "morning papers") but added a new caveat:

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.\(^{16}\)

A month later, perhaps because of violations or complaints, the president (through the War Department) reiterated the directive and added a palliative note that the action was "in the national interest and not with any idea of imposing censorship upon the press or radio." In addition, it was prominently marked "CONFIDENTIAL—NOT FOR PUBLICATION NOTE TO EDITORS."\(^{17}\) So, the government confidently and quite boldly (and publicly, since it was addressed to editors) declared, through the

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\(^{16}\) Emphasis mine. "Future Release" TSCMED, [undated]. Since the entire statement cannot be reproduced here, it is important to note that the statement (directive) was not distinguished in any way, even though other elements of the release were underlined or placed in all capitals for emphasis, this sentence appeared almost inconspicuous as the second-to-the-last paragraph of a one-page cover sheet.

On July 26, 1945, Groves issued a memorandum revising the "public relations program for the Manhattan Engineer District." In two and one-half pages, Groves established parameters for publication that placed himself at the top of a pyramidal regime covering all aspects of "the principle" — atomic science. Even the change itself, as Groves envisioned it at the time, was to remain secret: "Its contents and existence will only be disclosed to those whose part in the program necessitate action."

"Memorandum to The District Engineer from Major General Groves" July 26, 1945. TSCMED.

\(^{17}\) September 14, 1945, TSCMED. Significantly, on August 14, 1945 the Office of Censorship had issued a press release that stated "Censorship of news. . .will end one hour after President Truman announces victory over Japan." Arizona Republic, 1.
authority of the War Department and the president, that the public was not supposed to know.

There are two reasons, one obvious and the other less so, why the government decided to advertise its power: its privilege and right to continued secrecy. The immediately apparent and immensely practical explanation for the shroud of secrecy was to prevent an external enemy (at that time, any other non-democratic, non-allied, even non-American nation) from developing a similar weapon. Less evident, but I suggest nonetheless crucial, was the necessity for the government to re-establish sovereignty potentially threatened by the anticipated breakdown of consensus following the war and also by the divisive effects of an ever-broadening moral cum political dilemma that radiated from the bomb's use. There seems to have been little popular agreement except for relief that the war was over, and even as some recognized the devastation (both atomic and conventional) of Japan as a just retribution, others delved into a more fundamental questioning of society. The New York Herald Tribune powerfully encapsulated their thoughts: "One forgets the effect on Japan as one senses the foundations of one's own universe trembling."18 Important, too, to remember that divisiveness was not confined to the faceless, even anonymous public, but from within government itself. The "cacophony" arose from within government before it spread without, and as Michael Sherry has pointed out,

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18 Sherry, In the Shadow of War, 115. For an extremely lucid analysis of reactions, the government's attempts to stifle such reaction, and the psychological burden that created, see Robert Jay Lifton and Greg Mitchell, Hiroshima in America, passim.
military figures such as Marshall, Eisenhower, and Admiral Leahy had objected to the bomb's use against Japan, as did some of the weapon's creators, led by Leo Szilard.  

The War Department's directive constitutes a virtual assertion of state sovereignty to stimulate domestic consolidation. There are, of course, many ways that the state can exert its influence upon its citizen body, but this particular expression of state sovereignty is best understood with reference to Bourdieu's analyses of state-sponsored juridical dispute resolution. It is now, as it undoubtedly was then, difficult to assess the potential influence of voices that posed very fundamental, moral questions; but, it is also impossible to ignore that those elements of dissension amounted to a "confrontation" and that the "cognitive and evaluative aspects" of disagreement could not be easily, or readily, resolved through the democratic process. 

In the same way that the state uses its authority, grounded in its "monopoly of legitimized symbolic violence" to lend validity to the decisions of a judge, it also protected itself with a "quintessential form of authorized, public, official speech which

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19 Sherry, In the Shadow of War, 114-115
20 Power is, of course, an intoxicating topic for theorists (and others) and by choosing Bourdieu, I certainly do not mean to discount those many analysts who have sprinkled their insight throughout the decades. Foucault's explorations along these lines are particularly attractive, insisting, as they do, upon the recognition of the relational aspects of sovereignty; and, certainly the field of power relations is much broader than the state, reliant upon a "conditioning-conditioned relationship to a kind of 'meta-power' which is structured essentially round a certain number of great prohibitive functions. . [which] can only take hold and secure its footing where it is rooted in a whole series of multiple and indefinite power relations that supply the necessary basis for the great negative forms of power." Bourdieu's treatment, however, of both the legitimacy (as legally proscribed and socially authorized) of the state and his exploration of *habitus* as a structure through which power is both expressed and realized, encapsulates more succinctly and comprehensively the issues here raised. Michel Foucault "Truth and Power" in Power/Knowledge Colin Gordon, ed., (Pantheon Books, New York: 1980) 122-123.
is spoken in the name of and to everyone." By reasserting its power over atomic
secrecy, the government sought consensus:

These performative utterances, substantive—as opposed to
procedural—decisions publicly formulated by authorized agents
acting on behalf of the collectivity, are magical acts which succeed
because they have the power to make themselves universally
recognized. They thus succeed in creating a situation in which no
one can refuse or ignore the point of view, the vision, which they
impose.21

Had the government's intention been strictly to assure the secret nature of atomic
science, it is likely that it could have simply continued the elaborate, though expensive,
deception that so characterized the Manhattan Project. True, everyone would still
know about the bomb, but development and manufacturing could have progressed
relatively unseen. To do so, though, would only have solved (for a time) the dangers
inherently possible with enemy possession of the weapon. I propose that the
government's proclamation of its intention to maintain secrecy had an alternative use,
that is the suppression of dissent through the creation of a singular "vision" through an
expression and reinforcement of state sovereignty.22 The directive marks a turning
point in postwar America, and is thus worthy of exploration. I will argue that the

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22 It is important neither to ignore, nor sublimate, habitus as an element of the acceptance of governmental authority to restrict information and define perception, particularly since the government's dictum followed so close on the heels of wartime media regulation: "The habitus, a product of history, produces individual and collective practices--more history--in accordance with the schemes generated by history. It ensures the active presence of past experiences, which, deposited in each organism in the form of schemes of perception, thought and action, 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.
statement should be taken apart, unpacked, to illustrate three features of the statement
that inscribe it with far more meaning than might be immediately apparent; namely, the
indisputable authority of its source(s), its revolutionary intent, and the degree of
permanence it demanded, and, as will be shown, achieved.

First of all, the directives came from the War Department and the president,
two indisputably potent instruments of government. From the perhaps unwelcome
"Greetings. . ." to the certainly dreaded "We regret to inform you. . ." it might be
assumed that neither letters, telegrams, nor statements from the War Department
lacked import and that none were received casually. Any violation of a War
Department directive carried the potential for, at the very least, a censure of
investigation, and at the utmost, charges of treason. Admittedly, the War Department
controlled all information during the war, and the media had become accustomed to its
dispatches and restrictions;23 certainly, too, special circumstances distinguished atomic
development. Some individuals must have violated the War Department’s first
request or it would have been unnecessary for the president to reinforce it a month
later, but whether any editor, reporter, radio programmer or personality noticed that
this directive threatened complete postwar control (and though denied, censorship) by
the US government of all atomic information cannot now be known. There is no

23 The Office of Censorship played the major role, and the US “press and radio has
submitted to voluntary censorship during the war.” Arizona Republic, August 15,
1945, 1
doubt, however, that the 1945 threat became a promise—a clear violation, many would later argue, of the First Amendment.²⁴

²⁴ The questions surrounding censorship and media control by the government are far more complex than might, at first, seem to be the case and eventually devolve into a wide range of issues, from judicial control, e.g. issues of national security (the ‘clear and present danger test’ of Schenk v. US; voluntary media collaboration with government policy that, at some levels, borders on conspiracy to orchestrated administrative control. James Aronson, The Press and the Cold War (New York, NY: The Monthly Press, 1970, 1990). Though there is no question that governments control information in their own bests interests (a dynamic articulated by Weber early in this century) Barry Karl’s brief discussion is a cogent reminder that the relationship between the government and the media is a negotiation—a conversation between the government and the media that is susceptible from both directions, to transformation: “Franklin Roosevelt’s use of the intimately private press conference opened channels he himself was able to keep pretty well encapsulated by his own purposes, giving newsmen reason to argue with his successors for a greater openness that, in its turn, reached its zenith with the live television conferences pressed unsuccessfully on Eisenhower but initiated by John Kennedy.” See “Visiting the Recent Past” Reviews in American History, March 1990, 137.

Daniel Patrick Moynihan has more recently (and topically) addressed the problems of secrecy as they have affected the US since World War II, and particularly within the realm of atomic development: “The Cold War had come. Americans were used to secrecy during wartime. . . This was wholly new. Profound aspects of the culture, even the nature of energy (the oldest of mysteries), were now to be known by a few but withheld from the rest. In a sense, it was the most primitive of arrangements in the most advanced of societies.” Although articles from 1949 and 1950 on atomic weapons development (“The critical facts about this greatest of all publicly owned enterprises have been withheld. . . public ignorance is the extension of secrecy far beyond the limits of true security.”) that were published in Life stimulated Moynihan’s curiosity and analysis, I see no reason why they are not perfectly applicable to the immediate post-war period when the government began media restrictions pertaining to atomic testing. Secrecy (New Haven, CT; London: Yale University Press, 1998) 141 and passim.

It is not possible to overemphasize the role secrecy played in atomic development. The Atomic Energy Act permitted (but did not mandate because of a last minute alteration) the issuance of the death penalty against those accused of breaching the security provisions of the Act. See the New York Times, that noted that a “late alteration” had been included stating that “even if a jury found such an intent it could recommend clemency or life imprisonment. July 6, 1946, 3.
Remember, too, that it was knowledge that the government withheld. On the one hand, it seems perfectly reasonable to restrict “scientific and technical information” that might allow an enemy to assemble a bomb; on the other, and even at the dawning of the atomic age, the mandate gagged any opposition and rendered whatever national discourse that might perchance develop suppositional and, thus, readily dismissable. In time, this restriction would even prevent the dissemination of information that would have allowed citizens to take simple precautions to reduce the risks of fallout because any information might have benefited an enemy.

Finally, the directive provides a clear indication of the military’s intentions for atomic weapons (and any other conceivable use for atomic science) together with a certainty that the War Department’s authority would extend beyond war’s end, perhaps indefinitely. Did no one at the War Department think about what it meant to claim sole possessory and distributory right to “all scientific and technical information. . .now and for all time in the future”? Did a typist even blink? The questions, of
course, cannot now be answered; but it is important to recognize that even at war’s end, the military did not intend to either relinquish, or even reassess, its atomic monopoly.

The statement did not fade away with the War Department nor meld into memory with the official dissolution of the Manhattan Project. Secrecy and an associative military objective became the framework upon which all future atomic development was built, it became “usual” and its essence scriptural. The Manhattan project sowed the seeds of a culture of atomic governance that has shaped international and domestic relationships since its inception, consuming over $5,400 trillion dollars.26

The remainder of this chapter approaches the isolated world of wartime atomic development as a cultural system.27 In this regard, I have been influenced by the work of the noted anthropologist Clifford Geertz who argues for an analysis of culture that begins with the most elemental features and then moves to an exploration of those same features as they transform, and are transformed, by surrounding society.

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27 For a complete history, I would refer the curious to Peter Bacon Hales’ recent and extremely lucid, thorough, and broad-based account of the project that takes appropriate and overdue notice and appreciation for the thousands of workers who have not yet achieved fame for their participation. *Atomic Spaces* (University of Illinois Press: Urbana and Chicago: 1997).

The reader is warned, however, that Hales’ interpretation of Manhattan’s medical director Stafford Warren is somewhat one-dimensional, for his criticism of Warren is general, though flawed, informed solely by the author’s strict adherance to a negative view of Groves and of medicine within the wartime project. It simply fails to acknowledge positive contributions by Dr. Warren (and other medical personnel) who were undoubtedly influenced by factors other than their profession. Physicians within the Manhattan Project were controlled not only by hippocratic oath, but by the Army.
Accordingly, I have chosen to appropriate, though not duplicate, Geertz’ methods and have explored the isolated world of the Manhattan Project, particularly Los Alamos, by examining the attainments and learned behavior patterns of those individuals who were enveloped for a time at the locus of institutional atomic development. There is certainly no more potent symbol of US power than the mushroom cloud, yet the formulation and articulation of strength represented by that cloud resulted from an assortment of relatively miniscule characteristics of the Manhattan Project— isolation of scientists, military manipulation, and secrecy. The following, then, is an attempt to locate those significant features of the Manhattan Project that emanated, tentaclelike, and transformed the society at large.

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Individual initiative, ability, and personality can shape, and come to characterize, amazingly complex institutions, and the Manhattan Project is an excellent example. It is almost impossible to separate the project itself from its Director, General Leslie Groves, a former Deputy Chief of Construction for the Army Corps of Engineers, whose previous tasks included management of the massive construction

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28 Since this thesis argues that certain patterns and practices became embedded in the atomic testing program, the attributes of cultural features that spread into “ordered...system of families of thought, whence into “partical integration...incongruencies...independencies.” is fundamental. Clifford Geertz, *The Interpretation of Cultures* (Basic Books, New York: 1973), 408.

29 In due deference to Geertz, this is an attempt to sort the “winks from twitches and real winks from mimicked ones.” *The Interpretation of Cultures*, 16.
required by military mobilization and the building on the Pentagon. Groves was appointed in September 1942, less than a year after Roosevelt directed Vannevar Bush of the National Defense Research Committee to proceed with the development of the atomic bomb. Blessed with a blank check (others had to try to find the money) Groves acquired property, supervised construction of facilities, negotiated for raw materiel, chose the renowned physicist Oppenheimer to head up the weapons team, operated his own intelligence service, and bargained with the president, his cabinet, those few members of Congress who knew about the project, and with the associated British "tube alloy" facility.

As impressive as this list of accomplishments is (and certainly he had some help), two others were more important. Groves wove his own intensity into the project and blanketed every feature with military necessity and invented and

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30 Stanley Goldberg "General Groves and the Atomic West" in The Atomic West, ed. Bruce Hevly and John M. Findlay, (University of Washington Press:Seattle, 1998) 41. Goldberg convincingly argues for a transposition of the accepted ideology that the bomb ended the war, asserting that Groves and the War Department had such an investment in the atomic bomb that they made sure the war would not end without it.

The Manhattan Project destroyed Groves' belief in the security of his earlier great accomplishment, the Pentagon. In his report on Trinity among comments about the bomb's effects on a steel tower one-half mile from the detonation: "I no longer consider the Pentagon a safe shelter from such a bomb." TSCMED Groves to Secretary of War, 18 July 1945.

31 By the end of the war, over 485 "creeps" protected all of Groves' secrets and engaged in espionage in the US and abroad. Groves, Now It Can Be Told, (New York, NY: Harper & Brothers, 1962) 139. In this regard, see also the undated typed drafts of memoranda in Groves personal files concerning suspected "Russian agents" and MED's involvement: "All suspects are under continuous surveillance" and another, "Steps are being taken to avoid any draft deferment of Weinberg, Lomanitz, or any other Communists" TSCMED

32 Groves kept a permanent London office staffed with three WACS who reported directly, and only, to him. TSCMED "432 WACS Assigned to Manhattan Project" August 13, 1945.
implemented a method to secure the project’s secrecy: compartmentalization. This system, a task-oriented and multi-dimensional web, so diffused relationships and interconnections between information, people, and product that the bomb-building process became nearly unfathomable without a complete flow chart. As proof of Groves’ faith in both himself and the complex project, he handpicked a reporter to later piece together those selected pieces of the story that would glamorize the project, justify the expense, and keep the secrets secret.

Much of what the public first learned of the Manhattan Project came from the pen of New York Times science reporter William L. Laurence, a man who was conditioned, perhaps, to confront and address the unusual. Like many others on the team, Laurence was not born in the United States but he was, perhaps, the only one who, as a child, was stuffed into a barrel by his mother and smuggled out of Russia. Groves offered Laurence and his editor few details but promised them both the story of a lifetime in exchange for Laurence’s services. When Laurence got his first glimpse

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33 After the war, in testimony favoring the McMahon Act that would minimize the military’s control over atomic energy, Leo Szilard claimed that Groves’ compartmentalization caused an 18-month delay in the bomb’s development, because scientist were unable to put “2 and 2 together.” Weigall, 85. Claus Fuchs, though, figured out enough of Manhattan to shorten the Soviet’s weapon project by about a year. Moynihan, Secrecy, 144. See also Barton Hacker’s comment that secrecy “stood second only to making bombs that worked” and his discussion of how compartmentalization compromised radiation safety. The Dragon’s Tail: Radiation Safety in the Manhattan Project, (University of California Press, Berkeley: 1987) 84 and more generally ch. 4.

34 And also cast Groves himself in a fair and flattering light: “A pleasant-mannered, gracious officer who outwardly never shows the strain and worry of his job. . .a constant source of amazement to his associates and subordinates. . .firm and blunt when the occasion demands, but withal considerate and fair-minded. . .” Press Release [undated] “Major General Leslie R. Groves Directs Vast Project” TSCMED.
of the Oak Ridge facility from a mountaintop, he knew immediately that Groves had not exaggerated—just one building in the vast complex was four stories high and half a mile long. He also became concerned that his editor probably had underestimated the length of time that Laurence would be “out of commission,” so to tease some patience out of his boss, wrote that the story was worth waiting for: “a sort of Second Coming of Christ yarn.”

The Oak Ridge site that so impressed Laurence was just one piece of the enormous, and expensive, Manhattan Engineering District (MED). Covering 57 square miles, the Tennessee facility produced enriched uranium while a second facility in Hanford, Washington, delivered plutonium; a third, at Los Alamos—54,000 acres in with an industrial plant that covered over forty acres of floor space—designed and produced weapons. The expenses of the project, at first, were seriously underestimated. When Groves took over the project, its cost was projected at $100

— Spencer R. Weart, *Nuclear Fear* (Cambridge, MA: Harvard University Press, 1988), 99-100. Groves was initially unimpressed with his new assignment. As Deputy Chief of Construction during the intense mobilization, he had been in charge of almost “one million people... completion about $600 million worth of work each month.” The bomb project was not expected to exceed a budget of $100 million. Groves, *Now It Can Be Told*, 4, 390. See also Martin Sherwin, *A World Destroyed*, 58.

— The project’s original name had been “The Laboratory for the Development of Substitute Materials” or “DSM”, but Groves’ appointment resulted in a change. On August 13, 1942 the project officially became “The Manhattan Engineer District” because of Groves’ fears that the original title might arouse curiosity. Interestingly, and despite Groves’ insistence on the name change, he himself continued to use “DSM” in reference to the project as late as March 1945. See TSCMED Memorandum 6 March 1945, Groves to Secretary of War.

million;\textsuperscript{38} by December 1942, Vannevar Bush wrote the president that a bomb could be delivered by the “first half of 1945” but “the total estimates for a full program reach the serious figure of $400,000,000.”\textsuperscript{39} By 1945, the project’s cost had reached $1.9 billion, excluding $76 million for the modification of 46 B-29 bombers assigned to the Project and 14,700 tons of silver “borrowed” from the Treasury Department.\textsuperscript{40}

Secrecy and a dominant military objective operated in tandem to override seemingly unavoidable safeguards to fund the project. Not one dollar of the $1.9 billion that the Project cost was knowingly appropriated by Congress, and it is at this point where the government began to deceive itself. Roosevelt started the project with funds from a hidden reservoir within the Treasury Department. By December 1942,

\textsuperscript{38} Groves, \textit{Now It Can Be Told}, 4.
\textsuperscript{39} V. Bush to “The President”, December 15, 1942, AEC HX Document No. 121, declassified NARS 7 August 79.
\textsuperscript{40} The $1.9 billion figure differs somewhat from others; but is believed to be the most current (and complete) estimate available, even according to an “official with DOE’s Defense Programs office.” O’Neill, \textit{Atomic Audit}, 34. The Air Force project, codenamed “Silverplate,” cost $76 million. \textit{Idem.}, 56. Since copper was scarce and a critical war material, silver offered a logical (if finally expensive) replacement and provided the material for electromagnetic coils at Oak Ridge. The silver was officially borrowed from the Treasury through a formal lease agreement that was amended each time a new request was made. Stimson guaranteed the Secretary of the Treasury that the silver would be used only on government property, would be stamped as “property of US government” and adequately guarded. See Stimson to Secretary of the Treasury August 29, 1942 and Lease Agreement dated November 1, 1943, TSCMED. The \textit{New York Times} said that the War Department borrowed more than a one million pounds of silver from the Treasury at the suggestion of E.O. Lawrence. \textit{New York Times} (August 26, 1945) E9.

It was an unusual request. When approached by an Army Corps of Engineer Lieutenant Colonel Nichols, a tentatively receptive Undersecretary of the Treasury Daniel Bell asked how much silver the War Department might need. When Nichols asked (initially) for 15,000 tons, Bell chastized him: “Young man...I would have you know that when we talk of silver we speak in terms of ounces.” The War Department failed to return the silver within the agreed-upon five years; but in 1970 the AEC delivered $3.3 billion worth of silver to Treasury. O’Neill, \textit{Atomic Audit}, 56.
that initial outlay was running short, and Vannevar Bush suggested that the president either reconsider the pursuit of the project or approach Congress for a discretionary outlay of $315 million since “it would be ruinous to the essential secrecy to have to defend before an appropriations committee any request for funds.”

Instead, three members of Congress, House Speaker Sam Rayburn, Majority Leader John McCormack, and Minority Leader Joseph Martin, Jr., were briefed and they agreed to keep expenditures “buried in the Army’s budget” and also silence the questions of their colleagues. Before the war was over, however, it became more and more difficult to “silence” potential adversaries.

Groves managed to outmaneuver the administration in Spring 1945 and avoid an investigation recommended by Secretary of State James Byrnes. As victory in Europe drew closer, the expense of the project had become too large to hide and Roosevelt’s cabinet began to express doubts about both Groves and the never-ending outlays. With Germany on the ropes, Byrnes worried about postwar public relations, and suggested an “impartial investigation” which might protect the president, particularly in case the bomb failed:

No harm could come from an impartial investigation and review [though] it might hurt the feelings of those now engaged in the

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41 Interestingly, Bush’s suggestion to the president that he reconsider his commitment to the project even in light of a high probability for bomb delivery suggests that at that time, the project had not achieved its later prominence as a military “necessity.” Bush to President, December 16, 1942. TSCMED.

42 H. Foerstal Secret Science, 27.

It seems as though Congress recognized later, and perhaps with more than a little irritation, that traditional controls (voting and appropriations) had been subverted by the project. Howard Ball indicates, citing Niehoff, that the Atomic Energy Act created a Joint Committee to present AEC ideas to the public in an effort to avoid future subterfuge. Ball, Justice Downwind, 225, note 9.
project. . .Still 2 billion dollars is enough money to risk such hurt.
. .In any event, it would be clear that we were mindful of the
tremendous expenditure of men and materials.43

On March 6, Roosevelt forwarded Byrnes' letter to Secretary of War Stimson. On
that same day Groves sent a letter to Stimson suggesting that appropriations might be
secured if he invited a select Congressional committee to tour Manhattan project
facilities (though excluding Los Alamos for reasons of security) to "demonstrate the
scope and complexities of the project."44 On March "6 or 7" (for even Groves was
uncertain of the date) he told Stimson that Byrnes' suggestion of an independent
investigation would be "impossible" because of the complexity of the project and
(amazingly) that "there were no American nuclear physicists not connected in some
way with the project."45 Groves' statement was, of course, false.

It is, though, just another piece of a vast array of evidence demonstrating that
Groves and a handful of individuals, through the authority of the Executive, mortared
the Manhattan Project together with manipulation, subterfuge, and deceit.46 The

43 Memorandum for the President from James F. Byrnes, March 3, 1945, TSCMED.
44 Memorandum for the Secretary of War from Groves, 6 March 1945, TSCMED.
45 Memo to File from Groves, 7 April 1945. Though there is no indication that this
memorandum was distributed, Groves may have written it a month after the event for
some other reason than his own reference. Groves' memoranda were generally
informally prepared on plain paper and initialed; this one, however, appeared on
official letterhead with a signature block for Groves, which is signed "L.R. Groves"
TSCMED.
46 In September 1942, the president designated vice president Wallace, Secretary of
War Stimson, Chief of Staff General Marshall, Vannevar Bush, James B. Conant,
General Styer, Admiral Purnell and Groves to administer the project (then known as
S-1). "Memorandum A" September 23, 1942. Though Roosevelt had let Wallace in
on the project, Truman had no knowledge of it until after he became president, and
was briefed by Marshall and Groves on April 25, 1945. See "Memo to File" "Subject:
Report of Meeting with The President April 25, 1945." TSCMED.
building and funding of the project was but one part of the development of the atom bomb, and this examination will now turn to those crucial individuals who knew little about government funding and executive prerogative. Groves had not hired all the nation’s physicists, but most of the ones involved with the Manhattan Project fought a running battle not only against the barriers of atomic fission, but also against his methods.

Groves was so committed to secrecy that he managed to manipulate the way scientists “naturally” operated, probably to the detriment of the project. To reduce “the opportunity for cross-chatter” he enforced his program of compartmentalization

The project developed free of any existing constraints, and the conditions under which it operated facilitated its ability to maneuver extraconstitutionally: “because of it’s [sic] magnitude and highly scientific ramifications, it was established more or less as a separate entity. Because of the extreme secrecy, it was not possible for the business to be handled in the usual manner, and for that reason it was normal for General Groves to report verbally to his superiors, including the Secretary of War and the Chief of Staff. TSCMED [undated] Press Release.

Groves refused to relinquish control even after the formation of the Atomic Energy Commission. When Major General Curtis LeMay, a top Air Force planner, asked Groves for the number of atomic weapon, Groves refused: “That information is quite complicated and is based on many factors... I cannot answer your question because I force myself to forget the numbers involved.” [emphasis mine.] Weisgall, Operation Crossroads, 286.

47 “...scientists are deeply, almost mystically, committed to the notion of sharing ideas.” Ball, Justice Downwind, 19. After the war, scientists were eager to avoid the repetition of Groves’ methods. When Oppenheimer lobbied for the establishment of a civilian Commission to oversee the development of atomic energy before the House of Representatives’ Military Affairs Committee, he pointedly expressed his belief that scientists should remain independent and uncontrolled: “Scientists are not used to being controlled; they are not used to regimentation, and there are good reasons why they should be averse to it... the individual is to be given a certain amount of freedom to invent, to think, and to carry on the best he knows how...” Oppenheimer asked for the bill to be reinforced to assure that the Commission would “not interfere with scientific work except when there is a national hazard involved.” TSCMED “Oppenheimer Statement” October 18, 1945.
upon even the scientists, and he tried to insure that they received only the amount of
information necessary for them to perform their specific, limited task. In addition,
Groves enforced strict rules restricting the scientists' movement and communication.
The government discouraged scientists from any outside personal contact, censored
their mail; and, for the first eighteen months, forbid the scientists to travel away from
the site. In 1944, Groves relented a bit, believing that an “improvement in morale
would outweigh the increased security risks.”

Groves’ methods undoubtedly insured the clandestine nature of the project but
they did little to enhance the ability of the scientists to perform their role—unless, of
course, the restrictions served to encourage them to get the job done and get out as
quickly as possible. In addition, the Army’s unwillingness to accept the authority of
scientists and its technique of “compartmentalization” became counterproductive and
perhaps even potentially lethal. There was, also, the very real clash of cultures as the
men of science met the nation’s warriors. As Oppenheimer later remarked, scientists

48 Groves, Now It Can Be Told, 29.
49 Groves was undoubtedly a stern taskmaster, and exhibited little understanding, or
patience, with the normal behavior of scientists (or most human beings) in response to
pressure. Jonathan Weisgall indicates that Groves “...became annoyed the night
before the test when Nobel Prize-winning physicist Enrico Fermi offered to take bets
from the other scientists as to whether or not the bomb would ignite the atmosphere,
and if so, whether it would destroy only New Mexico or the entire world.” Weisgall,
Operation Crossroads, 5. Groves admitted his “annoyance” in his autobiography, and
noted that he “afterward...realized that [Fermi’s] talk had served to smooth down the
frayed nerves and ease the tension of the people at base camp.” He could not resist,
though, adding justification: “There was an air of excitement at the camp that I did not
like, for this was a time when calm deliberation was most essential.” Groves, Now It
Can Be Told, 168, 291, 297.
need a "certain amount of freedom to invent, to think..." so, how did they manage to accomplish so much in such a stifling atmosphere?

It will be useful to look at the reminiscences of Richard Feynman to help answer this question, and explore, through his experiences, the effects of compartmentalization upon the project itself and the methods at least one scientist employed to satisfy an independent spirit within the confines of Los Alamos. Richard Feynman made not only an enormous contribution to the Los Alamos project but he also confronted the Army head-on, achieving, "freedom to invent, to think..." by breaking almost all of the rules.

The government did not have to call scientists into action, and by the time the United States entered the war, almost one-fourth of the nation's physicists were already applying physics to warfare. Working in loosely-organized groups formed around friendship, mentorship, and respect, some had already formed cliques of specialty. Feynman's senior professor at Princeton, Eugene Wigner, had been part of the three-man team (with Leo Szilard and Edward Teller) who alerted Roosevelt (through Einstein) of the possibility of a German bomb. Another Princeton professor, Robert Wilson, was preparing to leave Princeton for Britain to work at their newly-formed Rad Lab. Wigner stopped Wilson in his tracks when he told him of Princeton's plan to develop a nuclear reactor.

The Office of Scientific Research and Development, together with the National Defense Council, formalized the relationship between the government and the

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50 At that time, there were more than seven thousand physicists in the US. Gleick, *Genius*, 138.
universities, and groups of students and professors aligned themselves to specific, and official, projects. Wilson convinced Feynman, still working on his Ph.D. thesis, to join him by giving him as much information as he knew about the German potential for a bomb and the British work on the separation of uranium. Wilson put together a group of about thirty physicists, shop workers and technicians divided into a experimental division and a two-man theoretical division composed of Feynman and another graduate student, Paul Olum, a mathematician.

In 1942, Oppenheimer substituted a Berkeley experiment for Wilson’s. The short break gave Feynman time to finish his thesis and he earned his Ph.D. before signing on again with Wilson’s team to work for the Manhattan Project. While they waited for the government to ready Los Alamos, Wilson sent Feynman to Chicago to gather all the information he could on Fermi’s atomic “pile” and, “as efficiently as a spy” Feynman brought back so much data that Wilson’s group began working on problems that Fermi’s group had not even identified. While in Chicago, he impressed everyone who met him, in one instance explaining “on the spot how to gain a quick result that had evaded one of our clever calculators for a month.”

Feynman was twenty-four years old.

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51 At that time, the problem of a possible German bomb and the potential of an American one was not secret: “The military still did not take the physicists completely seriously” although the scientists had agreed among themselves that most of their information should remain confidential. Though initially Feynman refused the offer, he reconsidered when he remembered that a top German physicist, Werner Heisenberg, had slipped from view, and believed that if Heisenberg were working on nuclear research, the Germans had a good chance at developing a bomb. Idem., 137-140; quote, 138.

Oppenheimer served as a dignified father figure to many, easing their burdens as much as he could and standing between Groves and the scientists he had recruited. Feynman and the rest of the Wilson group impatiently left for Los Alamos before it was ready and shipped the Princeton laboratory out ahead of them to join with a dismantled cyclotron, generators, and accelerators from Harvard. Feynman’s journey was complicated by the fact that his new bride, Arline, suffered from tuberculosis; but when Oppenheimer arranged for Arline’s stay at an Albuquerque sanitarium and offered the extra money required for their travel to Santa Fe via a private room and wheelchair on the train, Feynman became a devoted admirer.\(^{53}\) Oppenheimer “paid attention to everybody’s problems. . .he was a wonderful man.”\(^{54}\) The issue of secrecy already had Oppenheimer and Groves at loggerheads; but they both agreed that all physicists, to avoid suspicion, should buy tickets for any destination other than New Mexico. Feynman, though, figured that if all the others were buying tickets for other states, he might as well buy his for Albuquerque.\(^{55}\)

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\(^{53}\) While at Los Alamos, Feynman visited his wife every chance he got, and since he did not own a car he often hitchiked or caught a ride with a scientist friend who did own one, Claus Fuchs.

\(^{54}\) Feynman, *Surely You’re Joking*, 110; and Gleick, *Genius*, 160. The admiration was mutual. In 1943 Oppenheimer wrote to his department at Berkeley that they should hire Feynman so that he could start there at the end of the war: “He is by all odds the most brilliant young physicist here, and everyone knows this. He is a man of thoroughly engaging character and personality, extremely clear, extremely normal in all respects, and an excellent teacher with a warm feeling for physics in all its aspects.” Gleick, 184. Berkeley and Oppenheimer, though, lost out when Cornell jumped at Bethe’s recommendation to hire Feynman. Hans Albrecht Bethe “Feynman in Los Alamos and Cornell” *Most of the Good Stuff, Memories of Richard Feynman*, Laurie M. Brown, John S. Rigden, eds. (American Institute of Physics, New York: 1993), 35.

\(^{55}\) *Ibid.*
Despite all of the praise that Groves received for directing the building of Manhattan facilities, most of Los Alamos was incomplete when scientists arrived because the construction crews were baffled by the instructions and plans for the laboratories. One theater and a couple of “modified mobilization style” buildings were up, but little else was finished. In fact, when Feynman arrived the only telephone at the site was a single Forest Service line powered by a crank on the side of the box.  

By April the population of Los Alamos had swelled to about 30, and Feynman was reunited with his former colleague Paul Olum, who was passing the time by pitching in with the construction—manning a clipboard to check off lumber deliveries. Since Feynman belonged to the theoretical group and did not have to wait for a laboratory, he began working right away. A mixed group from Berkeley and Princeton began learning from one another, taking turns at the only blackboard on the mesa. Feynman spent the rest of the time studying: “Every day I would study and read, study and read.”  

Most of the scientists kept busy one way or another, and soon after Wilson took over supervision of the building of the laboratory, Los Alamos was the “best equipped physics center in the world.”  

The laboratory was the “best equipped” not only because Wilson supervised its construction, but because the scientists at Los Alamos could get almost anything, or anyone, they needed. They requisitioned two hemispheres of pure gold from Fort Knox, each about half the size of a basketball, to test gold’s ability to reflect neutrons;
once they completed their experiments, they used one of the gold globes as a doorstop in the room that held a single small, warm, ball of plutonium upon a pedestal.\textsuperscript{59}

People, too, could be requisitioned. When Feynman noticed a familiar name on a list of available physicists, he simply filled in the name of the man he wanted, T.A. Welton, on a form. Soon, a stranger invited Welton to a meeting in a hotel room in Chicago, and then offered him an undescribed job that would require relocation to an undisclosed place. Despite all of the mystery surrounding the offer, Welton acknowledged that he, like many other physicists outside the project, knew that "something" was in the works. He accepted.\textsuperscript{60}

The scientists worked under intense pressure and when they could not get everything they wanted as quickly as they wanted, they improvised. The most sophisticated calculator at the time, the Marchant, could add, subtract, multiply, and divide (but only up to ten digits.) Feynman and a Greek mathematician, Nicholas Metropolis, organized banks of Marchant calculators to perform like a primitive computer, and chains of scientists' wives handled bits of complex equations in array, one cubing, another adding, each passing their finished piece to the next. Under the almost-constant pressure of the serial routine, the mechanical calculators broke down often and were sent to California for repair. Frustrated at the waste of time while the project ferried computers back and forth, Feynman and Metropolis learned to repair the calculators themselves, and advertised their new talents on a shingle: "Computers Repaired." In 1943, the scientists requisitioned new computers and related equipment

\textsuperscript{59} Feynman, \textit{Surely You're Joking}, 135.
\textsuperscript{60} Gleick, \textit{Genius}, 169-170.
from IBM; and, in yet another example of impatience, before the new machines arrived they figured out how to triple the machines’ output by rearranging the plugs. They had also requisitioned a recently-drafted IBM employee to set up and service the machines; but when the computers arrived ahead of him, Feynman and Metropolis used the wiring diagrams that were enclosed in the crates to assemble the system. To make things interesting, Feynman soon developed programs that allowed the machines to “clatter” out the rhythms of well-known songs.

Intellectually, their boundaries were almost beyond understanding but they did, nonetheless, live under physical restraint. Feynman’s biographer James Gleick called Los Alamos a “magic mountain” and quoted one resident who compared it with the European stereotype of an American pioneer community: “a self-contained town with no outside contacts, isolated in vast stretches of desert, and surrounded by Indians.”

In an interesting shift, though, the ‘indians’ in the Manhattan Project turned out to be the Army. The irritation the scientists experienced by the Army’s attempts to discipline them was never far from their minds. Once, when Bethe presented a calculation to Feynman and his 40-man group, Feynman mechanically swiveled in his chair and commanded: “All right, pencils, calculate! Present pencils! Integrate!” Bethe laughed as the team mocked military drill and performed in perfect unison. It was

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61 Gleick, *Genius*, 181. Theoretical physicists seem strangely attracted to gadgets. Enrico Fermi’s wife Laura relates that he, too, had always been fascinated by mechanical and electrical labor-saving instruments; including the first Christmas present he bought her in America, a step-on garbage can. A gift she called “his never-forgotten present.” Laura Fermi, *Atomism in the Family*, 149.

62 Ibid., 185.

63 Ibid., 171.
easy to share a joke over regimentation, and military regulations like censorship and restrictions on travel were bothersome, but compartmentalization posed additional, and serious, consequences.

It was particularly difficult for scientists to ignore the authoritarianism of the Army when Oppenheimer insisted upon stringent egalitarianism and absolute democracy at Los Alamos. "Oppie" tolerated no distinctions between graduate students and world-renowned scientists, and the result was an untraditional "leveling" of professional relationships. The Army, though, managed to reduce some of the premier intellects of the age even further since in the name of security, scientists (to the world outside Los Alamos) lost even their identity. Within a month of his arrival, Feynman got a new drivers' license, and in place of his name he became "Engineer" who lived at "Special List B" and whose signature was "not required." The famous Niels Bohr turned into Nicholas Baker. To Groves, scientists were nothing but a a group of engineers. The Army understood neither scientific complexities nor the

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64 A technique Oppenheimer used to great effect to encourage fresh approaches and faster results. Because of that rule, and perhaps because of Feynman's intellect and contrariness, he became the only man at Los Alamos to openly challenge Niels Bohr. Afterwards, Bohr bounced his ideas off Feynman first. Feynman, Surely You're Joking, 133.
65 Ibid., 162. To the world at large Los Alamos did not exist. Children born in the Los Alamos hospital were born at Post Office Box 1663, Santa Fe. Fermi, 232.
66 When Danish police warned Bohr that the Germans were looking for him, he took a small boat to Sweden, flew to London and then on to America with his physicist son. He left his Nobel medal in Copenhagen, but the Nazis were unable to locate it because he had dissolved it in a bottle of nitric acid. After the war, he recovered the gold from the acid and the medal was recast. Fermi, Atoms in the Family, 223.
67 Groves became "defensive" around the scientists, and told them on one of his first visits that even though he did not have a doctorate, he had gone to school for ten years after West Point, so had earned the equivalent of two Ph.D.'s. Goldberg in The Atomic West, 47. Or soldiers—Groves awarded each of them a special military-type
pride the physicists took in "voluntarily" serving their country. A shared cause was the only bridge between the two cultures, and among the many barriers, censorship was a constant.

The Army opened all mail entering and leaving Los Alamos. In order to avoid the obvious suggestion that this was an illegal intrusion into the rights of ordinary citizens, the Army asked the scientists to "volunteer" to the practice by not sealing their outgoing mail and agreeing that all incoming mail could be inspected. Feynman posed a particular problem for the censors, because along with the news he enjoyed receiving from his parents and his wife, they cooperated in his appetite for games by enclosing puzzles in their letters or by writing the whole letter in code. Feynman had to then decipher the code before he could read his mail. The censors (obviously) did not understand Feynman’s penchant for mental gymnastics, nor could they interpret his mail in order to censor it. The censors and Feynman worked out a deal: Feynman’s family would send a key for the censors to use, and the censors would remove it so Feynman could still enjoy his game. Another problem with the censors, though, arose when Feynman tried to pass on a division problem that resulted in a repeating number ("It’s quite cute") and he ended up afoul of "Paragraph 17B: Letters are to be written only in English, Russian, Spanish, Portuguese, Latin, German..."

shoulder patch, an army star surrounded with a large question mark. According to the news release, "the symbol betrayed no ‘military secrets’." New York Times (August 22, 1945) 4.

Laura Fermi treats Groves generously in her account of life in Los Alamos, and even when she details Groves’ 1944 speech wherein Groves told the assembled military: "At great expense we have gathered on this mesa the largest collection of crackpots ever seen" she insists that "The ‘crackpots’ were dear to the General..." Fermi, Atoms in the Family, 226.
other language must be obtained in writing. No codes.” He finally convinced them that it really was just a “cute” mathematical trick, but did then have to formally ask permission to use arabic numerals in his letters. The problems persisted because Feynman could not resist needling the censors; and from then on, Feynman and Arline (until her death) came up with novel additions to their repertoire.68

While the Army took some things very seriously, there were problems at Los Alamos that they simply, to Feynman’s astonishment, disregarded even after he pointed them out. When his verbal requests or suggestions failed, he turned to games. Noticing a hole in the perimeter fence, he alerted a guard. When he discovered later that the hole had not been repaired, he spent a day leaving the facility through the hole and re-entering through the gate. Finally, the sergeant at the gate called the lieutenant, who decided to arrest Feynman. He avoided jail by explaining, again, that he had been trying to get them to fix the hole.69 He also became concerned when he realized that “terribly important secrets” were kept in wooden file cabinets equipped with cheap padlocks. When they were not replaced despite his repeated suggestions that someone should do something, he put his mind to work and figured out how to open every lock at Los Alamos, including the combination locks on the supposedly “secure” safes,

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68 Feynman, *Surely You’re Joking*, 114-118. Among the many rules the pair broke, Feynman found 8(1) a “delightful” regulation that disallowed any reference to the regulations, requiring the omission (or deletion) of “any information concerning these censorship regulations or any discourse on the subject of censorship.” Gleick, *Genius*, 186.

69 Feynman, *Surely You’re Joking*, 118. What Feynman did not know, and no one told him, at the time, was that the hole was there at Oppenheimer’s request so that the “people from the local tribes” could watch twelve-cent movies in the Los Alamos theatre. Gleick, *Genius*, 187. Laura Fermi found many more, guided by her son Giulio. Fermi, *Atoms in the Family*, 207.
using mathematics. When Teller boasted that he kept everything important in his desk drawer, Feynman slipped out of the meeting and emptied Teller’s desk of documents—from the back of the drawer, pulling out the paper “like those toilet paper dispensers.” They never did change the locks, but Feynman acquired a reputation as a safecracker and even carried a dummy set of tools around with him to keep up the charade.70

Holes in the fence and less-than-adequate locks, however, were minor compared to the potential disaster Groves’ compartmentalization almost caused at Oak Ridge.

The Army so restricted the information it gave to workers at the Oak Ridge facility that they unintentionally became inefficient and careless, jeopardizing the whole plant, and everyone in it. The Army even tried to prohibit the better-informed Los Alamos scientists from teaching the Oak Ridge workers about uranium 235.

Oppenheimer became aware, almost by accident, that the Oak Ridge team had no knowledge of why they were refining uranium, or even the most basic understanding of uranium’s properties. Workers at the Tennessee facility separated uranium 235 for the bomb from uranium 238, though in very limited quantities because, as Feynman recalls, they were “practicing chemistry.”71 When they began to have some success at recovering small amounts of the material, a plant superintendent with Tennessee Eastman Corporation sent a letter to Los Alamos: “Dear Sir, At the present time no provisions have been made. . .for stopping reactions. . .would it make sense to install some kind of advanced fire-extinguishing equipment. . .?” Clearly, the superintendent had no idea of what type of reaction uranium might cause; and almost certainly had no

70 Feynman, Surely You’re Joking, 118-119. Gleick, Genius, 189.  
71 Feynman, Surely You’re Joking, 120.
idea that if uranium 235 reached critical mass at Oak Ridge, the problem would become, immediately, critical certainly beyond the resources of a fire extinguisher, beyond even his worst nightmare.

Feynman recalled that only the “higher people knew they were separating uranium” but no one knew why, “how it worked, or anything.” When Oppenheimer and Emile Segre, head of the experimental radioactivity group at Los Alamos, decided that Segre should go to Oak Ridge to not only brief them on more efficient methods of uranium refinement, but also to check out their procedures for safety, the Army refused: “it is our policy to keep all the information of Los Alamos at one place.” The scientists finally had to wield a big stick and threaten that limited production of uranium 235 would hamper the successful development of a bomb and also that careless handling of the uranium Oak Ridge had refined could send the whole place “up in smoke.” The travel restrictions were removed.

When Segre got to Oak Ridge, the report he sent back to Oppenheimer resulted in an entire restructuring of the procedures at Oak Ridge. Upon his arrival, Segre noticed that workers were wheeling uranium nitrite solution in tanks, and explained to them that only because the material had not been further refined did it not explode. Two teams at Los Alamos worked on the problems of accumulation and storage of uranium 235, and when their calculations were complete, Feynman traveled

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72 “Dear Sir. . .” (Gleick, *Genius*, 198); “higher people. . .” (Feynman, *Surely You’re Joking*, 120)
73 Feynman, *Surely You’re Joking*, 120
74 *Ibid.*, 121
to Oak Ridge to help implement the new procedures, but discovered then that the
problems were worse than Segre had reported:

Through dozens of rooms in a series of buildings Feynman saw
drums with 300 gallons, 600 gallons, 3,000 gallons. . .He realized
that the plant was headed toward a catastrophe. . .At some point
the buildup of uranium would cause a nuclear reaction that would
release heat and radioactivity at near-explosive speed.75

He insisted the Army allow Oak Ridge workers to be briefed on basic nuclear physics
and demanded plant and procedure changes. When he believed he was not being taken
seriously, he used the magic words Oppenheimer had given him before he left: “Los
Alamos cannot accept the responsibility for the safety of the Oak Ridge plant unless. .
. .”76 Thus, while the Army’s methods protected the country’s secrets from the workers
at Oak Ridge, had the scientists from Los Alamos not stepped in, there would have
been no Oak Ridge for the Army to worry about.

It seems likely that the Manhattan Project could have proceeded more
efficiently and safely from the very beginning had the military recognized the role of
scientists as partners in atomic development, rather than as instruments toward a
specific goal. Only through Oppenheimer’s insistence that the expertise of scientists
be recognized was the Oak Ridge facility saved from almost certain disaster. However
reluctantly and belatedly, the Army (and General Groves) recognized that the
scientists’ warnings were serious enough to warrant an exception to established
procedure.

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75 Gleick, Genius, 197.
76 Ibid., 199; Feynman, Surely You’re Joking, 121-123.
The nation's commitment to secrecy, Groves' military methods, and compartmentalization built the Manhattan Project, and at the same time, narrowly missed destroying it. But, in the end, nothing devastating occurred and the nation got a spectacular bomb while millions of everyday Americans learned at least something about atoms and fission. This chapter has tried to show that the government carried out two experiments behind the closed doors of Washington conference rooms, the barbed wire enclosure atop a New Mexican mesa, and the high walls of Oak Ridge. One, of course, was the development of the bomb. The other was the crafting of a system of governance based upon deceit and manipulation, justified and fueled by a military objective. Both were hugely successful, and both continued long after the war that stimulated their creation ended. The novelties of the Manhattan Project, among them an ability to rely upon a military objective to secure funding and ensure secrecy, formed the core around which future testing progressed. Sadly, as those features became entrenched within the atomic testing program, they became ever more consequential.

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Before leaving the Manhattan Project, it is important to look at the report on Trinity submitted to Groves on July 21, 1945 that illustrates that before the war ended the government gave more consideration to civilian and military personnel than would be the case by 1956. The report is not only useful as a chronicle of the events of July
16 but an instrument through which the personality of one medical professional, practicing (literally) in the glare of the first bomb, might, in at least one sense, be understood. The report, prepared by Colonel Stafford L. Warren, Chief of the Medical Section of the Manhattan District, reflects that although the date of the test was accelerated, the effects of the bomb upon civilian populations were not considered negligible. Warren reported that scientists considered July 16 and 17 appropriate since the wind direction and speed would “localize the outfall of active material” and “dilute the outfall most effectively in the early hours of the life of the cloud” even though these winds would make monitoring more difficult. In addition, monitors patrolled the entire area collecting data on radioactive intensity and could have vacuated, if necessary, the few families that might have been endangered.

Warren did not hesitate to voice his relief that no one had been injured in the first test, nor was he reluctant to assess the consequences of future tests upon personnel and civilians; and, additionally, to make recommendations to avert future

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77 Although the bombing of the Japanese has received enormous attention, some confusion remains concerning the date the bomb was tested. As the bomb neared completion, the struggle between the scientists and the military assumed another dimension as the bomb became an integral, though at the beginning only potential, element of the Potsdam Conference. Martin Sherwin asserts that Groves ordered (on July 2) that the scientists plan for a July 14 detonation, but Oppenheimer, concerned about “unacceptable risks” that would result from a rushed detonation, asked for three extra days. Groves refused to grant the extension, and later that same night, telephoned Oppenheimer and insisted upon the July 14 date because the “upper crust want[s] it...” A World Destroyed, 222. Oppenheimer evidently bought some time by insisting on appropriate precautions; that analysis, however, still cannot explain why even “official” accounts disagree: The test, of course, took place on July 16, a date that Stafford Warren says as “two days ahead of the tentative schedule because everything of importance to the test was ready.” TSCMED, Warren to Groves 21 July 1945.
dangerous tests. His account was neither neutral nor sterile: he found "fortunately" that the highest intensities of radiation occurred only in deserted regions; those, however, were high enough to "cause serious physiological effects." To protect resident populations, the monitors "all took considerable risks knowingly... they should not be exposed to more radiation within the next month." He pointed out that "quick and adequate" monitoring was essential and that radio communications, transportation, and meters needed improvement.

His conclusions reflect that his interest as a medical doctor took preference over accommodation to military objective. Finding "partially eviscerated dead wild jack rabbits" more than 800 yards from the test and a farm house three miles away with "extensive damage," Warren noted that personnel up to two miles away would sustain lethal or severe injuries. In addition, he warned that only "under very special conditions" should another test be attempted, since Trinity caused a "potentially... very dangerous hazard" thirty miles wide extending ninety miles northeast. The government ultimately, and unfortunately, ignored Warren's final recommendation; specifically, that no test the size of Trinity be repeated unless a site could be secured that was free of population for at least 150 miles. Unfortunately, too, the expertise of medical professionals such as Warren and other scientists lost ground as the military exerted even more influence in the continuation of the nation's atomic weapons program.

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78 "Report on Test 16 July 1945" Warren to Groves 21 July 1945, TSCMED.
World War II had not been enough—generals wanted atomic energy. Millions in Europe tried to repair their war-shredded lives while they braced for winter, US and allied forces occupied Germany and Japan, and hundreds of thousands of Jewish refugees sought entry to British-controlled Palestine. Americans, still under shoe and tire rationing, nevertheless sought out new things, instant coffee and kiss-proof lipstick made their debut.\(^7^9\) In the meantime, the US military slavered over the possibility of ever-more-lethal weapons. One can only imagine why, on September 4, 1945, the Joint Chiefs of Staff asked General Groves about the “maximum rate of delivery from storage in the United States...using present personnel and facilities” and “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?”\(^8^0\)

On October 18, 1945, the military submitted to Groves a compilation of service requests, a “Dear Santa”, proposing the development of a panoply of atomically-enhanced weaponry.\(^8^1\) A very small sample of the exhaustive list reflects the allure of the atom: “to use as the explosive in the warheads for all missiles and projectiles” including conventional bombs, artillery projectiles and shells; short, medium, and hemispheric-range ground-to-ground missiles; ground-to-water and ground-to-air, for the coast. In addition, the military wanted countermeasures, including “neutron escape” warning devices and “means for the destruction of

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\(^8^0\) “Memorandum for: Major General L. R. Groves, U.S.A.” from H.P. Gibson for the “Joint Committee on New Weapons and Equipment” 4 September 1945, TSCMED.  
\(^8^1\) See TSCMED “Memorandum for the Chairman [Groves], War Department Atomic Energy Advisory Board” 18 October 1945.
vehicles used to transport atomic energy." The military also unimaginatively envisioned other conventional uses for the decidedly unconventional weapons: “simplification of the mechanisms of the warhead and associated bombs” so that military personnel could prepare and deliver the weapon; “techniques for storage and use under all climatic conditions,” “prophylactic treatment to be used by personnel exposed to the effects of the bomb,” “detection devices” and “suitable indicators or warning devices” to alert “friendly” personnel of dangerous conditions.

Although these extravagant requests, and many others like them, are (and were) perhaps meaningful in a military sense, one particular wish seems to stretch the bounds of military necessity. One is hard pressed to imagine, even putting oneself in the shoes of an overly-enthusiastic general, the need for “Development to perfect the loading and detonating techniques so that the carrying vehicles for atomic energy can penetrate the earth’s crust.” It is an alarming request—illustrative, though, of the military’s inflated sense of its own immediate importance and future purpose.

Atomic energy may have been all-but-imagineless to any but physicists before Hiroshima and Nagasake. Those events, though, erased old cognitive barriers and replaced them with visions terrifying to many but provocatively enticing and intoxicating to the military: vivid churning of towering clouds 50,000 feet high and tens of thousands of deaths—destruction at a single stroke, from a single airplane.

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82 Ibid.
83 Ibid.
84 Ibid.
Imaginations ran wild inside the nation’s military establishment, with only ‘the sky’ (or perhaps the Earth’s core) as “the limit.”
CHAPTER IV

OPERATION CROSSROADS

As soon as the war ended, we located the one spot on earth that hadn't been touched by war and blew it to hell.
—Bob Hope

The atom bomb was the stuff of warriors' dreams, and the grisly wish list that the nation's military men developed illustrates, perhaps, the extent to which each contributor believed that he might be only one weapon, one device, from heroic laurels. Other men, perhaps a little older, a little wiser, or just a little more realistic, recognized almost immediately that the bomb might be more portentous than promising—the stuff not of dreams, but of nightmares. A nation with the atom bomb did not need warriors, only scientists, planes and pilots. The reality struck the Navy particularly hard, for in those heady August days of 1945, the Army 'had the corner' on scientists with its still-operational Manhattan Project and its Air Corps was replete with planes and pilots. So, long before the public and Congress began their clamor for demobilization, some top Navy men, with more ships and sailors than planes and pilots, started planning Operation Crossroads.

1 "So This is Peace" Life (October 21, 1946), 119.
The Navy insisted that Operation Crossroads was a pragmatic and practical experiment, designed to “evaluate the strategic implications”\(^2\) of the effects of atomic weapons upon naval vessels, and even though almost no one (except the Navy) thought it was a good, or even useful, project, on January 10, 1946, President Truman approved it. The Army bitterly opposed it, the scientists believed it unnecessary, the diplomats worried that it would aggravate already-shaky international relationships, many Congressmen tried to kill it, and a dean of women at a New York college said that it smacked of folly, “the whole project sounds like bad boys playing with matches in the hay mow.”\(^3\) The opposition was understandable, for the Navy’s plan was not really an ‘experiment’ within any accepted usage of that term, and it can only be said to have been ‘pragmatic and

\(^2\) Jonathan M. Weisgall, *Operation Crossroads* (Annapolis, Maryland: Naval Institute Press, 1994), 31. The reader will note my reliance upon Weisgall’s book throughout this chapter. Weisgall, an attorney, successfully represented and negotiated the settlement between the US government and the Marshall islanders, and his book is a wonderful combination of narrative and meticulous documentation that makes it a valuable resource for work on the Navy’s first attempt at Pacific testing. Weisgall’s book includes little analysis except as it pertains to his focus, the treatment of Bikini islanders.

Despite the enormous publicity Operation Crossroads received at the time and the importance that I believe must attach to it as an element of the atomic testing program, it has been all but ignored by historians, and even those scholars interested in atomic testing give the Operation only minimal attention, e. g. Barton Hacker deals with the operation in his straightforward, uncontroversial way and insists that “Crossroads adhered to Manhattan safety procedures” and that *Baker* surprised everybody (ignoring, of course, the scientists who had warned of fallout before the project, especially DuBridge), concluding that the operation ended in “some haste.” *Elements of Controversy*, 4-5; as a “source of embarrassment” by Gregg Herkin in *The Winning Weapon*, 225; Richard Miller mentioned the operation only as a way to explain why Louis Slotin died from radiation exposure while trying to perfect a new trigger for the Operation’s bombs. *Under the Cloud*, 68. To this writer’s knowledge, the only works other than Weisgall’s that deal comprehensively with Crossroads are those prepared as technical reports by the Navy and the Report of the Joint Chiefs of Staff Evaluation Board housed in the National and Naval Archives.

\(^3\) The letter from the dean of women was one of many that the White House received protesting the operation. Weisgall, *Operation Crossroads*, 56.
practical' in the service of precepts far more fundamental than those that the Navy posited
publicly and to the president. Operation Crossroads was not about weapon effects, what
an atom bomb might do to a ship; it was, instead, about the meaning of the bomb and what
atomic weaponry might mean to the military. The extravaganza that was Operation
Crossroads should not be understood as an experiment or evaluation, but as an expression
of power and prestige—hubris cubed.

In July 1946 the Navy pitted two atom bombs, Able and Baker, against a floating
array of 95 allied and enemy ships and landing craft. Four times larger than the wartime
invasion of Guadalcanal, the operation put a fleet of over 250 support and target ships
around Bikini, incorporated into its design over 150 aircraft, consumed the talents of over
43,000 military men, and sacrificed nearly 6,000 animals in a spectacle later valued at $1.3
billion. Unlike the Manhattan Project, Crossroads was designed to make news, so the
Navy handpicked 150 of the nation’s top reporters to relay home every detail the Navy
wanted released. For a permanent record of the display, the Navy installed 328 automatic
cameras in planes and purchased other 700 cameras—some of which went unused because
the Navy could find only 500 photographers. The shortage of photographers proved
insignificant when, within moments of shot Able, the Navy used up half of the world’s
supply of film.⁴

The Navy already knew about ships, learned a good deal about cameras and a little
about animals; but, as the operation’s Radiation Safety Advisor, Stafford Warren, soon
discovered, it seemed content to remain blithely ignorant of radiation. During the week

⁴ Weisgall, Operation Crossroads, 121.
following the *Baker* shot, Warren fought an uphill battle against ships' captains and crewmen who had little fear of an invisible enemy and even less regard for Warren's crew of radiation monitors. Desperate, he took his case straight to the top and on August 3, 1946 urged Admiral Blandy to surrender. Warren warned that continued decontamination promised only the exaggeration of an already "extremely difficult and dangerous problem."\(^5\) In a four-page top-secret memorandum, Warren explained that the extent of contamination combined with the dangers of radiation demanded that someone reconsider the whole operation. Over one-hundred acres of ship surfaces remained seriously contaminated: "In most cases areas of dangerous intensities remain on deck surfaces in spite of strenuous efforts to remove them." Warren then outlined the potential hazards to crewmen if the Navy continued its attempts at decontamination:

- progressively increasing sterility
- defects in children of first and second generation
- anemia
- good experimental evidence to show that in some tissues there is never complete recovery from radiation injury no matter how small.\(^6\)

Finally, Warren reminded the Admiral that sailors were more than "personnel" and were, after all, young men whose "heredity is of prime importance to them and their families."\(^7\) Warren's arguments fell on deaf ears, and it was not until August 10, and, as will be shown, after more persuasive arguments by Warren, that he finally convinced Admiral Blandy to cancel the operation and postpone a planned third detonation, *Charlie*. The

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\(^5\) Memorandum from Stafford L. Warren, Radiological Safety Advisor to Admiral Blandy, Commander Joint Ask Force One, 3 August 1946; Stafford Leak Warren Collection, University of California, Los Angeles, Collection 987, Reel 1, Box 75, 76 (hereinafter cited as Warren MSS).

\(^6\) *Ibid.*

\(^7\) *Ibid.*
Navy then hurriedly cleaned up and cleared support ships and personnel for a return to the
States. For the men of Crossroads, however, their job was not over even after they left
Bikini.

Ken Haugen was one of those men, and like many, many others, he had spent most
of the spring and the entire summer attached to Operation Crossroads. By September
1946 he was anxious to get into port, perhaps have a few beers and maybe a little fun. His
plans were delayed, however, because his ship, the USS Wharton, could not find a Navy
port that would take her. It was, as Haugen said: “so radioactive it must have glowed in
the dark.” After Kwajalein refused to allow the ship entry, the crew set their sights on
Pearl Harbor only to be, yet again, turned away. The floating pariah finally stopped fifteen
miles off the California coast. Unwilling to spend any more time living through some
modern perversion of The Ancient Mariner, Ken and his shipmates did their best to “cool”
off the ship. To do so, they threw everything made of canvas or wood overboard,
including all their spare clothing and blankets, mattresses, bunks, life rafts. Then, after
they “scrubbed and scrubbed” everything else, the USS Wharton finally got clearance and
entered the Port of San Diego, more than two months after the sailors got their first
glimpse of an atomic bomb.8

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8 Ken Haugen’s is one of several stories of atomic veterans told to Gary Turbak and
Ken and his shipmates did not know was that they were, at the time, part of a plan to see if
the open ocean would reduce the levels of radioactivity on the support ships. Ports were
manned by radiation monitors and ordered to refuse the entry of any radioactive ship to
avoid “wagging tongues.” “As I see it, the most serious aspect of it is the one which may
arise in regard to public relations...” Letter from George M. Lyon, Captain USNR to
Vice Admiral Ross T. McIntire, Chief of the Bureau of Medicine and Surgery, 12 August
1946 Warren MSS, boxes 75, 76.
In the eye of the public, The Navy’s Operation Crossroads was a success—most of the target ships survived floating—but since cameras do not record radioactive contamination, only to the Navy did it became abundantly clear (particularly after *Baker*) that the bomb’s most hazardous feature outlived its mushroom cloud.\(^9\) Success is hardly the word to describe the Navy’s battle against radioactivity. Radiation was decidedly more tenacious than the Navy’s ships, and almost all of the target vessels were later scuttled or sunk when efforts at decontamination failed. In addition, many non-target support ships like the *USS Wharton* became dangerously radioactive—exposed through contaminated seawater, marine life, and even crewmen themselves who returned to their bunks radioactive after shifts on the target ships and in the bay. As Haugen’s story shows, more than a month after the *Baker* test many were still fighting radiation. The eventually-worthwhile efforts to slow the relentless clicking of port inspectors’ geiger counters prove that Ken Haugen, and many others like him, had been continuously exposed to radioactive material even after leaving Bikini atoll—resting their heads on contaminated pillows, sleeping on contaminated mattresses, wearing contaminated clothing, ‘swabbing’ and sweeping with contaminated brooms and mops.\(^10\) They had lived for more than a month in an environment that was so radioactively hot that the Navy itself refused to allow them docking privileges at its own ports.

\(^9\) The final report admitted that radiation was the real weapon, not the bomb: “These contaminated ships became radioactive stoves, and would have burned all living things aboard them with invisible and painless but deadly radiation.” Weisgall, *Operation Crossroads*, 291.

This chapter argues that Operation Crossroads was one element of the nation's testing program that adversely affected the nation's future course of atomic development and also urges the reader to recognize the consequences of that contribution: that it so irradiated an island and its lagoon that the area remained completely uninhabitable for forty years, jeopardized the health and lives of tens of thousands of servicemen and islanders, and consumed enormous amounts of taxpayer dollars. In addition, the operation escalated the nature of governmental secrecy. Despite the fact that in response to opposition the president appointed civilians to serve in key evaluative roles during the operation, the Joint Chiefs of Staff neutralized that civilian input, fearful of "serious political problems for the military." 

A year after Crossroads disbanded, the Joint Chiefs of Staff Evaluation Board issued a preliminary report, and even though the Pentagon had assured Chairman Karl T. Compton that civilians and the public would have access to the Board's findings, the military decided to alter and delete the conclusions of civilian board members and released only fragments. Compton resigned in protest, but returned when the Joint Chiefs told him that the deletions and alterations were the result of inadvertent clerical errors. The final report evaluating the operation so "outraged" Truman that the White House requested all copies be turned over to the Joint Chiefs of Staff, who immediately suppressed the document because:

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11 Weisgall, Operation Crossroads, 289.
the findings about the effects of the atom bomb are so disturbing and frightening and the recommendations so sensational that the White House won't permit it to be made public at this time.  

Karl Compton refused repeatedly to relinquish his copy of the report, and even after his death in 1954, the Armed Forces Special Weapons Project, the successor to the Joint Crossroads Committee, tried unsuccessfully to retrieve his copy and then even asked the FBI to investigate.  
The report revealed what scientists had said all along, that the bomb’s radioactivity, not the bomb itself, was the most lethal (and in war, effective) component of the bomb. It quite simply “scared the hell” out of everyone on the evaluation board.  

What the Joint Chiefs of Staff wanted suppressed, and what Compton wanted everyone to know about, was contained in the opening lines of the report, that radioactive fallout, the extensive dispersal of radioactive material that occasioned shot Baker, could:

especially if employed in conjunction with other weapons of mass destruction, as, for example, pathogenic bacteria. . . depopulate vast areas of the earth’s surface, leaving only vestigial remnants of man’s material works. 

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12 Ibid., 293-298. 
13 Ibid.  
14 Weisgall, Operation Crossroads, 291. In connection with this comment, Rear Admiral Ralph Ofstie, a Navy member of the board suggested that the report, and its frightening conclusions, left the impression on one “highly experienced and keenly intelligent naval officer” that “somewhere or other we may have slipped a cog.”  
15 The Final Report of the Joint Chiefs of Staff Evaluation Board for Operation Crossroads, June 30, 1947, JCS 1691/10, cited in Ibid., 291. Curiously, Weisgall had to cite Ross and Rosenberg, America’s Plans for War, Vol. 9, for quotations from the report; suggesting, perhaps, that he was either unable to obtain a copy, or the one he did have still contained classified deletions. The report may exemplify one of the many pitfalls of the complications within the nation’s framework of documentary classification. The government’s system is gargantuan, but often haphazard and fickle—and two copies of the same document recovered at different times from different locations will often have quite varied deletions. Sometimes, with enough copies from different sources, the researcher can actually get the text of an entire document.
Manhattan scientists developed a method that allowed man to manipulate nature, instigating a reaction that changed the world, and the Project itself initiated a chain of practices that (since they seemingly contributed to its success) became inscribed within the testing program, changing the relationship of the government to its citizens. This chapter will show how Operation Crossroads built upon the secrecy, military objective, and media manipulation of the earliest atomic weapons project and added a fourth element when it capitalized upon the divisions of scientists to achieve military goals—all of which only multiplied the hazardous nature of postwar atomic testing—and effectively altered the government's perception of the authority of science and scientists. I continue to be interested in individuals and their ability to initiate behaviors and structure organizations, but do also believe that at this juncture the business of history first requires a broader perspective—especially since the atomic bomb caused monumental transformations in the ways that Americans look at the world and their leaders. Accordingly, then, it is important to look not only at what Operation Crossroads was and how it affected future atomic testing, but also to look at why it came about.

I have already suggested that the motivating influences of power and prestige played the major role in the planning and execution of Operation Crossroads, and although those two terms signify concepts that are commonly framed in the mind's eye of the

The comments by the JCS concerning biological warfare should not come as a surprise to readers of Stephen endicott and Edward Hagerman's *The United States and Biological Warfare* (Bloomingdale, Indiana: Indiana University Press, 1998).
historian with an oversize 'warning!' sign, they are, nevertheless, fundamental and worthy topics for consideration. Though a complete understanding of the ways that power and prestige—two multi-dimensional and complex features—have ever operated to shape the actions of individuals is impossible, Crossroads offers an opportunity for historians to confront an instance where their influence cannot be ignored—the historical record reveals that there is simply no other logical explanation for the Navy’s plan. First, there was no need to set bombs against naval vessels: scientists warned all along that radiation would pose the greatest hazard, particularly since the Navy’s ships were built for combat and structurally designed to withstand bombardment. Additionally, radiation’s effects upon ship material could be more safely, and scientifically, studied in a laboratory setting. Second, many contested the Navy’s presumption that any possessor of an atomic bomb would expend, actually waste, such a costly and supremely effective weapon of depopulation upon ships at sea. Third, and particularly in light of the foregoing, the operation demanded an enormous expenditure at a time when the nation’s domestic problems demanded immediate attention. Fourth, the operation could only but aggravate the tense relationship between the United States and the Soviet Union and jeopardize any possible agreement on the hotly-debated issue of international control of atomic energy. Finally, and perhaps even more telling, is that the Navy designed Operation Crossroads as a public demonstration—it fully intended to confront and emerge victorious from its battle with atomic weapons before an audience—announcing to the world its superiority. It seems, then, a more-than-reasonable suggestion that the Navy’s public arguments for the operation shielded more primal, fundamental motives.
To understand why the Navy sought to aggrandize itself at the expense of atomic weapons and ships, it is important to bring the Navy and its relationship with the nation into context. In this regard, it is helpful to look at Operation Crossroads in light of the Manhattan Project and recognize that although there are similarities, there is also a very dramatic difference between them. In a very broad sense, if the Manhattan Project can be seen as a process driven by unity and confidence, then Operation Crossroads must be understood as the product of disunity and (though perhaps too modern a word) insecurity.

The Navy planned and executed the ostentatious Operation Crossroads to prove itself, and its ships, militarily viable in the aftermath of atomic weapons development and grossly underestimated both its costs and its consequences. To Congress, the Navy estimated the expense of the maneuver at $10 million, less than the actual $100 million the Navy itself spent, and miniscule compared to the actual cost to the nation of Operation Crossroads: $1.3 billion. This is not to say that the operation's consequences and

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16 It must be noted that the Navy, and perhaps almost all those who supported Operation Crossroads, failed to recognize the impact of radiation upon ships; and, failing to take note of the scientists who tried to warn them, considered that if ships continued to float, the operation would constitute a valid indicator of the Navy's continued presence in the atomic world. Hanson Baldwin suggested that despite the concerns of scientists, the tests would help the Navy plan better ships, even if they were yet "another piecemeal improvisation which represents the daily evolution of our postwar defense policy." He did suggest other tests, though, so a citizen might "know how deep he might have to go underground to obtain some reasonable degree of immunity from atomic explosions." *New York Times*, February 20, 1946, 9.

17 This astronomical figure 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 and Weisgall, *Operation Crossroads*, 294. Blandy justified the lower, $10 million, figure by valuing the target ships as salvage, and estimating costs only upon their value per ton as scrap.
influence can be legitimately measured in dollars alone, but the figures do illustrate the willingness of the government to funnel postwar dollars into a military program despite the fact that few believed it worthwhile, and lends credence to my argument that the Navy placed enormous significance upon Crossroads; indeed, that the Navy believed that the operation might just secure its very survival. In 1994, Jonathan Weisgall, the attorney who later successfully represented the Marshalese in their lawsuit against the US government refused to lay blame, commenting: “This is a story of a fatal combination of ignorance and arrogance. There is no conspiracy and no genuine villain—only victims.” There may have been no conspiracy, but there was plenty of blame to go around, beginning with the Army and Navy who trained their sights only on each other.

America’s war against Japan had been, in one sense, the Navy’s own battle, at least, that is, until the Army dropped two atomic bombs and ended the war. Japan had attacked the United States through the Navy—the raid on Pearl Harbor killed over two thousand, sunk or disabled nineteen ships and 150 planes, and coordinating attacks in the Philippines, Guam and Midway only increased the losses of Naval personnel and

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18 The solution is not that simple. How, for example, can one really place a value on the suffering of the displaced 167 Bikinians, the anxiety of atomic veterans who knew that they were overexposed, or the illness and deaths of those same veterans. Congress, though, has attempted to do so and has passed legislation compensating both islanders and veterans.

The Bikini islanders suffered tremendously. Rongerik, the island that served as their temporary relocation destination, had neither sufficient food nor space for the Bikinians. It was one-quarter the size of Bikini, and its lagoon carried more poisonous than nutritious fish. By August 1946, the islanders had harvested all the island’s food and during the winter of 1946-47, the islanders sailed eighteen miles to Rongelap to leave their malnourished children and elderly and to ask for additional food to take back with them. Weisgall, Operation Crossroads, 308-309

19 Ibid., 5
equipment. Battleships, carriers and cruisers dominated the war in the Pacific even as the Army took to the field in the European theatre; but although Japan started the war against the Navy, the Navy did not get the opportunity to finish it. Instead, General Groves and a special Army squadron of bombers set up on Tinian Island and, in a week, ended the war. The atom bomb put the Navy at a perilous junction—it could either prove its viability or face eventual oblivion as the Army and its spawn, the Air Force, dominated a world of atomic weapons. Tension within the nation’s military establishment filtered into the public realm quickly, and before the Japanese had even signed the formal surrender, a New York Times article neatly defined the problem, reporting that the end of the war gave the military a “green light to resume their campaign, and Navy leaders are preparing for the coming fight.”

The atom bomb enormously raised the stakes of a longstanding intraservice rivalry. Even during World War II, the military had not expended all of its energies against the enemy, and their attacks against each other were so vociferous that Truman later said “.

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20 Indeed, Ralph Bard, Undersecretary of the Navy and a member of the Committee that ostensibly decided whether or not the bomb would be used against Japan, argued that Japan was already “ licked” and that Japan should be warned explicitly before the bomb’s use. In a memo to Stimson, he said 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 (New York, NY: G.P. Putnam’s Sons, 1995).

21 Interestingly, the US even interviewed Nazi prisoners for their comments on the bomb and navies. In an August 10 interview, the Hermann Goering sympathized with the US Navy, noting that the atomic bomb would make “battleships impractical” but (optimistically) that a new defense was found for every new weapon. New York Times, August 9, 1945, 17. Six months later, Admiral Chester Nimitz made the same argument: “There are some people who claim that the atomic bomb makes navies obsolete. . . That has been claimed for every other new weapon. . . 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.” New York Times, February 13, 1946, 13.

that if the Army and the Navy had fought our enemies as hard as they fought each other, the war would have ended much earlier." The Army and the Air Corps had delivered a stunning blow in Europe, and delivered the *coup de grace* in the Pacific. The Navy, faced with a loss of prestige and money, accepted a suggestion by Lewis S. Strauss (later Chairman of the AEC) and planned Operation Crossroads as the means to insert a naval quotient into the atomic equation. Before it was over, the Navy had used up one-third of the nation's supply of atomic material and rendered a tropical paradise uninhabitable.

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Analysis reveals that practices within Operation Crossroads correlate to those of Manhattan: both capitalized upon an overriding military objective, secrecy, and media manipulation. Crossroads is, perhaps, less well known than Manhattan, but it also consumed vast amounts of money justified by an overriding military purpose. In fact, Admiral Blandy convinced a doubtful Truman by invoking not just the Navy, but the entire US military establishment—Crossroads was necessary: "of great importance by the Joint Chiefs of Staff." And, just as the government and General Groves manipulated the media, so too did the Navy for Crossroads. The Navy's operation, though, had the added benefit of being able to deliver the goods, *live*. To chronicle its success, the Navy invited the most prestigious group of reporters ever assembled at government expense for a six-

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24 Truman signed the order authorizing a significant obliteration of the nation's atomic arsenal without knowing its full implications; only Groves and Eisenhower knew how many weapons existed at the time. In fact, Truman chose ignorance, telling his cabinet that he did not want to know. Weisgall, *Operation Crossroads*, 8-9.

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week floating excursion to the Pacific—168 print and radio reporters became participants in the grand public relations scheme. Unfortunately, the large number of talented reporters did not get a chance to exercise much creativity—secrecy remained paramount and the Navy excluded reporters from everything (and everyone) save official press conferences. They were the epitome of a captive audience, and according to one, had “freedom of action—on the end of a shrinkable leash.” But it is important to look at Crossroads as more than the sum total of Manhattan behaviors with the addition of displaced islanders and radiation-exposed veterans.

Operation Crossroads represented a second and crucial stage in the development of the nation’s weapons testing program because it was responsible for a profound perceptual and operational shift in the relationship between scientists and the government. While the operation promised to solve a number of questions about atomic weapons and ships, one of the most important things it proved was that scientific information itself could be manipulated in the interests of a military objective. When the physicists developed the first atomic weapon, they assumed nearly mythic status but within a year fractures within the scientific community itself developed and the military capitalized upon those disagreements. The end of the war provided the physicists with

26 Robert Littell “The Voice of the Apple” Harpers September 1946, cited in Weisgall, Operation Crossroads, 142. The press fared better than the invited foreign contingent who were restricted from even press releases. Two Russians attended, a physicist and a KGB agent who posed as a mineral processing expert. Idem., 144.

27 Weisgall does recognize that Crossroads instituted a pattern of secrecy that had continued since the inception of Manhattan, when the first atomic “seeds of arrogance” were sown. Ibid., 8.

28 “...no dinner party is a success without at least one physicist to explain...the nature of the new age in which we live. Ibid., citing Harpers, 83.
an opportunity to interject their own personal attitudes about the atomic bomb and its consequences. Anxiously, they instigated a national discourse that many thought would lead to international control and enhanced atomic development; progress divorced, they hoped, from the limiting and lethal utilization of physics for warfare alone.

That conversation, though, infused as it necessarily was with the moral, practical, and political ramifications of atomic energy belied the all-too-human characteristics of the bomb’s creators: their image as demi-gods was shattered. Clearly, as long as scientists remained mysteriously gifted with knowledge of the seemingly unknowable they were elevated from the rest of humanity, somehow detached from the cares of everyday men; but, when they voluntarily re-entered the world by decrying the power of their own invention and politicized their arguments, they became, like any other, susceptible to not only criticism, but appropriation. The division among physicists at the end of the war allowed the Navy to utilize a “one guess is as good as another” philosophy, discarding those that did not suit their purpose and embracing those that did. Agreeable scientists became cogs in the military machine and science itself a tool of the military.

Exception must be made for General Groves, of course, who from the very start believed scientists little more than engineers. Groves’ frustration with scientists only grew after scientists began to report radiation damage at Hiroshima and Nagasaki and although he was not particularly concerned with the injury to the Japanese, reports indicated that the white and red corpuscles of soldiers had diminished. Groves telephoned Lt. Col. Rea at Oak Ridge Hospital on August 25 who told him that the drop was possible, but believed the reports were generated as propaganda. Groves replied “Of course, we are getting a good dose of propaganda, due to the idiotic performance of the scientists and another one who is also on the project.” Dr. Rea, although implicating propaganda, admitted that the reports were probably correct: “Of course, those Jap scientists over there aren’t so dumb either and they are making a play on this too. They evidently know what the possibility is.” “Memorandum of Telephone Conversation between General Groves and Lt. Col. Rea, Oak Ridge Hospital, 9:00 a.m. 25 August 1945” TSCMED.
Though the previous chapter discussed the ways that the government suppressed information about the bomb, it is important to understand that those restrictions limited discussion about the science of the bomb, not attitudes about its use. After Hiroshima and before anti-communistic fervor became inscribed upon the nation’s consciousness, a vibrant and fluid national discussion ensued over the bomb and the future of atomic energy. The issues raised in newspapers illustrate that during the last few months of 1945 and 1946, the nation’s reliance upon atomic weaponry was not (in the public’s mind, at least) a foregone conclusion and also that some believed that international control could successfully restrain future use of the bomb and potential devastation. Naturally, too, others thought that America alone deserved the keys to wholesale destruction and relished atomic weaponry as an instrument of everlasting superiority. Before this chapter turns to the exaggerated demonstration of naval pride that was Operation Crossroads, it will be helpful to look at the ways that some politicians, citizens, and scientists articulated their concerns and shaped a short-lived national debate over atomic weapons and energy.

The monumentousness of the bomb itself stimulated immediate comment, and perhaps reflective of the ‘absolute’ nature of the bomb, a sampling of press coverage

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29 It is significant, however, that as early as September 21, most members of Truman’s cabinet favored American control of atomic information. The editor of Forrestal’s diary indicates that at a meeting called to determine the US position vis a vis the bomb and international relationships, most agreed with Forrestal, whose point was that the knowledge of the bomb was “the property of the American people” and that the President could not give it away without the public’s permission. Willis, The Forrestal Diaries, 94-95. Forrestal’s point was undoubtedly reinforced when an October poll of Congress reflected that ninety percent believed that the US should retain sole control of the bomb and a public poll demonstrated that an almost identical number of Americans agreed. Weisgall, Operation Crossroads, 59. Given this, then, it seems that those who urged international control through 1946 spoke to a small audience of supporters and a far greater number of the unpersuadable.
reflects that the debate quickly assumed an all-or-nothing stance. Two letters to the *New York Times*, both written on August 7, 1945, illustrate the polarity that occasioned the widespread belief that America should keep her own counsel. One writer believed that only wise choices of leaders could save the earth and that the “fate of humanity largely rests upon a course of wisdom or one of primitive ferocity. . .[and] only men of great vision and warm human understanding” should be elected. Another rejected “understanding” in favor of aggression, and argued that the United States should use “all its power to obtain military and political control.” After the bombing of Nagasaki on August 9, yet another writer offered an even more determinative, if naive, solution to the problem of the bomb: “Let us. . .dump the whole thing into the middle of the Atlantic or the Pacific, whichever is deeper. . .”

The bomb’s clandestine deployment also resulted in some poorly-articulated and decidedly uncontemplative responses. Three days after the United States bombed Nagasaki, New Mexico’s Senator Hatch, obviously a proponent of the “big stick” philosophy of foreign relations and harbinger, perhaps, of atomic diplomacy, proclaimed

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30 It is impossible, of course, to assess the beliefs of those whose views were not recorded, but there is no reason to believe that they differed significantly from those published. The British, too, were divided: Churchill proposed that the US maintain sole custody and control, while other members of Parliament, especially Laborites, noted that “exclusive knowledge and exclusive use in the sole discretion of one power of an overwhelmingly destructive force. . .would make nonsense of the whole conception of collective security.” *New York Times*, August 22, 1945, 4


32 *New York Times* “Letters to the Editor” August 11, 1945. On August 9, the *New York Times* published excerpts from the English Press demonstrating allied anger over the bomb’s use: “Is there to be no protest against the crime of Hiroshima” and “Japan has never aroused my sympathy until today, and now my heart goes out to her.” *New York Times*, August 9, 1945, 11.
that the “the world” would have to accept the US way, or else: “we die together...the world is going to have to accept the rule of law and justice or be destroyed.”[^33] A perhaps too-patriotic chemist with the University of Washington concluded that international control was unnecessary and that United States should keep control; this, despite his belief that other countries could not even build such a weapon: “It is doubtful that any country is capable of its development except the United States because of this country’s production capacities and great resources.”[^34]

Others, though, had less faith in the possibility of maintaining the scientific secret and thus emphasized international guardianship. Scientists, many of whom were themselves members of the world community, wasted no time in stressing the importance of international control. Oppenheimer, who said he spoke for the bomb’s developers, relayed the united hopes of physicists that the bomb could ensure peace, “...the cooperation and understanding between nations which has seemed desirable for so long has become a desperate necessity.”[^35] A veritable “who’s who” of scientists contributed to a book, *One World or None* that relayed their desperation:

> Make sure that your Senators and Congressmen know that you are aware of the unprecedented gravity of the problem. Urge them to act with courage and vision in solving the problem of the atomic bomb within the


[^34]: *The Arizona Republic* August 9, 1945, 5. There were utilitarian hopes at this early stage. The mayor of Miami Beach, Herbert A. Frink, embraced a more functional use for the bomb and telegraphed a proposal to Truman that it be used against hurricanes, more particularly against the one brewing in the gulf that was about to threaten his city. *Santa Fe New Mexican*, August 21, 1945, 1.

framework of the new ideas that, as this book shows, are necessary to the solution. Time is short. And survival is at stake.\textsuperscript{36}

Newspaper editors too, believed that the bomb's secrets could not be kept and stressed the need for international control. Waldemar Kaempffert called it an "unsecretive secret," noting that Great Britain and Canada already knew about it, Germany had come close, the Russians would eventually, and when small countries developed bombs "little Davids" would be able to lay Goliaths low.\textsuperscript{37} Another editor with the \textit{Arizona Republic} insisted "If ever there was a need for international machinery to maintain the peace of the world... the atomic bomb... has made it vital."\textsuperscript{38} While those inside the nation argued whether international control was necessary, or desirable, statesmen negotiated with the Russians.

Perhaps because of the rapidly changing international situation, or because historians are limited to written material and do not have the luxury of discovering what may have stirred in the minds of those long gone, it is difficult to establish a clear measure of commitment on the part of the administration to an international agreement on atomic weapons. With little direction from the president, Secretary of State James F. Byrnes tried


See also the \textit{American Association of Atomic Scientists' Bulletin} that stressed the maintenance of US military superiority in tandem with international control of atomic energy: "Much as we may all hope that the millenium of peace is about to arrive, there is little reason to believe that it is here." April 1946, vol. 5, no. 4,27.

\textsuperscript{37} Waldemar Kaempffert, "Now That We Have Got an Atomic Bomb, What Do We Expect To Do About It? \textit{New York Times}, August 26, 1945, E9.

\textsuperscript{38} \textit{Arizona Republic}, August 9, 1945, 1.
to secure a Soviet agreement to participate in an international scheme for atomic control.

As the "only American ever to serve as governor, secretary of state, Supreme Court
justice, congressman, and senator" Byrnes probably had no doubt that he could solidify
Soviet cooperation. His methods betray no lack of confidence, and during September
1945 at a conference with Molotov, warned "If you don’t cut out all this stalling. . . I am
going to pull an atomic bomb out of my hip pocket and let you have it." By December,
though, after Byrnes had taken some advice from Stimson, Kennan and Truman, he
approached Stalin directly (with considerably less bravado) and received a verbal
agreement from the Soviets on the issue of international control. Shortly after Americans
got this news during Byrnes’ homecoming radio broadcast, Truman called him to the
White House and chastized Byrnes for believing a Soviet promise.

International control was not "dead in the water" but as Weisgall notes, the
relationship between the Soviet Union and the Americans (and British) was beginning to
deteriorate. On February 9, Stalin delivered a speech promising the trebling of Soviet
industry and claiming that "peaceful international order. . . was impossible under the

39 Weisgall, Operation Crossroads, 57.
40 Gregg Herkin, The Winning Weapon, 203
41 Weisgall, Operation Crossroads, 58-60; and McCullough, Truman, 479.
42 In late March, 1946, the long-awaited Acheson-Lilienthal plan for international control
received high praise, but Truman’s choice of the US representative for the plan, Bernard
Baruch, casts some doubt upon the president’s commitment to the plan. When Baruch
accepted the position, Truman noted “He wants to run the world, the moon and maybe
Jupiter--but we’ll see.” The most outspoken proponent for internation control,
Oppenheimer, claimed that the day Truman appointed Baruch was the day that “he gave
up hope.” Weisgall, Ibid, 70, citing Peter Goodchild, J. Robert Oppenheimer
(Boston:Houghton Mifflin, 1981) 71. One of the plan’s developers and later Chairman of
the AEC, David E. Lilienthal, had serious doubts about the Baruch appointment,
particularly after Baruch admitted that “he wasn’t much on technical scientific stuff, but he
could smell his way through it.” Lilienthal Diaries, The Atomic Energy Years, 32, 43.
capitalist world economy," a speech that Justice Douglas and James Forrestal considered privately the "declaration of World War III." Shortly thereafter, the "breaking moment" in this nation came on March 5, 1946, when Churchill delivered his 'iron curtain' speech in Missouri. It cannot be known, of course, whether all the publicity surrounding the atom bomb contributed to international friction, but it is not unreasonable to assume that it had some effect. If that is the case, then, the many confrontations over the Atomic Energy Commission and Operation Crossroads that played out in the nation's press may have intensified the progress of the cold war.

The issue of international control had given the scientists an arena through which they might articulate their uniform arguments, but domestic control of atomic energy provided them an arena of a different sort, and that issue became and highly public point of contention between scientists. On October 3, 1945, Truman proposed that Congress establish an Atomic Energy Commission and two bills, one by Senators Andrew May and Edwin Johnson (the May-Johnson Bill), another by Senator Brian McMahon (the McMahon Bill), were introduced. Although Oppenheimer, Lawrence, Compton, and Fermi supported the May-Johnson Bill, most other scientists considered it simply a continuation of the Manhattan Project and argued that the associated military restrictions

43 Millis, The Forrestal Diaries, 134.
44 Weisgall, Operation Crossroads, 61.
45 On Independence Day, 1946, the New York Times reported that Boris Izakov of the Soviet's Pravda had claimed that Crossroads amounted to a military demonstration designed to force concessions. Crossroads "explode[d] something more important than a couple of out-of-date warships. It fundamentally undermined the belief in the seriousness of American talk about atomic disarmament... This is what in the long run atom diplomacy boils down to... it is by no means more attractive when it is accompanied by light and explosion effects. July 4, 1946, 4.
would not serve science. Sixty prominent figures, including Albert Einstein and twenty-seven other physicists, petitioned Capital Hill in support of their argument that the May-Johnson bill would establish "totalitarian authority" and "promote a competitive arms race." The rival bill reflected not only McMahon's personal dislike of General Groves (one of McMahon's Connecticut neighbors who previously threatened to run against him) but also his firm belief that atomic energy required civilian, not military, control. The highly charged debates over the domestic issue of atomic control drove a fracturing wedge through the heart of the scientific community and resulted in a long-term, and enormously consequential, division.

Even as international and domestic control of the bomb itself stimulated divisive and heated debates, the aptly-named Operation Crossroads became the locus for the gamut of atomic concerns, including disputation of international control, domestic trusteeship, military rivalry, and civilian atomic interests. Admiral Blandy had hoped that

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46 A physicist's letter to the Association of Los Alamos Scientists declared that "my confidence in our leaders...is shaken." Weisgall, Operation Crossroads, 65. The supporters, however, pointedly qualified their support and urged for the relaxation of both compartmentalization and secrecy so associated with Manhattan. In this regard, see Oppenheimer's statement before Congress in TSCMED.

47 The Bulletin of the Atomic Scientists, February 15, 1946,1; Weisgall, Operation Crossroads, 67. See also Herkin's analysis of the relationship between McMahon and Groves, The Winning Weapon, 133. As early as August 10, 1945, Senator McMahon urged some sort of 'constructive' use for atomic energy, apart from weaponry by sending a telegram to Truman "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." New York Times, August 19, 1945, 6.

Secretary of War Robert Patterson "attacked" McMahon because his bill excluded the military control. Curiously, he argued that the civilian commission would not develop military weapons and also that any military weapons it developed would be unfamiliar to the military forces asked to use them. Samuel A. Tower "Patterson Fights for Voice on Atom" New York Times, February 15, 1946, 3.
the operation could be reviewed by an all-Navy board, but that proposal disturbed the Army Air Corps which became irate and insisted that it also participate in the review, but proposed to report only to the president. Senator McMahon, already an outspoken opponent of the military’s influence in atomic affairs, criticized the operation and forced Truman and then-Secretary of the Navy Forrestal to announce on February 13, 1946 that the operation would be evaluated by civilians. Still, on February 17, Hansen Baldwin stated the obvious self-serving nature of the tests: that the Navy’s experiment would not result in the advertised fact-finding and scientifically-beneficial operation, but rather that the Navy planned the maneuver solely in its own best interests and would undoubtedly serve as “judge and jury.” On February 19, 1946, President Truman tried to quell some of the debate and announced personally that a civilian board would oversee the tests and report not to the military, but to him. This move infuriated both the Army and the Navy who joined in a rare display of common cause, believing that it reflected executive mistrust and also because it appeared that Truman had finally committed to support the

48 During the meeting about the tests, Truman called the critics “crackpots” but decided that a special commission would attend the tests to validate the Navy’s findings for the benefit of Truman and the public. Forrestal and Admiral Leahy objected especially to McMahon’s bill, claiming that it insinuated a “distrust of the armed services...[since it] proposed to turn over the making of one of the most effective weapons of war to a civil commission.” The Diaries of James Forrestal, 13 February 1946, 133. Their comments, though, do betray a like distrust of civilians.

At the March 22 cabinet meeting, Truman insisted that Operation Crossroads (originally scheduled to begin on May 15) be delayed until after July 1 because a sixty-member Congressional delegation planned to attend while they still “had business” to take care of. McCullough. At the same meeting, Commerce Secretary Wallace proposed that the Navy limit the test to the deep-water detonation experiment. Millis, The Diaries of James Forrestal, 22 March 1946. Had that recommendation been accepted, the results might have been disastrous.

49 Hansen Baldwin, New York Times (February 17, 1946), 32.
McMahon Bill, one that they were united against. Additionally, Secretary of State Byrnes still worried that the publicity associated with the tests would disturb international relations and the summer's Paris Peace Conference and asked that they be postponed.51

Respected physicists agreed with Byrnes that the operation could be counterproductive to international cooperation on atomic energy and weaponry and that the tests promised to add little scientific information.52 The Bulletin of Atomic Scientists clearly defined its subscribers' belief that the tests would have little effect upon battleships and that the American people might be convinced that the atomic bomb was "just another big bomb" and not worthy of international control.53 In its May issue, Lee DuBridge,
President of the California Institute of Technology, worried that the tests could not possibly improve international relations, and that "at this critical hour they are in poor taste." The Association of Los Alamos Scientists concurred, and Louis N. Ridenour, spokesman for the Federation of American Scientists called Operation Crossroads "The Great Boondoggle." A University of Chicago physicist, Albert S. Cahn, succinctly analyzed the problem: "In case of war, no power is going to be foolish enough to waste its bombs on a few boats. They are going to bomb the cities and harbors." The operation's supporters, though, pushed these legitimate concerns aside.

When some scientists questioned the safety of the project and whether the ramifications had been carefully investigated, they were dismissed and the opinions of supportive scientists (and civilians) accepted instead. DuBridge had also expressed health and safety concerns unaddressed by the Navy, particularly fallout—warning that water spray onto observation vessels or a sudden rainstorm that could trap radioactive material and carry it to unsuspecting, and unprotected, locations. When presented with DuBridge's concerns, a member of Operation Crossroad's civilian evaluation board superficially dismissed them, saying "DuBridge has been wrong before." The Navy's choice of Technical Director for the project, Dr. Ralph Sawyer, an expert in spectroscopy, demonstrates the dearth of physicists willing to participate in the questionable 'experiment.'

57 Ibid.
After Truman had decided to back the Navy’s operation, the administration began a process of manipulation designed to stimulate support and avoid public criticism. As the list of opposing scientists grew and as their arguments became public, it looked for at least one famous scientist to support the project. Truman asked Groves to contact Oppenheimer and ask him to serve as part of the president’s oversight committee. Groves agreed and contacted Oppenheimer, asking him to attend the tests, but knowing Oppenheimer’s objections, did not ask him to participate in the evaluation—a nuance apparently lost on Oppenheimer (and Truman.) Although Oppenheimer initially agreed, he wrote a lengthy letter to Truman on May 3, 1946, asking to be excused. The administration, reluctant to fuel the already-heated debate over the tests; or, perhaps, equally reluctant for the public to know why Oppenheimer chose not to participate, refused to excuse him or even announce that he would not be participating until after the operation began.58

There was, indeed, no lack of controversy or chicanery leading up to Operation Crossroads and those features only continued (and escalated) once the Navy’s ships were anchored around Bikini. Let us turn now and look more closely at Operation Crossroads to see why, in the interests of naval prestige, the Navy wasted almost a hundred ships, exposed tens of thousands of servicemen to radiation, and how one man, Stafford Warren, struggled to save crewmen from needless radiation exposure and how he finally convinced the Navy, with a radiographic image of a fish’s scale, to finally give up.

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58 After a lengthy list of reasons, Oppenheimer told the president that whatever the outcome of the tests, it “could well be most undesirable” for him to produce a report on the operation. *Ibid.*, 98-99.
When it was all over and he was on his voyage home, Stafford L. Warren, the operation's Radiological Safety Officer, wrote his wife from sea on August 20 that, having slept for four straight days, he had partially recovered but was ready for a vacation: he was "tired of bombs and radioactivity." The Operation had been an ordeal throughout its planning stages, and once Crossroads got underway in the Pacific, Warren had battled not only radiation, but arrogant ships' officers who seemed unable to understand the potential of the invisible enemy. He was not accustomed to such widespread disregard of his professional competence and had, after all, spent years working to protect the uninformed from, and teaching others about, radioactivity. As Chief of the Medical Section of the Manhattan Project and Advisor to General Groves, he had built the medical and industrial radiological program "from scratch." Additionally, he was second in command of the survey team that the United States detached into Hiroshima and Nagasaki. After he left Japan and had accepted the Navy's offer to serve on Operation Crossroads, he realized immediately that his experiences with General Groves had not prepared him for the Navy and the highly politicized and publicized atmosphere of postwar atomic testing.

59 Letter from Stafford Warren to Viola, August 20, 1946, Box 1, Viola Warren Collection, Young Library, UCLA.
60 Letter to Dr. George F. Lull from Stafford Warren, December 5, 1946, Warren MSS, Box 73, 74. Warren performed the first studies in Japan and concluded there that radiation in Japan caused far more damage than the bomb itself, and conducted the first systemic study of fallout, and after Crossroads, developed an inexpensive meter to measure radioactivity.
61 Warren had demonstrated his willingness to take on the military in the interests of science, and humanity. While he served on the Atomic Bomb Casualty Commission in Japan, he reported that Japanese scientists, "eager to publish the results of their studies" had been prevented from doing so by the military occupation. Additionally, and though he
Warren confronted the potentially contradictory reality that while safety was his responsibility, the Navy's chief concern was publicity. Since Warren needed so many physicians, trained medical personnel and technicians that he could not rely upon the Navy's resources, he began recruitment in the private sector almost immediately. Acquiring civilians, though, presented an additional problem because Warren was unable to tell them exactly when, or for how long, they might be needed. Scheduling posed problems for Warren—it was a crucial factor that might determine whether or not Warren could locate enough willing personnel. After Truman had already ordered the first of three planned shots (originally scheduled for May) postponed until after July 1, the Navy proposed another change that would have extended the entire operation. At a January 22 meeting, they suggested a mid-August date for the second test. Warren became "disgusted" and, blaming the delay on the Navy's desire for publicity, demanded that unless the two shots were scheduled closer together, he would insist that the entire team leave after the first shot and then return for the second:

Groves' method of working...may have been upsetting but it was decisive in the main and accomplished what you were supposed to do. Blandy will soon have to put the foot down...there is no distinction between what is public relations and what is a working session.\(^2\)

Finally, \textit{Able} was tentatively scheduled for July 1, and \textit{Baker} as quickly as cleanup from the first had been completed and weather permitted.

\(^\text{2}\) Stafford Warren to Viola Warren, January 22, 1946, \textit{Viola Warren Collection}.
It is not necessary, however, to rely solely upon Warren’s disdain as evidence of the Navy’s emphasis on public relations, since plenty of evidence exists to illustrate that the Navy’s commitment to the operation was firmly grounded in a desire for positive press. First of all, hoping that image just might, perhaps, be everything, the Navy changed the name of the operation. The new name, “Joint Task Force One,” carried none of the critical baggage that had been directed at “Operation Crossroads” and, additionally, acknowledged the Army’s contribution through both Manhattan Project cooperation and the Air Corps’ delivery of the Able weapon, de-emphasizing, too, the power struggle between the armed services.\footnote{Without legislation controlling domestic atomic energy, the Manhattan Project (and General Groves) maintained control of atomic weapons and materiel.} There is evidence that the tactic was not completely successful, for by the time the Navy published its official operation plan, the Navy insisted that all publicity refer to the operation as “Joint Army-Navy Task Force ONE.”\footnote{“Appendix I to Annex ‘O’ of ComJointTaskFor ONE No. 1-46” (4)O-I-2. Warren MSS.}

Secondly, the Navy’s public information office encouraged the development of a more positive image and coordinated all publicity to already-prevalent criticism. With the approval of Admiral Blandy, the Navy’s Public Information Office distributed bulletins designed to help task force members deal with a wide range of criticism. On March 7 Warren received the first “Public Information Estimate” under a Joint Task Force One letterhead that informed him of the “general attitude of the public toward Operation Crossroads” and suggested “appropriate public information policies to be followed.” The report’s short, positive, preface suggested that the public’s attitude seemed to be “sane and encouraging” and that the operation was “widely recognized as a forward-looking
military experiment" but the bulletin’s three pages of sample criticism and suggested
responses demonstrate that it was clearly designed to assure that task force members
respond properly to existing, and possible future, criticism. The tone of the missive
clearly indicates that the Navy was confident that it could successfully sway public
support, particularly since “opposition to the tests has been sporadic, relatively
unorganized, and ineffective. Widest opposition appears to come from the ‘dissatisfied
scientists.” The Navy indicated that the only “strong” opposition came from objections
by the Society for the Prevention of Cruelty to Animals.

Despite, or more likely because of, the Navy’s investment in positive press, it
severely limited the activities of reporters allowed to participate in Operation Crossroads.
It did, though, accommodate them by setting aside one ship for reporters only, the
Appalachian; and another equipped with communications equipment and wire services,
the Panamint. The Navy’s formal “Plan of Operation” covered every possible eventuality,
and dedicated “Annex O” and its multiple appendices to the press corps. In the interests
of national security, the Navy invoked President Truman’s order of September 14, 1945,

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65 The Navy’s use of the word “sane” as an attribute of those who encouraged the tests
leads one to wonder if, perhaps, the Navy believed the obverse—that any criticism of the
operation was “insane.” The report includes a litany of criticism, some already noted
earlier in this chapter, but other criticism cited included: “uncontrollable chain reaction.
volcanic eruptions. . .radiation effects at great distances. . .grave risks to personnel. .
destruction of marine life and damage to fisheries. . .pacifistic reaction. . .” It should be
noted that although the testing resulted in no uncontrollable chain reaction or volcanic
eruptions, the rest of the criticisms seem to have been fairly leveled, rational, and borne
out by time—including the feared, though perhaps too-long-delayed ‘pacifistic reaction’.
“Public Information Estimate No. 1”, 7 March 1946; Warren MSS, box 73, 74, reel 1.
66 Ibid., 2.
67 Including a typhoon plan complete with air-sea rescue and evacuation.
to editors and broadcasters to rely solely upon official releases, and placed other restrictions upon reporters and the information they divulged. Information that focused upon the grandiose nature of the operation, however, was encouraged. For example, the Navy admitted that it would use a Nagasaki-type bomb and although almost all other information was restricted, it made a notable exception where the size of the weapon might be used as a measure of naval strength in the face of atomic weaponry: "Note: It may be said that the bomb has the explosive power equivalent to 20,000 tons of TNT; it is 2,000 more powerful than any other bomb yet used." Additionally, the Navy managed a far-flung empire devoted to public relations. It censored photography, posting "photographic review officers at all necessary points" including on the Appalachian, Kwajalein, and at "processing laboratories" in the US. The public relations aspect of the operation was not limited to nationally-recognized reporters and broadcasters, however, because the Navy had "established procedures" to furnish stories to hometown newspapers of participating servicemen. A not-insignificant task considering that over 43,000 servicemen participated in Operation Crossroads.

The Navy's image, though, required the legitimization of its spectacle, a task which only increased the extent of the operation's planning. The incorporation of 'scientific studies' inserted a massive civilian component into Crossroads and required an elaborate set of contingencies. To the already-complicated military organization was added the transportation, security, housing, and evacuation of civilian researchers.

69 Ibid. (2)(b)(3),O-I-1. (emphasis mine).
70 Ibid. (5)(e),O-1-2.
General Groves, who had confidently gnawed through the intricacies of building the Pentagon and the even more complex Manhattan Project said that “...it would be difficult to get it more complicated.” And the Navy itself said that the Operation’s planning was “so vast and detailed as to suggest the Book of Fate itself.” Designed to illustrate the Navy’s commitment to methodical operational development, the statement also betrays the more fundamental motivations and subjectivities lurking within the nation’s military in the wake of the atomic bomb. The “fate” of the Navy rested upon its ability to justify its hairy-chested display as something more noble—a contribution to science.

Hence, Blandy publicly placed science ahead of military concerns, repeatedly announcing that the operation was a joint scientific-military venture. One commentator from Life noted that so many university scientists were involved that Bikini had become the most studied place on earth, and that “astrology” seemed to be the only “ology” missing in the contingent. The military, though, placed great emphasis upon its own experimental animals. The Burleson, an attack transport modified with concrete-covered decks, holding pens, feeding troughs, special drainage systems, and carrying eighty tons of

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71 Weisgall, *Operation Crossroads*, 118.
72 The Navy was, perhaps, a little slow in recognizing the value of co-opting science into their program, because although planning for the operation began in August, 1945, a letter from the Massachusetts Fisheries Association of December 12, 1945 to Secretary of War Patterson complained bitterly about the ocean testing: “Warnings have already been issued to both branches of the Armed Forces by the Fish and Wildlife Service of the Department of the Interior, coupled with requests from the industry for detailed surveys before such tests are conducted. If these experiments are carried out without regard to the effect on Marine life, the results are likely to be disasterous to commercial fishing operations both afloat and ashore. ...We suggest that you...immediately request a postponement of all such experiments until conditions are properly studied.” Thomas D. Rice to The Honorable Robert Patterson, December 12, 1945. Warren MSS, Box 77.
73 Weisgall, *Operation Crossroads*, 120.
hay and grain in its hold, housed 5,664 pigs, mice, guinea pigs, goats and rats. Blandy announced that he regretted that “some of these animals may be sacrificed...but we are more concerned about the men and women of the next generation than we are about the animals of this one.” The self-aggrandizement of that statement deserves little comment, but it should be noted that Blandy apparently assumed (and no one apparently questioned) that radiation experiments on animals could only be carried out 4500 miles from the nearest US laboratory.

Important, too, is the fact that Blandy’s statements about the operation’s animal experimentation reveals an inexcusable ignorance about radiation and its effects. The animals were destined for tether or cage on decks, bridges, turrets, and engine rooms of twenty-two target ships; some dressed in Navy antiflash suits, others covered with sunblock cream. Planned for exposure to shot Able, the Navy admitted that some animals might die, but believed that although many would become sick from radiation, they would eventually be returned to Washington and remain subjects of study until they died “a natural death.” Initially, Able seemed to confirm Blandy’s confidence: ten percent of the animals died immediately as a result of the blast, and the Navy boasted (and the press dutifully reported) that the goats, seemingly “imperturbable” had continued eating throughout the ordeal. Most animals, though, died within months of the shot from radiation sickness. There was one survivor of the radiation: the lucky pig “311” had escaped sometime after the shot and was rescued while swimming in the lagoon. She lived out her days, though apparently sterile, at the Washington, D.C. zoo, and finally died in

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74 Ibid.
75 Ibid., 120-121.
The public heard little about the delayed fate of the experimental animals since most died after the reporters had left Bikini and the Joint Chiefs of Staff suppressed the final report on the operation. Blandy’s willingness to believe, though, that the effects of radiation might, like the flu or chicken-pox, subside, even despite mounting contradictory (and perfectly legitimate) evidence, explains his almost-complete disregard for the effects of radiation upon servicemen that would be exposed during shots Able and Baker.77

Shot Able was, ironically, both a success and a failure. The Navy believed Able would be the most predictable of the planned tests, presumably since it was an air drop like Hiroshima and Nagasaki. As the first shot, Able enjoyed the most press coverage, and (as has already been shown) employed the so-called scientific animal studies. Additionally, the Navy hoped that Able would demonstrate the “joint” nature of the operation since Air Corps pilots would deliver the bomb. The Army had held contests among General Groves’ special B-29 crews to chose the best one to fly Dave’s Dream and deliver Able. Perhaps to the Navy’s great satisfaction, though, the Army’s contribution to the operation was less-than-exemplary. Despite the weeding-out process, practice runs demonstrated that the pilot was unable to hit (or even locate) the Navy’s central target ship, the Nevada, with a dummy bomb. For the ease of Air Corps bombers, the Nevada, a ship that the Navy chose because she was the “most rugged ship available” and had served nobly

76 Ibid., 190-191.
77 Blandy had only to consider the warnings of US scientists (including DuBridge), or his own RadSafe officer, Stafford Warren, to realize that radiation’s effects were not temporary. Indeed, had he sought a realistic appraisal of the potential for radioactive injury, the Atomic Bomb Casualty Commission in Japan could have provided him with ample (and heartbreaking) evidence. In this regard, see the voluminous files in the Warren MSS, particularly box 84.
throughout the Pacific theatre despite having been run aground at Pearl Harbor, was painted an undignified bright red and orange. The paint did not help. At 4:00 am on July 1, 1946, the bomb missed its target by over a half mile. It landed, instead, upon the *Independence*, a ship carrying an enormous quantity of instrumentation, "invalidating much of what had been planned as a scientific test." Fires burned on many ships, and others suffered twisted metal, but the rugged *Independence* kept floating even though the twenty-five fighter planes on her deck had been tossed into the sea. Blandy capitalized upon the dramatic scene and accompanying the official Crossroads press release was a picture of Blandy and Secretary of the Navy Forrestal rushing into the smoking hulks, emphasizing the duo’s bravery, "unmindful of radioactivity still lingering aboard ships in the...bull’s eye circle." After all the buildup, the bomb disappointed the press, and they returned to Bikini Island from their observation ships and noted that not only did the palm trees seem untouched, but photographic towers and even shoreline vegetation appeared normal. The Navy had won, though, because the ships kept floating, the goats seemed ok, and the Army's Air Corps had, after all, missed its mark.

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78 Weisgall, *Operation Crossroads*, 3, 168, 189. For *Baker*, the Navy put the *Nevada* in the outer ring of ships, and was "listing" by July 28—three days after the blast. In a report calculating the amount of time necessary for ships to ‘cool off’ sufficiently to allow their re-use, Warren estimated that the *Nevada* could go back into service in 1949. Warren MSS, box 78, 79. After Crossroads, the Navy towed the *Nevada* to Pearl Harbor and sunk 65 miles southwest of Pearl on July 31, 1948. The battleship, however, did not ‘go gently into that good night’—it took “four days of gunfire, bomb, rocket, and torpedo hits” to sink the *Nevada*. Weisgall, *Operation Crossroads*, 317.
81 *Ibid.*, 191-192. One said that “there were more explosions in that first Red Sox game at Fenway” *Idem.*, 187.
82 Understandably, each service had a different version after *Able*. Admiral Blandy claimed that he had seen worse damage from Kamikaze attacks; the Air Corps announced
Warren and his radiation safety officers began their battle with the Navy over radiation almost as soon as Able was detonated. The bomb exploded five-hundred feet over the array of ships so there was little radioactive water spray, but radiation was an immediate problem—as was the Navy which refused to heed Warren’s warnings. The submarine Skate appeared to have suffered severe damage, but since its structure was sound and watertight, it became the focus of the Navy’s attempt to prove its invincibility. Reporters, unable to see more than the delapidated and burned surface believed her a goner. Warren’s team estimated that the Skate would remain dangerously radioactive for three days and his team posted large warning signs “DANGER! VERY RADIOACTIVE! KEEP CLEAR!” The signs, however, made little difference to the Navy and by July 2, the Skate, still carrying its warning signs, cruised around the lagoon with a full crew, receiving a salute from Admiral Blandy and his flagship. A weapons team member from Los Alamos was astounded: “That submarine was hotter than all hell... but here was the Navy, all gung-ho, lining up those sailors.” Warren was probably encouraged because the monitors after Able confirmed earlier estimates of amount and decay rate, but should have, perhaps, taken the Navy’s reluctance to respect his “warning” signs as an ominous sign of the Navy’s lack of respect for radiation. Warren, however, made no particular notice of it in either letters to his wife or in reports about Able. Instead, he looked ahead to the Baker shot and worried about a more fearsome battle with radiation.

that the test demonstrated the flexibility and power of its force, and had they been at war, that bomb would have “wiped out” the entire fleet; and Groves was furious, not only because the Navy underestimated the bomb’s effects and associative radiation, but because the Air Corps missed its target. *Ibid.*, 186, 196, 197-198.

The Navy had been warned against trying an underwater shot like *Baker*, but they had also been warned against the very deep water planned shot *Charlie*—and they ignored both. The potential for a disaster with *Baker* may have seemed inconsequential ("waves a hundred feet high, winds reaching a thousand miles and hour, and heat measured in hundreds of millions of degrees") compared to the prospect for *Charlie*, a shot that even Blandy admitted was lethally unpredictable:

> no one can be sure what the results will be. . .among the things that have to be considered are whether this bomb might set up an endless chain reaction in the ocean, or radioactivitize the water over large areas.  

Thankfully, in the aftermath of *Baker*, the Navy postponed (forever) *Charlie*, and one can only be saddened that Blandy did not listen to the warnings about *Baker* that began in December 1945. Warren and scientists from Los Alamos warned that an underwater explosion would prevent the dissipation of radiation and most radioactivity would fall directly back into the lagoon or into shipping lanes. Additionally, that even support ships would not be able to avoid the uptake of radioactively-contaminated saltwater into ships’ systems. One scientist warned Blandy that the Manhattan Project would fervently oppose the underwater shot unless it could be “demonstrated to be absolutely vital and [information] obtainable in no other manner.” In view of this warning, Blandy originally abandoned the plans for an underwater shot, but then, under “political” pressure that the

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84 *Ibid.* 116-123. Note that Blandy’s comments about *Baker* relate only to physical effects—waves, wind, heat—and ignore the problems he had been warned about concerning radiation.

85 Groves probably played a role in *Charlie*’s cancellation. He had complained throughout that the tests compromised national security, and finally, with *Charlie* claimed that since the “important casualty producing radioactivity would be lost under water” it would be scientifically unproductive. *Ibid.*, 257-261.
Navy might just be trying to avoid damage to ships, took a firm stand in support of an underwater atomic detonation.\textsuperscript{86}

It is clear that with \textit{Baker}, the Navy knew and accepted that there would be an enormous radioactive contamination problem and that the only ‘mystery’ the test might solve was how long before ships’ crews could make the hot ships habitable.\textsuperscript{87} A summary of scientific opinion gathered before the \textit{Baker} shot reflects that Blandy, and the rest of Crossroads’ planners, knew that it would, without a doubt, contaminate not only target ships, but support ships as well. Los Alamos predicted a “witch’s brew” of plutonium near the surface—enough to poison all US forces at their highest wartime strength. The University of California warned that a 10,000 feet or less rise of the atomic cloud (\textit{Baker} had been estimated to rise 5,000-8,000 feet) would present “the greatest hazard.” A British explosives expert warned that the low cloud height would result in a “collapse of the water column. . .[and] cover many ships with water and contaminate them.”\textsuperscript{88} It seems preposterous that, given all of the warnings Blandy received (from his own scientists and others) that \textit{Baker} would result in catastrophe, he continued with the test because of ‘political’ reasons; and, I suggest, for a chance at another public relations coup.

\textit{Baker} was a precision weapon that delivered its punch with exactness, predictably (and unfortunately) confirming the fears of scientists. Before detonation, the Navy

\textsuperscript{86} \textit{Ibid.}, 213-215.
\textsuperscript{87} The ‘habitability’ problem was the \textit{only} one he presented to the Joint Chiefs of Staff when he advised them of predictions for the shot—after he had received those dire. “it will undoubtedly be some weeks before the lagoon and target ships are again habitable.” \textit{Ibid.}, 216.
\textsuperscript{88} \textit{Ibid.}, 215-217.
anchored the bomb 90 feet under a specially-equipped landing craft. At 8:50 am on July 25, the water column appeared “to spring from all parts of the target fleet at once” and rising at a rate of two miles per second, gained a mile’s height. Within 10 seconds it formed a “doughnut-like circle. . .[and] seemed to wrap itself around the target fleet.”

The column was a half a mile across and carried two million gallons of water from the lagoon. Only, possibly, did the 1883 explosion of Krakatoa create larger waves: fifteen to twenty surge waves emerged, the first 94 feet high, moving at 50 miles per hour. The waves’ backrush carried more than 50,000 tons of Bikini island back into the lagoon. This time ships did sink, among them the Arkansas and the Saratoga and the crews who rushed to try and save the latter (against Warren’s orders) suddenly “put heels in the water, slowed down, stopped, and then backed up furiously.”* Warren was pleased that at least some seemed to be finally coming around to the fact that radiation was dangerous, and he shared the vision in a letter to his wife:

> while the Sara [Saratoga] was sinking in plain sight for hours even the salvage people could be seen charging in toward her & turning tail at 1 mile away! . . .at least those with us. . .are convinced of the danger now. 

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*Before it was packed, Senator Hatch of New Mexico (the same Senator who proclaimed that either the world would accept the rule of law or everyone would just die!) chalked “Made in New Mexico” on its side. Senator Hatch seemed to thoroughly enjoy his trip to the Pacific, and he appears in many, many pictures in the Warren MSS. Spotting his presence in photographs became quite easy because he was always the only one in the frame with an absolutely clean white shirt—a standout compared to the other individuals in the photographs whose garments were almost always rumpled, and generally sweat-stained from the heat and humidity.


*Warren to Viola, 26 July 1946, Viola Warren MSS, box 5.*

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They were not all completely convinced, however, and the longer the Navy captains had to sit around after the blast, the more impatient they became to get to the target ships. When they did get restless, Warren sent radiological safety team members out with the Navy crewmen far enough toward the target ships that the hand-held radiation monitors would register dangerously high levels of radiation. Warren’s tactic seemed to solve the problem, for a time.

Warren was ill prepared, however, for the problems that would arise on the support ships once they re-entered the lagoon and the Navy became too impatient to handle. On July 27, the Navy had tried to reduce radiation on the target ships by washing them down from a distance with seawater sprays, but that had not proven effective. By July 29, the Navy was already looking for alternative ways to decontaminate the still-floating vessels, and Warren and the salvage officer Admiral Solberg suggested an abrasive spray—coconut and palm trees, pulverized with a grinding mill from Pearl Harbor. Warren finally began letting small work parties attend to the less-dangerous target vessels, but set strict regulations on the amount of time and exposure they would be allowed—regulations that they began, almost immediately, to violate.

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92 Using geiger counters to measure the presence of radiation, and allowing those alone to serve as a warning for the Navy, may have been a tactical error on Warren’s part. The geiger counters that the Radiological Safety team used, X-263, measured only high energy gamma radiation, not longer-lived plutonium. The Navy’s officers relied on the clicking of the geiger counter rather than Warren’s calculations of alpha based upon gamma readings, and thus assumed an absence of radiation in the absence of a clicking counter; when, in fact, hazardous levels of alpha and beta were present. On the geiger counter, see Weisgall, *Operation Crossroads*, 213, 233.

The pressures of mounting radiation in the lagoon combined with the Navy's attempts to decontaminate its vessels had grown by August 1. Warren pulled out an old teletype that he had sent over the Navy's wire on Able day to "Jupiter Pluvius" and "Davy Jones" requesting "half gale from Northeast with copius rainfall at Bikini Atoll...urgently needed to clear lagoon of hot water and wash target vessels" and updated it, scrawling across the bottom: "Please belay and replace 1 July by 1 August. Then send again with higher priority."\(^94\) In addition to anxious Navy men wanting to get out to the target fleet--"staring us in the face and saying 'when can we get aboard--we want our instruments..."\(^95\) the support vessels that came back into the lagoon refused to obey Warren's directives for safety. He had issued orders forbidding the use of any equipment, distillers, evaporators, and other equipment that would bring contaminated sea water into the ships, but the day after the ships re-entered the lagoon, Blandy countermanded that order and authorized the use of evaporators to distill water for drinking. This one order resulted in the contamination of every support vessel, as radioactivity became "concentrated in every ship's condensers, evaporators, and saltwater pipes."\(^96\)

There seemed to be no escape from radiation, and the problems became worse than even those predicted. When Bikini lagoon became highly radioactive, Warren instituted stricter regulations concerning the disposal of radioactive clothing and showering by the men returning from the target ships, but the levels of radiation kept climbing. The Navy moved the support fleet to 'cooler' water on August 2, but even that

\(^94\) Teletype "Priority" "From CJTF-1, Haven (AH-12)" Warren MSS, box 75, 76.
\(^95\) Warren to Viola, 30 July 1946, Warren to Viola, Viola Warren Collection, box 5.
move did not cool down the ships' hulls. Radiation Safety men ordered the sailors' bunks moved away from the walls to try and cut down on their exposure, but they still received more than an acceptable daily dosage just from their own ‘home’ ship—and that dosage climbed as they worked under orders to try and decontaminate the target ships. Later, Warren learned that much of the radioactivity absorbed by the hulls came from marine life that typically concentrates “fission products by a factors of 100,000.” Barnacles on the hulls kept the ships “hot.”

In the face of climbing levels of radiation, Warren urged the cancellation of Operation Crossroads. The day after Warren sent his letter to Blandy on August 3 warning that continued decontamination could result in serious health problems for the seamen involved, Warren received word that Blandy would not cancel the operation. That same day his Radiation Safety team advised him that the Navy’s working crews had been deliberately avoiding his monitors (some at the urging of their officers) so he gathered proof and wrote another letter to Blandy. It, too, met with a negative

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97 Ibid., 232-233.
98 Ibid.
99 After Baker, the Navy assigned over forty percent of its workforce at Bikini to ships’ decontamination.
100 Warren to Viola Warren, 11 August 1946. Viola Warren Collection, box 5. Navy officers ordered their men to disregard safety procedures, telling them that the recommended limitations had “such a large safety factor that it can be ignored” and plundered the target vessels for material that would add to the comfort of their own, support, ships. Weisgall, Operation Crossroads, 237.

The Navy’s officers simply did not fear invisible radiation. The radioactivity on one ship measured fifty times the maximum daily tolerance dose. “Nevertheless, crew members stayed on board the ship for as much as 16 hours or more. Some were ordered to spend the night there, because the ship’s officers believed that the daily tolerance dose” had a large “built-in safety factor.” Mike Moore, “The Able-Baker-Where’s Charlie Follies” Bulletin of the Atomic Scientists (May-June 1994), 24.
response. In the meantime, one of the Rad Safe team members sympathized with the Navy:

Decks you can’t stay on... but that seem like other decks; air you can’t breath without gas masks but which smells like all other air; water you can’t swim in... good tuna and jacks you can’t eat. It’s a fouled-up world.101

The Navy, though, made little effort to understand radiation. Warren urged Blandy, again, to call off all decontamination efforts except on the almost-clean target ships. Blandy refused.102 Warren then called upon the Los Alamos lab for more sophisticated equipment and analysis, requesting that “this [be] treated as an actual emergency involving safety to life.”103 On August 10, with Blandy at Bikini for a visit and just hours before he was scheduled to leave, the Los Alamos reply arrived “just in the nick of time.” While Admiral Blandy looked over the Los Alamos data—“curves” of possible rates of radiation injury from beta and gamma—Warren took a scale that he had removed from one of the lagoon’s radioactive fish and laid it on a piece of photography paper in front of the Admiral. When the scale reproduced itself on the paper, the Admiral said: “Well, this stops us cold alright.”104

* * *

101 Weisgall, Operation Crossroads, 234.
102 Blandy’s motivation stemmed from the adverse publicity that could accompany any announcement that ships had been lost to radioactivity. At an August 6 staff meeting, he stressed that even the ‘hot’ ships could not be considered casualties “in the sunken ship sense of the word” and ordered that any ship scuttled, sunk, or destroyed more than 30 days after Baker would “not be considered as sunk by the bomb... The idea must not be fostered that nothing can be done about the radioactive condition of the ships.” Moore, “The Able, Baker, Charlie Follies” 24.
103 Weisgall, Operation Crossroads, 241.

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Baker confirmed the worst fears of the cautious scientists and jeopardized the lives and health of thousands. Had it not been for Warren’s consideration for the health and safety of servicemen, many would have died. Baker certainly should have taught the government that fallout was fickle and frightening. But then, the Navy continued with the planned underwater detonation even though they had ample warning that Baker would be dangerous. Many need not have been put into harm’s way. Scientists had known since the twenties that a few millionths of a gram of ingested radium could fatally lodge in the bones of radium dial painters. The levels of plutonium, in radium equivalencies, following Baker was measured in the “thousands of tons,” and as radioactive mist it “settled on the decks, moistened every bit of exposed metal, wood, and canvas.” The Navy finally had to admit that although many ships might survive the blast, few would be serviceable because of radioactive contamination—the crews would not stand a chance.

In its zeal to prove itself a worthy opponent in atomic warfare, the Navy had failed.

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105 Given the history of atomic testing, though, it did not.
106 “In 1924, Blum discovered that severe osteomyelitis and necrosis of the mandible occurred with great frequency in the workers of the New Jersey plant. The reports which followed on the clinical course and death of those women from anemias, crippling bone lesions, bone tumors, have now become classics on the destructive effects of radioelements in humans.”302. Karl Morgan and J.E. Turner, Principles of Radiation Protection (New York, NY: Wiley, 1967) See also17-19, 303.
107 Weisgall, Operation Crossroads, 227, 224.
108 On August 13, Warren informed Blandy that casualties would result from future decontamination: “. . . the presence of beta emitters in even moderate intensities is an indication that it is present in dangerous if not lethal amounts. . . [it is] the most poisonous chemical known. It can only be measured with very precise equipment which is not available, and cannot be made available. . . The use of personnel for cleaning without proper indoctrination and special complex protective equipment, particularly in the inside of ships, is exceedingly dangerous.” Memorandum, Warren to Commander, 13 August 1946, TG 1.2, JTF-1.
One of the reasons for the disaster at Bikini was that the Navy seems to have forgotten that the war was over. They had the luxury to plan a relatively safe, peacetime exercise—but they were more accustomed to the pressures of war. They rushed into the tests fearful that they might lose in the postwar arguments over demobilization and atomic weapons. Warren said that Crossroads “was conducted as an emergency and a lot of compromises were made to meet this emergency.” In 1946, the war was long over, but the Navy did not accommodate itself to peace. Crossroads was not about science or possible warfare—the Navy’s only enemies were its own insecurities, the Army, and the atom bomb—poor reasons to expose thousands of military personnel and civilians to such dangerous levels of radiation.

As with Manhattan, secrecy and media manipulation contributed to the success of the Navy’s planned operation and enhanced its detrimental effects. The Navy, and the military, shielded the public from the facts of the operation. The Navy insisted that it was only carrying out its duties imposed upon the military by the Constitution; but its actions served only the Navy itself. The Joint Chiefs of Staff classified all adverse conclusions,

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109 The Navy pushed an inadequate geiger counter into production without field testing it, and they neglected the measurement of inhaled beta radiation, until Warren (in an emergency) got Los Alamos to do the calculations.
111 Admiral Robert Monroe of the Defense Nuclear Agency denied in 1979 that men who served in the military during Able and Baker later contracted radiation-induced cancers because the average exposure was 0.5r. Weisgall points out that families “do not think in terms of averages” and identified men who spent extended periods of time in ‘hot’ areas, never wore protective gear, suffered radiation burns, etc. His examples include men who worked up to nine hours in the radioactive lagoon repairing damaged ships, others who put out fires on newly-contaminated ships in tennis shoes, shorts, and t-shirts. *Ibid.* 274-278.
112 See Annex “O” Warren MSS, box 79.
particularly the report by the Evaluation Committee, with such a high rating that only the
they had access. As for other issues, particularly the acclaimed "scientific" nature of the
operation, military media control allowed few to know that Crossroads only confirmed
valid and widely-known scientific conclusions. It cost the nation over a billion dollars and,
more than likely, resulted in the future deaths of at least hundreds of over-exposed
servicemen; but again, the true taxpayer cost was hidden and the military simply
disavowed, until the 1980's, that radiation exposure could have injured servicemen.

The Navy claimed that Operation Crossroads would solve a number of questions
about atomic weapons, but among the most important things it proved was that scientific
information itself could be manipulated in the interests of a military objective. Operation
Crossroads was the first time in the nation's testing history that the military was able to
draw from a divided group of scientists "pick and choose" its desired opinion. Rather than
err on the side of caution, the Navy picked the scientific opinion that best suited its
purpose and instituted a practice that became tragically commonplace in the future of
atomic testing. This practice widened the gap between policymakers and scientists just as
the time when the correct opinion became ever more crucial because of the theoretical
nature of atomic science. Additionally, the government learned one very important lesson
from Crossroads: that it could, in the interests of a military objective, and even in the face
of hundreds of reporters, deceive the American public.

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Stafford Warren, “tired of radiation and bombs,” left the Navy after Crossroads and accepted an offer to become the Dean of the Medical School at UCLA. Warren was clearly disillusioned with the military’s influence over atomic science. In January 1947, Admiral Parsons asked him to participate in a Crossroads seminar and give his recommendations on “radiation tolerance.” Warren refused, but did submit a letter.

Warren told Parsons that the only data available amounted to “guesses” by committees with “no one” satisfied with, and no one willing to be held responsible for, the results. Furthermore, he noted that no reliable estimate of safe radiation dosage would be possible without a “proper program” of study, continuing for at least 10-12 years. He recommended additionally:

that no attempt be made at this time to fix a range of tolerances. . .Once they are stated in writing or put in a manual, they are almost impossible to change. They would hardly be worth the paper they were printed on and would be misleading in the light of subsequent findings.\(^\text{113}\)

Warren’s answers to a Navy questionnaire about Operation Crossroads also offer a good summary of the views of a knowledgeable Crossroads participant:

Are further tests necessary?  \textit{From my standpoint, no.}  
If there are to be other tests should they be over land or water? \textit{Use Bikini.}  
Is there any likelihood that terrestrial conditions, such as the amount of dust in the upper air. . .be significantly or permanently changed by a number of atomic explosions? \textit{Yes.}\(^\text{114}\)

Unfortunately, his suggestions pertaining to dosage went unheeded, as did his admonitions

\(^{113}\) Warren’s remarks proved astonishingly correct, particularly given the 1956 experiences with the Atomic Energy Commission’s Division of Biology and Medicine’s half-hearted attempt to change the standards for strontium 90 exposures. Warren’s letter to Admiral Parsons was not declassified until 1965. Warren to Parsons, 18 January 1947, Warren MSS, box 77.

\(^{114}\) “Impressions of the Bikini Tests” \textit{Ibid.}
regarding future testing.

The repressive and hazardous practices that began with Manhattan were enlarged and enhanced by Operation Crossroads and were already solidified when the Atomic Energy Commission took over control of atomic energy and testing. By June, 1947, Warren had completed some articles on atomic weapons, but when he submitted them to the AEC, as required, they refused to give him permission to publish them. He wrote his wife from Washington that he was in quite a “tizzy” because the AEC feared public reaction:

   I was advised [the papers] 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.\textsuperscript{115}

It is likely, I suggest, that the AEC was less concerned with public hysteria than they were about public outrage.

\textsuperscript{115} Warren to Viola 14 June 1947, Warren MSS, box 1. Perhaps no one will ever know what Warren said in his articles. Various articles appear in the Warren collection, but I have been unable to locate any articles that he wrote that would have been considered particularly alarming, even by 1947 standards.
CHAPTER V

THE ATOMIC ENERGY COMMISSION

Our obsession with the atom led us to assign to it a separate and unique status in the world. So greatly did it seem to transcend the ordinary affairs of men that we shut it out of those affairs altogether.

David E. Lilienthal, first Chairman of the AEC

Operation Crossroads made big waves not only in the Pacific, but in Washington as well. It is, perhaps, a reflection of the astuteness of congressional leaders that as the Sara sank into the waters off Bikini they officially transferred control of atomic energy from the military to a civilian commission. Congress charged that commission with sole authority to control atomic development in the interests of national security and public safety. Congress, though astute, had seriously underestimated the military. By 1951, civilian control was only a mirage—the military had regained its hold over the atom bomb.

On July 26, after ten months of hearings and controversy and two days of intense negotiation, congress reached a compromise between the rival McMahon and May-Johnson bills and officially subordinated a Director of Military Application and Military Liaison Committee to the all-civilian Atomic Energy Commission, with the responsibility to administer all future atomic development—for peace and war.¹ The Atomic Energy Act of 1946 effected no more than a notional transformation—indeed, the Act became the

¹ See Chapter IV, supra.
legitimizing vehicle through which the hazardous practices of the Manhattan Project and Operation Crossroads were authorized, continued, and enlarged when the military, ultimately, assumed control.

Congress did not mandate civilian control to limit weapons development, rather, those who sought to reduce the military’s influence in the realm of atomic energy apparently did so on methodological, not ideological grounds. Certainly, congress never believed that the military should be sequestered from atomic science; but the establishment of an unconventional Joint Committee to relay Commission ideas to the public suggests that the short history of atomic development haunted congressional leaders—a result, perhaps, of legislators’ recognition that traditional controls, namely approval and appropriations, had not been sufficient during the wartime Manhattan Project. Yet, congress linked this provision with extensive support of military requirements and weapons development as evidenced by the Act’s provisions for a Director of Military Application and Military Liaison Committee. Additionally, congress directed the military to appeal directly to the president if it decided that the civilian commission had not acted in its best interests. Others, too, clearly supported weapons development. The first Chairman of the Commission, David Lilienthal, and most scientists, believed that atomic development should not only serve industrial and medical applications, but also, crucially, weapons. What they all seemed to fear and tried to avoid, however, was not weapons

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2 Ball citing Niehoff, *Justice Downwind*, 225. Though well intentioned, international events and the growing fear of communist subversion kept the Joint Committee from fulfilling its intermediary role, a which might have benefited citizens.

3 Stafford Warren believed that weapons development would guarantee interest and appropriations for a wider range of atomic science, particularly in the field of medicine. His continued interest in radiogenic diseases and radioactive treatment led to a
development, but the perpetuation of insidious wartime characteristics of the Manhattan Project: extreme secrecy and the militarization of science.

Their plan failed. Congress may have forced the military to relinquish the grasp it had held on atomic technology since the beginnings of the Manhattan Project, but the armed forces did not, like Admiral Blandy at Bikini, surrender. Militarily-influenced behaviors that characterized the Manhattan Project and Operation Crossroads came to play crucial roles in the developing realm of atomic energy despite the fact that so much emphasis had been placed upon civilian control. Additionally, and although it probably was not evident at the time, the divisions within the scientific community that began to affect weapons testing as early as Crossroads became endemic as the military’s influence professional interest in cancer; indeed, he is perhaps best known for developing (with another scientist) the ‘cervical smear’ for diagnosis of cancer of the cervix.

Lilienthal constantly reminded the military of his belief in the importance of atomic weapons. For examples, see The Diaries of David Lilienthal, December 21, 1946, 121; and Millis, Forrestal Diaries, March 27, 1947, 259.

4 Since this thesis proposes to answer limited questions that relate to fallout and weapons development, other components of the Act are not here addressed. This is not to say, however, that the Atomic Energy Act only served military concerns. Certainly the Act and the Commission stimulated, especially under the leadership and influence of David Lilienthal, the development and application of radiological science throughout medical, industrial, and scholarly fields. Features that attended the Act, however, particularly the licensing provisions and governmental-imposed secrecy provisions, undoubtedly restrained (to some extent at least) innovation; and although the Act, and the cold war, stimulated a tremendous growth in the academy, the strings that accompanied funding carried with them their own set of consequences. In this regard, see in especially Chomsky, The Cold War and the University, passim.

Though I have not researched the issue, it seems obvious that as anti-communistic fervor mounted, the funding for weapon-related science in laboratories and universities would flow more freely than that for peacetime applications. It is clear that the AEC’s budget grew proportionately with increased US tension, expanding five and one-half times between 1947 and 1952, from $312.3 to $1,766.4 million dollars. Hilgartner, Bell, O’Connor, Nuclear Language, Visions and Mindset (San Francisco, CA: Sierra Club Books, 1982), 42.
grew. Operating in concert, these characteristics limited the ability of the Atomic Energy Commission to properly administrate its congressionally-imposed duty, and significantly encouraged the de-emphasization of public health concerns in favor of military objectives.

To better understand how these characteristics affected the Commission and the development of the nation’s testing program, it will be helpful to look at three distinct consequences that I believe caused weapons testing to be more hazardous than necessary. First, and perhaps primarily, the military waged an almost-continual rearguard action through the president and congress against the commission and individual members and ultimately managed to exert enormous control over the civilian commission. Second, military-style secrecy and security precautions led to the classification of nearly every element of the testing program, a practice that severely limited meaningful debate and investigation both within government and without. Third, since the AEC’s policies limited discourse and since the AEC came to rely upon its own, hand-picked scientists, enormous cognitive barriers developed that (in the very best scenario) resulted in insignificant misinterpretations, but too often accommodated deceptive forms of explanation and manipulation that promoted hazardous testing practices.

Although some scholars have argued that the predomination of militaristic trends within the development of atomic energy resulted from the increased confrontational nature of the international situation, and that the goals of the commission merely reflected this change, I think it is important to look at these features as they opposed, or at least

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5 The Department of Energy has recently declassified many hundreds of thousands of documents, but the mass of material and the haphazard organization makes research difficult. Additionally, many of those released documents still bear classified deletions.
controverted, policy. This distinction between policy and its articulation may perhaps be recognized more conveniently as a distortion of national intent, and in this regard Crossroads offers a convenient and familiar example. Clearly, the president approved the operation and congress appropriated money for it because the Navy convincingly argued that it needed to test its ships against the atom bomb. The operation certainly fulfilled that goal—but it is abundantly clear that there were additional motivations than those presented and approved, and certainly the operation itself vastly exceeded the expectations of both the president and congress. Additionally, and most importantly for the scope of this study, 

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6 Research suggests that domestic considerations, particularly convenience for the laboratories and economic considerations of the military, played a far greater role in the development of the continental testing site than the worsening international situation; indeed, both the Army and the weapons laboratories began lobbying for a site more accessible than the Pacific Proving Grounds before either the Berlin Airlift, the first Soviet atomic detonation, or the Korean War:

"The Los Alamos Scientific Laboratory program for development of nuclear weapons requires nuclear field tests... In 1947 the Laboratory programs had progressed to a point where developmental field tests were required and LASL proposed that the AEC activate a continental site. A survey disclosed possible sites on the coast of the Carolinas, at Alamogordo (N.M), Dugway (Utah), and two sites in Nevada. Largely because of unresolved questions concerning off-site hazards to the United States public... it was decided to have the spring 1948 (Sandstone) series at Eniwetok."

"Summary of Minutes Committee on Operational Future, NPG" meeting January 14, 1953, CIC 26306. Most historians give the Korean War at least some credit for influencing the decision, though they differ as to the extent of its significance. Miller places most emphasis upon the Army's desire for tactical weapons and economic considerations (Under the Cloud, 80) while A. Constantina Titus asserts that the Korean War was the determinative factor in the selection of a continental testing site (Bombs in the Backyard, 55.) Hacker strikes an in-between note, noting earlier requests for a continental test site but places the emphasizing economics, suggesting that weapons development coincided with economic cutbacks in atomic weapons (forced by the Korean War) to stimulate the creation of the Nevada Proving Grounds. Elements of Controversy, p 38-40.

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is a direct confrontation between policy and practice—that the government certainly did not knowingly and intentionally, as a function of policy, approve an operation that would needlessly waste resources and endanger men. As the Navy shaped Operation Crossroads, so did the military with the AEC—overwhelming official intent in the service of its own objective.⁷

The following discussion of Crossroads and the militarization of the AEC raises important questions about the relationship between the state and the military and seriously jeopardizes the notion that the military operates solely as a state functionary. Thus, while I have argued, and hope to have made clear, that the practices that developed within the Manhattan Project filtered into peacetime atomic development and weapons testing, those behaviors could not have become determinative without access to the levers of power. Accordingly, it is important to look at not only habitus but beyond—to the complexities of a substrata of power relationships as they developed under the auspices of the Atomic Energy Act. My desire to burrow beneath a conception of the military as merely an organ of the state has been influenced by the French political philosopher Foucault who admonished political theorists to “cut off the King’s head”—to see that the influence of the state is limited by the existence of power relationships that operate independently—and explore the ways that those those forms of power structures become “detached” from the

⁷ The reader should note that although the term ‘AEC’ refers technically to the commission formed under the Atomic Energy Act, the use of it here encompasses not only the collective activity of a small group of presidential appointees, but unless otherwise apparent from the context, also the range of organizational initiatives and institutional management of that governmental agency that administered the development of atomic energy and weapons.
Additionally and in accord with this alternative interpretation of the relationship of subterranean levels of influence that function within and comprise the state, is a recognition that all relationships are by nature, fluid. In this regard, my attempts to puzzle through some of the many curiosities of policy and its articulation have been influenced by Nietzsche, and particularly his reminder that all things, including institutions, are not appropriately understood through an analysis of either initiational intent, construction, or ultimate terminus since they are inherently transformative and unpredictable. Although Nietzsche's analyses are rooted in a period far removed from the cold war, they address the prerogatives of power and are equally applicable here, where military objectives seem to have subverted the intent of congress. Nietzsche warns historians especially:

That the 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.  

It is clear from this examination that the military managed to overcome the barriers congress imposed through the Act, and successfully "implanted its own sense of function" into the "less powerful" commission. Additionally (and ideally) this discussion of the military's relationship to the AEC should also help shape the reader's understanding of the

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8 "The State, for all the omnipotence of its apparatuses, is far from being able to occupy the whole field of actual power relations. . .which render its functioning possible." Foucault, "Truth and Power," Power/Knowledge, particularly 121-123.
following chapter that explores the AEC’s impact the nation when it came to Southern Nevada. Toward this end, then, it will be useful to first return to the AEC’s beginnings.

* * *

The AEC immediately became the target of postwar military insecurities. The last chapter explored the Navy’s attempt to come to terms with its postwar world, but it is important to view the immediate postwar period as one of extreme transition and conflict between the nation’s collective armed forces and the government itself. A push for rapid demobilization by the public was matched by congressional scrutiny of military budgets and appropriations; additionally, the proposed National Security Act threatened each branch individually with its cabinet-level consolidation of the forces under a Secretary of Defense.\(^{10}\) Into that mix of antagonism, then, ten months of heated hearings and negotiation eventually resulted in the subordination of the military to civilian authority under the Atomic Energy Act. Such intense public scrutiny and transformation perhaps only strengthened the military’s resolve and, focusing a measure of animosity against the

\(^{10}\) In this regard, see James Forrestal’s letter to Edward Hopkinson of December 7, 1946 where he points out the obvious paradox between verbal assurances of maintained military strength and budgetary restrictions: “There is great danger of repetition of the pattern which developed after the last war . . . in wrapping up a balanced budget and a decreased tax rate. That these are sometimes accompanied by reaffirmation of necessity for remaining strong isn’t much consolation.” Millis, *Forrestal Diaries*, 236.

There was a clear line of influence from the Manhattan Project through Crossroads to the development of the AEC. As Secretary of Defense, Forrestal retroactively authorized the Armed Forces Special Weapons Project that had been initiated during the planning stages of Operation Crossroads. Under the leadership of its first chief, Major General Groves (of Manhattan fame) it “was charged with providing nuclear weapons support to the Army, Navy, and Air Force. Maj. J. Stinson and K.K. Horton “Historical Chronology of DOD Weapons Testing Organizations” October 19, 1984, Defendant’s exhibit DX 21958, *Prescott v. USA [consolidated]* CIVLV-80-143.
president who had proposed consolidation and (eventually) supported civilian control of atomic energy, the armed forces began strident behind-the-scenes lobbying efforts. They found a ready-made alliance in the form of the new Secretary of Defense, former Navy Secretary James Forrestal, and in Republican legislators led by Senator Hickenlooper of Iowa, a vociferous critic not only of Truman, but also of former TVA Director and the new Chairman of the AEC, David Lilienthal.

Tension between the AEC and the military characterized atomic development from the beginning. Truman firmly believed that atomic energy belonged in civilian hands, and when David Lilienthal and the other four members of the Atomic Energy Commission met with him on December 11, 1946, Truman told them that if necessary he would mediate problems between the Commission and the War Department. “The Army,” he said “will never give up without a fight.” Six days later, the Army’s Manhattan Project seemingly assented to the Act, and “lots of braids and stars,” surrendered to the Commission and the Military Liaison Committee its accounting of the nation’s atomic stockpile—the most “critical numbers in the world.” On New Year’s Eve, 1946, after a month of what Lilienthal reported as “very deep troubles with the War Department about who got what” atomic energy became the official responsibility of the Atomic Energy Commission.

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11 Lilienthal, *Diaries*, 118.
12 Ibid., 119.
13 Although diaries are an invaluable source of impressions and conversations that would otherwise not be available to researchers, this quote points up one of the pitfalls of reliance upon them when exploring questions of atomic development. This chapter uses the diaries of two men, Lilienthal and Forrestal, both of whom were extremely cognizant of security; thus, it is impossible to *know* exactly what type of custody issues Lilienthal referenced. Ibid. 127.
The military, having already lost the public battle over control, began to wage a private one. During a meeting on January 22, 1947, five days before Lilienthal began the ordeal of Senate confirmation, the military and its congressional supporters were already pinpointing dangerous influences in the AEC. At a meeting between Hickenlooper, Forrestal, and Rear Admiral Parsons of the Military Liaison Committee, Hickenlooper complained of Lilienthal’s “tremendous power and responsibility” and (perhaps in an attempt to shape future discourse) complained of a “pacifistic and unrealistic trend” within the commission. After a month of confirmation hearings, Hickenlooper hinted that Lilienthal had been negligent and was possibly lenient toward communists. Complaining of Lilienthal’s “intransigence and inflexibility” he asked Forrestal to bring to the attention of the president that Lilienthal had hired appointees without having them screened by the FBI. Forrestal considered Hickenlooper’s charges serious indeed, and contacted Truman that very evening to relay the concerns. Animosity mounted even after Lilienthal’s confirmation, and in September, Forrestal noted in his diary that he had told Lewis Strauss that the Military Liaison Committee had complained to him that Lilienthal was uncooperative.

14 Regarding the Senate confirmation, Lilienthal privately questioned his own judgment: “what is it in a man that makes him willing to risk his name, his health, and his chance of a decent way of living to get into such an impossible setup?” He knew from whence he spoke, having been on the receiving end of congressional opposition from his years with the TVA. Lilienthal, Diaries, 133.
15 Millis, Forrestal Diaries, 240-241. This is an curious comment to make about a spanking-new commission with no history upon which to base a pattern or ‘trend.’
16 Ibid., 255. Forrestal also contacted Lewis Strauss to discuss Hickenlooper’s concerns, demonstrating (perhaps) Strauss’ complicity in the subversion of Lilienthal’s leadership long before it was recognized by the Chairman. In this regard, see Chapter II, supra.
17 Ibid., 319.
The increasing political pressure that occasioned complaints about Lilienthal eventually resulted in Truman’s decision to replace a retiring committee member with Gordon Dean, a favorite of the militarists—thus changing the ideological constituency of the commission. As time went on, Lilienthal’s aggressive public relations campaign for atomic energy and his national popularity as a speaker had only increased the suspicion with which his opponents viewed his leadership, and Forrestal’s role as intermediary between Lilienthal’s military and congressional enemies and the president grew. During a lunch meeting in February 1948, Forrestal, Hickenlooper, and the president of Bethlehem Steel discussed their “vague misgivings” about the direction of the AEC. Hickenlooper also voiced concern about Lilienthal’s public speeches that emphasized the use of atomic power for industrial and other private purposes, and complained that there had been no significant advances in the “art” since the dissolution of the Manhattan District. Hickenlooper especially disliked Lilienthal’s repeated public references to the control of atomic energy by “the people” believing they smacked of “statism.” Again, anti-communism played a role in attacks directed against Lilienthal. Within days, the AEC’s Director of Security, Rear Admiral John Gingrich, told Forrestal that Lilienthal observed lax security procedures, based on his observation that Lilienthal had distributed $40 million to Brookhaven Laboratories through which “nine universities” shared participation. There is no evidence that Truman suggested to Lilienthal that he change

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18 See Chapter II, supra., for a more thorough discussion of Gordon Dean’s appointment to the Commission and the political circumstances of that appointment.
19 Lilienthal traveled extensively promoting atomic energy and attempting to stimulate academic and industrial interest in its development. Lilienthal, Diaries, passim.
20 Millis, Forrestal Diaries, 379-380.
his methods. Politically, though, Truman tried to pacify congressional opponents such as
Hickenlooper through the appointment of one of their chosen, Gordon Dean.

Although international events played into the military’s hands, it still found itself
unable to officially retrieve the bomb from civilians. The Berlin Blockade of June 1948
encouraged the military to take a more aggressive stand against what they perceived as
pacifism within the Truman administration as a whole and especially against Lilienthal and
his custody of the atom bomb. On July 15 Forrestal and the armed forces scored a victory
against Secretary of State Marshall and convinced the National Security Council to send
B-29s, the atom bomb’s delivery system, to England.21 Forrestal apparently anticipated
that England would become a permanent outpost for an American atomic arsenal, since he
noted that the force would not only demonstrate American resolve (domestically and
abroad) but would “accustom” the British to the accommodation of an “alien... though
allied, power” so that the force would become an “accepted feature.”22 Emboldened by
this victory, perhaps, Forrestal approached the president that same day and and requested
a meeting to consider the transfer of the bomb to military custody. On July 21, at a
meeting between the President, Forrestal, the Joint Chiefs of Staff, the AEC, and the Act’s
military liason, Forrestal presented a formal request from the “National Military
Establishment” for custody of the bomb.23 Lilienthal objected, insisting on civilian control.
the president agreed, saying “You have got to understand that this isn’t a military weapon.
. .we have got to treat this differently from rifles and cannon and ordinary things like that.”

21 Despite assumptions made at the time (particularly those importantly made by the
Soviet Union) the United States had not armed the B-29s with atomic weapons.
22 Millis, Forrestal Diaries, 455-457.
23 Ibid., 459-461.
That, however, was just what the military intended, and the Secretary of the Air Force resolutely told the president that "our fellas need to get used to handling it" as though an atomic weapon could be handled like any other weapon. Aside from mentioning that he would personally maintain responsibility for the weapon, the president delayed. Within two days, however, Truman told Forrestal that there would be no change of custody from the AEC because it would be disadvantageous politically. All was not lost, though, for Truman told Forrestal that he would reconsider the issue after the election.

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The foregoing demonstrates not only the vigor with which the military maneuvered to regain control of the bomb but also that it did so by discrediting David Lilienthal. It is worth considering that Lilienthal was targeted not only because he was Chairman of the rival civilian commission but also because he had been one of the main opponents of the elaborate apparatus that the Army had developed to hide all atomic issues from the nation's public. The value of secrecy to the military establishment had grown proportionately with its plans for atomic weapons, and although Lilienthal was not

24 McCullough, *Truman*, 650.
25 Millis, *Forrestal Diaries*, 459-461. Although Forrestal's entry is limited to the decision itself, it appears that Forrestal did not want the public to learn that the military had lost the battle for the bomb. Lilienthal received the news at his office, and was advised that Forrestal fairly graciously accepted the President's decision, but did object to the President's plan to announce publicly the intention to leave control of the bomb in civilian hands. Forrestal apparently "objected strongly...questioning why it should be announced that he had been overruled." Lilienthal, *Diaries*, 392.

The President's attempts to assuage antagonistic congressmen (particularly Hickenlooper) with the appointment of Gordon Dean to the Commission and Lilienthal's objections to this politically-stimulated appointment have been discussed in Chapter II, supra.
the only one opposed to military classification methods (Truman had nominated Lilienthal and congress confirmed his appointment with full awareness of his steadfast objections to the Army’s broad provisions for secrecy) he was a powerful adversary. To understand why the armed forces wanted to remove Lilienthal from his position with the AEC, the deep roots of Lilienthal’s abhorence of military-style secrecy need to be examined.

Long before Lilienthal became Chairman of the AEC, he had made a clear distinction between the type of secrecy favored by the Army (as exemplified by General Groves’ management of the Manhattan Project) and security precautions that unavoidably occasioned atom bombs. The University of Chicago invited Lilienthal, scientists, researchers and philosophers to attend a Conference on Atomic Energy Control on September 20-21, 1945. The conferees addressed a number of issues including international control, Soviet development, psychological effects, and comparison between jellied gasoline bombs that were dropped by the thousands on Japanese cities before two atom bombs ended the war.²⁶

The issue of secrecy, however, stimulated the most discussion; prompted to some extent, perhaps, by the fact that the Army itself had tried to obstruct the University of

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²⁶ Curiously, Lilienthal referred to some ‘unmentionable’ scientific developments that, for him at least, could made international control of atomic energy irrelevant, or at least too limiting to deal with the broadening field of general scientific developments: “I note that all these proposals address themselves to the particular kind of hell that the scientists have brewed in the atomic bomb. . . Would it not be important to make plain to the American people—if such is the fact—that you fellows have other things cooking, not related to atomic explosions, that may be just as bad or worse? Why work ourselves blue in the face to develop a method of . . [inspection]. . . when science has other, equally destructive things on foot that do not involve either uranium or even the atom?” Lilienthal, Diaries, 640.
Chicago from even holding the meeting.\textsuperscript{27} The group concluded by the end of the first day that there were really only two ‘secrets’ that might remain so for any period of time: the materials required for the diffusion process; and, the production rates (“super secret”) of ‘critical’ materials. On the second day, Lilienthal drew a firm line between issues of security (weapons and weapons production and secrecy (oppression):

These scientists are under a rule—whether legally enforceable or not is immaterial—that they will submit everything they say, before a congressional committee, say, or elsewhere, to the “review” and “approval” of the Army. . .Nothing of the kind has ever been proposed. . .that a citizen’s opinions shall be subject to a pre-audit by the military in peacetime. What happens to the “right to talk” . . .This pre-audit over the opinions of men will create a . . .creeping paralysis. . .mental. . .ethical, moral. This whole discussion. . .has been wholly in terms of power politics, surely it is assumed that there are other forces at work in the world. . .that are within the individual controls and disciplines and urges. . .moral compulsions.\textsuperscript{28}

Lilienthal told scientists that they must “insist” upon their moral duty to educate the public; and then, with obvious pleasure, received the enthusiastic support of the other conferees. It is clear that while Lilienthal believed it was undoubtedly necessary to keep certain information secret, he was (almost from the outset) wary of the expansion of secrecy and believed that it could detrimentally transform the nature of governance and science. Had this sophisticated distinction between “secrecy” and “security” been allowed to develop in the postwar period, the progression and nature of atomic testing could have, perhaps, been a safer enterprise.

\textsuperscript{27} Ibid., 642.
\textsuperscript{28} Lilienthal, Diaries, 642.
Secrecy, though, was not the only issue discussed at the conference, and this is an appropriate place to provide an example of early postwar thinking about the atomic bomb, and how structures of secrecy operated against discourse and thwarted the development, or even consideration, of alternatives during the cold war. The following forgotten dialogue demonstrates the range and value of intellectual insight that might have influenced crucial national issues had it been allowed to circulate publicly. Jacob Viner, a University of Chicago economist, technically disagreed with a point made by Reinhold Niebuhr: that the only secret ("techniques not known") was patently insignificant. Viner though, traced Niebuhr's argument to its logical conclusion and identified the consequence that Niebuhr had only hinted at:

There is a secret—perhaps a six-months' secret, but still a secret. Will six-months' secret generate another six-months' secret—can we remain six months ahead indefinitely?

The issues that would shape decades of American history were, prophetically, addressed by fifty participants in a conference that few, if any, paid much attention to, except, of course, for the Army which tried to prevent its occurrence. It is unavoidable that the bounds of secrecy essentially strangled those who might have been able to influence, through meaningful debate and intellectual stimulation, a vastly different (and I believe, probably better) postwar environment—one without, perhaps, an arms race. Fear, though, rapidly overtook reason.

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29 Ibid., 644.

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It seems clear that secrecy offered far too many benefits not to prevail. Mounting anxiety that America might lose its atomic monopoly encouraged congress to incorporate stringent military controls on atomic energy. The extreme secrecy and classification systems that occasioned the Manhattan Project have already been discussed, and those same structures served the Navy well in its management of the media during Operation Crossroads and inquiries after. Similar restrictions gave the Army, the AEC, and the state, the perfect opportunity to effectively conceal anything it could even remotely link with atomic science, whether related to valid matters of national security or not. Additionally, the supporters of secrecy held a tactical advantage against their opponents, and those who criticized the implementation of strict security measures might as well have drawn a giant red bullseye on their backs. Indeed, Lilienthal's continuing objections to needless security precautions simply gave Hickenlooper, for example, the means through which he could attack Lilienthal's credibility. Secrecy then, served many purposes—it purportedly kept rival countries out of the atomic loop, it provided a convenient shield for questionable practices, and the value placed upon it rendered its opponents vulnerable to attack.\textsuperscript{30} It is important, now, to look at the meaning of secrecy as it was applied to the field of atomic science and development.

The Atomic Energy Act authorized the most comprehensive classification system known, exceeding even that of the National Security Council—the organ primarily

\textsuperscript{30} This discussion, of course, addresses only the very obvious uses of 'secrecy' and unavoidably ignores its psychological role—a topic intelligently discussed by Hugh Gusterson in his anthropological examination of Lawrence Livermore Laboratories, \textit{Nuclear Rites}, 68-100.
responsible for the nation’s security.\textsuperscript{31} The National Security Council’s methods of restriction required a decisive act to classify information: an individual actually reviewed a document and rendered a decision whether or not it was in the nation’s best interests to restrict access. By contrast, the AEC adopted the Army’s stringent scope where anything even remotely associated with atomic science was classified but then it added a twist: everything within its purview was ‘born’ classified. In other words, every thing associated with atomic weapons or science immediately entered a classified realm and required no positive decisive action on behalf of anyone to restrict its circulation.\textsuperscript{32} The AEC’s system severely compromised legitimate oversight and substantially thwarted the effectiveness of the representative function of congress and the intermediary function of the Act’s Joint Committee.\textsuperscript{33} On May 5, 1947, the Joint Committee learned,}

\textsuperscript{31} “Security markings” had long been a feature of military documentation during wartime, but the practice was not formally extended into peacetime until 1921. Roosevelt issued an Executive Order four days after Mussolini joined the Axis powers that gave presidential recognition, and added legitimacy, to the practice. Initially, the process affected only public exposure, as with the press, and Congressional committees remained entitled to full disclosure. Roosevelt’s action, however, resulted in the practice becoming an institutional feature of the State Department and it soon spread throughout the government. Access to classified documents remained restricted after the war. By 1951 Truman had authorized any executive department or agency to classify information.

\textsuperscript{32} “Any information related to the design, manufacture, or utilization of atomic weapons, the production of enriched uranium or plutonium, or the use of those materials for the production of energy is Restricted Data, unless the information has been removed from the Restricted Data category by order of the Secretary of Energy. . .no matter where originated or by whom generated.” Hilgartner, Nukespeak, 62-63. A 1957 New York Times article focused on the problems of a system that classified ideas and concepts. “An anonymous professor awaiting citizenship and clearance, ‘Professor X’ a renowned scientist, has an embarrassing faculty for producing ideas that sail in the classified realm; in effect, he thinks classified thoughts. His colleagues cannot discuss his own ideas with him—not because they aren’t cleared, but because he isn’t.” Idem.


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for the first time and to their great amazement, that British and Canadian scientists had 
worked in cooperation with American scientists and knew how to "make the bomb."
Lilienthal was stunned when he learned that the committee had not been given access to 
(admittedly) classified information that they required. Lilienthal's subsequent diary entry 
notes that "we cannot operate on a reasonable basis with the congress if the congress does 
not receive information that is classified." 34 The Army did not agree, and continually 
thwarted the exchange of information. In 1949, it stepped up its attack and publicly 
lambasted Lilienthal and the AEC because its yearly report to congress divulged secret 
information. 35 The inability of the Joint Committee, let alone congress itself, to acquaint 
itself with atomic developments rendered it useless: nothing more than a superficial 
intermediary between the Commission and the public. Equipped, perhaps, only to confirm 
or deny the obvious— that a certain bomb had (or had not) been detonated.

The atom bomb was the perfect excuse for the imposition of exaggerated security 
precautions, but as weapons testing progressed, it became patently obvious to even 
militarists that the detonation of a bomb was a difficult thing to hide. The 1952 test of the 
first hydrogen device in the Pacific exemplified, for at least those with logistical ties to Los 
Alamos, the absurdity of trying to conceal a blast equivalent to tens of thousands of tons 
of TNT. An editorial in The New Mexican that discussed an awe-struck sailor's letter 
home is representative of the obvious contradiction between secrecy and bombs. The 
sailor's letter exposed the supposedly secret Eniwetok explosion:

All of which makes the AEC's super-duper security precautions look pretty 
silly. . .With Los Alamos only 35 miles away, it has been common

34 Lilienthal, Diaries, 176.
35 Ibid., 493.
knowledge for months... but strictly hush-hush as far as the AEC was concerned. With modern detection instruments, it is a foregone conclusion that if the Hell bomb is at last a reality, the Russians know that it has been exploded and knows when it was exploded and how powerful it was.36

This example illustrates not only the recognition of a fundamental flaw in the AEC’s security precautions but also that those regulations perhaps needlessly infringed upon domestic rights in the interests of spurious assertions.37

Despite the opposition of a few bold critics, the AEC zealously clung to its stringent classification system throughout its history and the practice has been continued by its successor, the Department of Energy. The DOE itself may have only a vague idea of the number of documents that remain classified. In 1993 it estimated the number at 25 million, yet in 1995 claimed that it maintained over 250 million classified documents.38 It is not enough, though, to count the reams of material that ended up within locked file cabinets; one must also explore the consequences of the AEC’s policies.

The AEC used its ability to restrict the dissemination of information to encourage and maintain support for the military’s program of weapons development and testing.39

Certainly, many people had at least a minimal awareness that an atomic detonation posed

36 The New Mexican, November 8, 1952, 2.
37 The issue remains a valid one—who is served by such extreme precautions: The USSR duplicated US efforts and detonated a hydrogen device on August 12, 1953. Meanwhile, historians and other researchers are still trying to pry records from the AEC’s grasp that were produced during the early atomic period, in the mid-1940s.
39 Anthony S. Mathews recognizes this as a universal problem: “When too much secrecy surrounds government institutions, the implementation of its policies discourages a feedback of relevant information and increases the tendency of pushing through its programmes come hell or high water.” The Darker Reaches of Government, (Berkeley, CA: University of California Press, 1978), 34.
risks beyond the actual explosion itself. Certainly, too, the AEC knew that it could reliably conceal neither an atom bomb nor its remnants—fallout and the dispersal of radioactive material. The military, though, had wanted an accelerated testing program since (at least) 1947, and the government’s remote Pacific site was an expensive option.\textsuperscript{40} In the wake of the Navy’s Operation Crossroads (and perhaps envious of the spectacle), a memorandum to the Army Chief of Staff from Commanding Lieutenant General Hull demonstrates that the Army not only wanted its share of atomic weapons, but that it believed only public opinion stood between it and an exhorbitant arsenal of bombs and smaller, tactical weapons. Accordingly, Hull hoped to desensitize the American public:

\begin{quote}
tremendous monetary and other outlays [for Pacific testing] have at times been publicly justified by stressing radiological hazards. . .I believe that it is high time to lay the ghost. . .There appears to be a need for adequate education of the people. . .in order that the hysterical or alarmist complex now so prevalent may be corrected. . .Alleviation of their fears would be a matter of reeducation over a long period of time, and, until the public will accept the possibility of an atomic explosion within a matter of a hundred or so miles of their homes.\textsuperscript{41}
\end{quote}

The outbreak of the Korean War may be said to have helped initiate General Hull’s re-education program since it gave both the military and the AEC an excuse for the development of a convenient and relatively inexpensive weapons testing site within the US. The Nevada Proving Ground became a reality despite the fact that the government’s experiences with fallout at Trinity, Crossroads, and subsequent Pacific testing vividly

\textsuperscript{40} Other countries, too, found remote, ocean, testing cost prohibitive. The Soviet \textit{Joe One} was detonated continentally, and although Great Britain eventually chose an island site off the coast of Australia, they had seriously considered a site in the Scottish Highlands near Wick. Miller, \textit{Under the Cloud}, 81.

demonstrated its unpredictability and potential for harm. The military got its way, though, and to avoid adverse public reaction, the AEC engineered an elaborate campaign that emphasized its ability to safely test weapons in the continental US—the education had begun.

It was not too difficult to convince the uninformed that weapons testing and fallout posed no hazards. After all, the few who knew the most facts about radioactive fallout either worked for the government or were oppressed by it. The AEC held licensure authority over atomic material, and any scientist who might choose to speak out against continental testing or individual who earned his livelihood through government contracts could find himself unemployed. Additionally, the AEC’s ability to classify knowledge meant that there was little information readily and conveniently available to the public that might have cast doubt upon the AEC’s assertions of safety. In the absence, then, of contradictory information, the comforting ‘spin’ delivered by the AEC prevailed.

* * *

Even though congress delegated authority for atomic science to a civilian commission, the military wasted no time in usurping that civilian authority and insinuating its own agenda and methods into the development and testing of atomic weapons—turning the AEC into little more than a military functionary. Indeed, a transformative trend in military influence is evidenced by the correspondence between the military’s weapons development and its requests for a continental testing site. In 1947 the AEC received

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[42] The military relied upon Los Alamos for weapons development.
the first request for a continental site; the request was renewed in 1948 but the AEC remained hesitant "largely because of unresolved questions concerning off-site hazards to the United States public." Again, in 1949, the continental testing issue came before the AEC because of a "need" for a test in advance of the planned Pacific Greenhouse testing series. Finally, in 1950, "security of a far distant Pacific site" and "Korean logistics" overrode earlier concerns of off-site hazards and the AEC approved a site in Southern Nevada, less than seventy miles from Las Vegas.\(^43\) Reason itself, though, would seem to disallow (to some extent, at least) this argument since if the Korean War were the primary reason for a change of testing location from the Pacific to Nevada, then once the situation stabilized and the United States began to pull out of that country, why did testing not return to the Pacific site? The AEC offers, perhaps, the solution to the puzzle.

A close reading of the same AEC document reveals a subtle, but different set of reasons than "Korean logistics" or Pacific security. Indeed, economy and efficiency seems to have played the greater role.\(^44\) Under the heading "Reasons for a Continental Site" the first specifically identified:

> The basic reason was the material advance in pace of weapons development foreseen if Los Alamos Scientific Laboratory could have a backyard laboratory where developmental tests could be quickly mounted and quickly held. \(\ldots\) coupled with this primary reason were obvious

\(^{43}\) "Summary of Minutes Committee on Operational Future, NPG" January 14, 1953.

\(^{44}\) This analysis is also evidenced by an announcement made publicly in 1952 by AEC officials at the opening of the Tumbler-Snapper series; "we needed a continental test site because the program was moving, by necessity, very rapidly, and the delays which are involved in making overseas tests were such that the program was necessarily being seriously delayed. you cannot have overseas tests without planning and worry. \(\ldots\) Dollar wise, aside from overseas effort, etc., I think the taxpayer, the country as a whole, you and myself, can feel that this is a wise expenditure of money." See "Appendix B—Texts to be used in briefings by Carrol L. Tyler, Dr. Alvin C. Graves, Everett F. Cos and Dr. Gaelen Fast", [undated], Tumbler-Snapper, Vol. 2, CIC 39040.
secondary advantages in economy of manpower (particularly scientific),
time (of scientists and in gaining new weapons goals) and of money.\textsuperscript{45}

The promise ("foreseen") of more efficient and economical weapons development appears
to be the primary reason why the AEC agreed to continental weapons testing and why,
finally, only Americans were injured by those same weapons that the military so wanted
rushed into service.\textsuperscript{46}

\textsuperscript{45} Ibid., 4.

\textsuperscript{46} This somewhat unsatisfactory conclusion may be disputed (forever) by historians. It is,
after all, their penchant, if not their duty, to engage in interpretational quibbles. In this
instance though there may be no other choice, since even the AEC, in its own document,
could not pin down an exact cause.
CHAPTER VI

THE NEVADA PROVING GROUND

...somewhere in the sands of the desert
A shape with lion body and the head of a man,
A gaze blank and pitiless as the sun,
Is moving its slow thighs, while all about it
Reel shadows of the indignant desert birds.
    William Butler Yeats

Many take some small, and too often smug, comfort in asserting that no global war has ever been fought on American soil, but they are wrong. This nation fought the cold war in the Nevada desert, and, like all wars, there were casualties. These soldiers did not die with dog tags, they did not come home in body bags or government-issue coffins, and at their funerals no soldiers fired rounds in salute to their sacrifice or played Taps at their passing. With the cold war over, the United States stands proudly above the disorganized rubble that was the USSR and claims victory. But that does not tell the whole story, for where—in what office, what file, what government safe—is the tally of the war’s toll? That gruesome balance sheet would be embarrassing indeed, for it would show that the only casualties of the cold war fell victim to friendly fire. Unlike the atom bomb itself that dramatically announces its presence in a furious burst of energy, power, light—radiation is insidious. It kills quietly, sometimes slowly, and its effects often go unnoticed, unrecognized, hiding behind other causes. The victims of the cold war, then, remain, for

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the most part, unnamed, faceless. It would take a talented artist indeed to memorialize the diversity of these casualties—the weathered Nevada cowboy, the pigtailed Utah schoolgirl, the paunchy Indiana farmer, the NYU student sampling mysteriously radioactive rain. The only failures of these, and so many others like them, were commonplace: they drank contaminated milk, or ate bread baked with radioactive wheat, or drew stick figures in the radioactive talc that settled on the Buick in the driveway. They stand witness to a war that did not end.

We cannot count the cold war’s casualties, but it is possible to look into the program itself—to the military’s approbation of the Nevada Proving Ground—to find the seeds of their suffering. This thesis nears its conclusion at the historical moment when the hazardous practices of the nation’s testing program—secrecy, media manipulation, misapplication of science, and an exaggerated military objective—coalesced and became inseparable from the program itself. This examination of the Nevada Proving Ground demonstrates that with the inception of continental testing, atomic governance had taken root, matured, and blossomed into full, poisonous, flower. Indeed, even the birth of continental testing was marked with an odious taint of deceit and manipulation.

Evidence suggests that the AEC hedged its bets on the proposed weapons site and misled the president, proposing that any continental testing would be minimal. And, based upon that proposal (supported, incidentally, by the National Security Council), Truman had every reason to believe that scientists from Lawrence Livermore or Los Alamos might just need to spend a day or two in the Nevada desert to solve some puzzling experimental riddle that would otherwise have required a trip to the Marshall Islands. Indeed, the
record fully supports that assumption. Truman authorized the testing of atomic weapons at the Nevada Proving Ground on December 18, 1950 before the Army Corps of Engineers had completed studies on radiological factors because the site would be used for a "few relatively low-order detonations" on an "emergency basis."¹ There is no doubt, however, that the AECs intentions were distinctively different than those it proposed to the president, an 'operation', not an 'emergency experiment', was certainly already in the works. Six weeks after Truman approved continental testing, the first unimaginatively-named shot of Operation Ranger, Able, had caused doors to slam in nearby Las Vegas, and four more detonations followed within two weeks. There were, obviously, more than a 'few' shots necessary, and the elaborate maneuvers planned by the military belie any characterization of the tests as 'emergencies.' Slightly more than a year later, by the time Truman left office, the military had detonated twelve atom bombs in the Nevada desert with three equal or greater than the 21 KT weapon dropped on Nagasaki. It was, however, only the beginning. By October, 1958, the United States detonated 119 atomic weapons in Nevada and all but 23 released radioactive fallout off site.

When the civilians lost the tug-of-war over atomic energy, the military took a trophy—the Nevada Proving Ground. There, and in Washington where decisions continued to be made, military objective reigned supreme, achieving primacy over all other considerations, including ethical responsibilities to the commander-in-chief and, (so very importantly) moral responsibilities to the health of participants and innocent civilians. In his excellent history of atomic testing, Richard Miller drew an enthusiastic portrait: "The

generals rushed to the chalkboards. There would be war games to end all war games. Troops. Tanks. Artillery. Paratroopers." The Army played its games (not unlike Admiral Blandy's Navy) against an unbeatable opponent and to try and win—to harness the bomb for something, perhaps just pride—it pressured and cajoled the AEC onto its team.

The complicity of the AEC in the military's program of atomic game-playing, when combined with established behaviors within the AEC's institutional structure itself, contributed to what we can now recognize as yet another step along a perilous pathway. The decision to locate the test site in Nevada offers an ideal opportunity to explore the ramifications of the screening out of disadvantageous scientific opinion that had become commonplace (since Operation Crossroads) within the nation's atomic program. In considering the Nevada location, the AEC relied upon only those scientific opinions that supported its intentions. According to the AEC, the choice of the Southern Nevada site was based upon the "approval of eminent advisory scientists as to safety factors" who

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3 Scientists were, of course, crucial and as the number of 'approved' scientists became fewer in number, the government increasingly relied upon a small coterie of 'experts' that increasingly became less and less innovative, supporting each others' opinions and apparently hesitant to point out discrepancies (if, indeed, they noticed them) and unable, or unwilling, to inject any element of innovation into the program. It is perhaps only through hindsight that this becomes obvious. Eisenhower framed the problem in terms of numbers, not variety of opinion, and in 1953 indicated that "[national security] in this atomic age is endangered by a shortage of first-rate research scientists, particularly physicists." Review Journal, May 18, 1953, 1. Eisenhower remained alarmed though and in 1954 commented in relation to the denial of a security clearance for Robert Oppenheimer, said 'We've got to handle this so all our scientists are not made out to be Reds, because that Goddam McCarthy is just likely to try such a thing." Hewlett and Holl, Atoms for Peace and War (Berkeley, CA: University of California Press, 1989) 89.
claimed that the site was suitable even though it was "only 65 miles from Las Vegas." By accepting that recommendation, however, the AEC ignored the 1945 advice of Stafford Warren, the primary medical officer on the Manhattan Project who witnessed Trinity.

Although Warren had recommended that no test of a weapon of Trinity's size be repeated in any area not "free of population" for at least 150 miles, the AEC detonated three weapons larger than the Trinity device during the first 1951 testing season at the Nevada

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4 I acknowledge that I have chosen to take this evidence at its ‘face’ value, yet recognize that the reasons given in 1953 for the establishment of the test site may be more self-serving that factual, particularly since the motivations of historical actors (and particularly those who relied upon an earlier assertion of ‘emergency’ for the test site’s creation) may have changed. “Summary of Minutes Committee on Operational Future, NPG” January 14, 1953, CIC 26306. Certainly, the supportive influence of Nevada Senator McCarran may have been significant. McCarran sat securely on the military appropriations committee and favored the Southern Nevada site and was influenced, undoubtedly, by the promise of economic benefits to Nevada that testing would bring. Additionally, and officially, the site was large, remote, and not prone to rain. See too, Titus, Bombs in the Backyard, 56, 57.

An internal memorandum prepared in anticipation of the formal meeting to settle the details of the official report for the choice of the Nevada Test Site, prepared also in 1953, includes some points left out of the final memorandum mentioned above. That document indicates that fallout was a consideration, and shows that the AEC was perfectly aware that a good portion of the United States would be exposed to perhaps “prohibitive concentrations” of fallout. The memorandum indicates that although “the probable distribution of waste from carefully conducted nuclear tests has been described. . .The fact was established during the Eniwetok tests of 1948 that no prohibitive concentrations of fall-out were observed beyond a radius of 300 miles from the test site. The suspicious samples collected within this radius came from air-craft runway water following rain showers. . .It is also self-evident that fall-out occurs anywhere toward the surface under the vertical projection of the radioactive cloud aloft. It has been shown, however, that this fallout has a negligible concentration at the surface outside a radius of 600 miles from the test site. . .” [emphasis mine] Memorandum from Carroll L. Tyler, Manager Santa Fe Operations Office “Documentation of Establishment of Continental Test Site” September 14, 1953, 326 US Atomic Energy commission, Location: LANL, Collection Records Center C-2 D-44, Folder Comm. to Study on Future of Nevada Proving Grounds” Defendant’s exhibit Prescott v. US, DX 21914.

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Test Site. The AEC could so comfortably reach a decision contrary to earlier recommendations because no agency but the AEC had access to the records of the Manhattan Project or knew the identities of the mysteriously unnamed “eminent advisory scientists” that the AEC said it had relied upon in 1950. The self-serving and dangerous decision to ignore an informed warning about the safety of weapons testing, is, however, only a start.

It seems clear that as the military assumed greater control over atomic development, the commission paid less and less attention to the ramifications of testing. As has been shown, in 1948 the commission disallowed a continental site based upon safety considerations. Yet in anticipation, perhaps, of the military’s push for a continental site and accompanying troop maneuvers, Dr. Shields Warren, Director of the Division of Biology and Medicine, contacted Dr. Joseph G. Hamilton at the University of California in July 1949 and requested his help in evaluating radioactive hazards. Warren, who is not

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5 “Report on Test 16 July 1945” Warren to Groves 21 July 1945, TSCMED. Trinity’s yield was estimated at 21 KT; of the ten detonations at the Nevada Test Site during the first season, three exceeded 21 KT.

6 It is important to remember that secrecy continued to permeate every element of the program. William Twitchell, who had been in charge of a California radiation laboratory, was hospitalized at the Letterman Army Hospital for security reasons so that anything he might say during periods of delirium would be safeguarded. *Bulletin of the Atomic Scientists* May 1953, 150.

7 It is important to note the effort that Lilienthal individually expended in his effort to understand atomic weapons and their consequences. In mid-1949, before he resigned as Commission Chairman, Lilienthal made note of his concern: “How many atomic bombs, set off within a short space of time, will so contaminate the atmosphere as to kill off a substantial part of the world’s population. Stafford Warren and others have emoted about this, placing it very low; E.O. Lawrence [of Lawrence Livermore Laboratories, a long-time participant in atomic weapons development] and his people think this is rot. . . . Now we get a report, from one individual only but pursuant to a request I made, that puts it very low. We must try to get a reasonable answer. What a business!” Lilienthal, *Diary*, 553.
related and should not be confused with Stafford Warren of Operation Crossroads, nevertheless tried, like the earlier Warren, to temper the military’s enthusiasm for atomic weaponry by attempting to instill some realistic concern for radiation’s dangers. He, like Stafford Warren, failed.

Hamilton received all the health information collected from Trinity, Japan, Bikini and Eniwetok, and by November 28, 1950 had completed his research. Hamilton’s analysis focused upon acute injuries that might result from a serviceman’s radiation exposure. Significantly, he warned against the very things that troops would eventually face at Camp Desert Rock. For example, Hamilton noted that the chances of radiation injury would probably be enhanced if the exposed individuals had “been subject to previous stresses such as prolonged physical effort, loss of sleep and other fatigue” and that the effects of inhaled material might be significant, producing “a severe and possibly fatal radiation injury to the pulmonary tissue.” Hamilton believed that there existed insufficient data upon which to base more reliable predictions of injury, and his conclusion offers a glimpse into the macabre subcurrents of thought that flowed through this early

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8 The AEC demanded that the military assume radiation safety responsibility. Letter to “Commanding Officer Test Command AFSWP [Armed Forces Special Weapons Project] from K.F. Hertford, Director, Office of Test Operations, June 2, 1952. Prescott v. US, CIV LV 80-143, Defendant’s Exhibit DX 21920. The military’s commitment to radiation safety, though, turned out to be negligible. In 1953 the Test Director complained to Seth Woodruff, Field Manager of the Las Vegas Office, that although a great deal of decontamination work followed a test, the technicians of the military rad-safe group that remained was “not well-qualified. . .I was questioned by the rad-safe officer and technician regarding the proper film developer temperature to be used. . .and dosimeter techniques. . .questions were raised which indicated there was a real problem of being able to differentiate between gamma and beta radiation in the film measurement and analysis.” Memo dated 28 May 1953, 326 Us Atomic Energy Commission, LANL Records Center, Collection C-2, Folder Rad-Safe (Upshot-Knothole) TR 306.
stage of atomic weapons tests. Even as he urged controlled experimentation, Hamilton significantly qualified his proposal:

For both politic and scientific reasons I think it would be advantageous to secure what data can be obtained by using large monkeys. . . Scientifically, the use of such animals bears the disadvantage of the fact that they are considerably smaller. . . and evaluation of their subjective symptoms is infinitely more difficult. If this is to be done in humans, I feel that those concerned in the Atomic Energy Commission would be subject to considerable criticism, as admittedly this would have a little of the Buchenwald touch.  

Unfortunately, history has borne out not only Hamilton’s obvious concerns, but also the disdain for human radiation experimentation that Hamilton predicted. Unfortunately too, however, Warren’s emphasis upon preventative health and safety, based upon hazards fully recognized at the time, deteriorated within the institutional culture of atomic guardianship, the AEC.

By September 1952, AEC oversight had become notional, at best. After twenty atomic bombs had sent tons of radioactive debris into the air and eventually onto teetertotters in Louisiana and milksheds in Dakota, in September 1952 AEC Chairman Gordon Dean “said he was interested in knowing how responsibility for health and safety” was determined and applied.  

In accordance with the AEC’s promise to the president and the National Security Council to consider each continental test in light of its consequences, though, the commission should have asked that question before the testing began.

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9 Hamilton to Warren, November 28, 1950; original in the Bancroft Library.
By 1953, after two years of continental testing, the commission had been transformed into a board almost completely ignorant, apparently, of the most fundamental qualities of atomic testing itself and one that only superficially directed or controlled the decisions made by its operational staff. When the commissioners learned that thunderstorms might result in heavy, isolated concentrations of radioactive fallout, they asked Alvin Graves, the site's test director, how weather affected the testing of weapons. Graves' response was, at best, vague: "...what was safer for nearby areas might be more dangerous for distant regions, and vice versa." Graves then agreed with Commissioner Eugene Zuckert's conclusion that "a lot seemed dependent on good luck."\(^{11}\)\(^{12}\)

* * *

Commissioner Zuckert's reference to luck betrays a realization by the AEC, and a reminder, that atmospheric testing was more than a nation's need for defense, more than bombs, more than fallout; it was—as Stafford Warren tried to convince a self-indulgent Admiral Blandy—about human beings. It is certainly worthwhile to examine institutional culture, to look at the ways that individual personalities shaped cold war policies; how the

\(^{11}\) There was really no reason for anyone associated with atomic testing to not recognize the hazards of thunderstorms and fallout. Trinity, itself, was delayed until thunderstorms passed for fear that fallout would not become dispersed, but instead could become trapped within the storm cell and deliver a potent radioactive stew onto a small area. The problems of secrecy, though, will rear their ugly heads indiscriminately: "...many government enterprises go wrong because unpalatable facts are screened out and mistaken decisions consequently go unreviewed." J.R. Lucas, *Democracy and Participation* (Harmondsworth; Baltimore, MD: Penguin, 1976) 155.

\(^{12}\) Fuller, *The Day We Bombed Utah*, 36-38.
atomic program paired secrecy and deception from the very beginning; how the
government first separated atomic scientists from the everyday world and then capitalized
upon the scientists' own philosophical and professional divisions; and, how the government
manipulated the media to serve its own ends. History, though, properly asks us to look
beyond the processes of the politically prominent (and also, in the case of the atomic
establishment, the administratively and institutionally secretive); to remember, as Linda
Kerber urges, that "history involves simultaneously the stories of the powerful and the
stories of the weak."*13

Accordingly, it is important now to track the decisions of the mighty as they made
a journey from the Washington conference room to the Nevada desert and confront the
impact of those decisions upon the less powerful, the weak. What did the practices and
behaviors that characterized the atomic testing program mean to Southern Nevada? the
Utah schoolgirl? the soldier in a fox hole less than four miles from an atomic detonation?
the rest of the nation? These people are the main focus of this chapter because their
stories reveal that by using the bomb as a measure of national strength to keep the Soviets
at bay, the nation put innocent people directly in the line of fire.

The atom bomb, as Operation Crossroads demonstrated, was not a precision
weapon. Its effects were terribly widespread and to capture its diverse impact, this
chapter will examine the dual facets of atomic testing, those who set off the bombs and
those affected by them. First, then, and even though it is clear that the military played a
fundamental role in the decision to christen a continental testing site, it is important to

13 Linda K. Kerber, in "Teaching American History" The American Scholar (Winter,
look also at the ways it positioned itself in the institutional hierarchy and came to ‘occupy’ the Nevada Proving Ground despite some tentative attempts by the AEC (with at least some concern for radiation safety and prompted additionally by laboratories that wanted to preserve the area for scientific studies) to curtail, at least to some extent, the military’s extravagance. The military, though, once firmly entrenched, blatantly disregarded not only commonsensical but also scientific approaches that could have made testing a safer enterprise.

Second, this chapter will show how the military’s overweening self-...

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14 Even the weapons laboratories had become weary of the military by 1953. Norris Bradbury, Director of Los Alamos objected to the military monopolization of the site: “I regard the tendency to use the NPG...for weapon system tests, for civil defense, effects tests, for troop indoctrination and maneuvers, and for the repportorial press as quite outside the original concept of the site...this trend, if continued, can force us to abandon this site for no other reason than that the military has taken it over...it may sometime be necessary to recall that this area was actually established at the specific request of the LASL for its own needs.” Another member of Los Alamos focused on the unique characteristics of atomic testing and consequent limitations imposed: “If these five sites [at Yucca Basin] are contaminated by being used for other purposes they are not available for developmental tests.” “Summary of Minutes Committee on Operation Future, NPG” 6, CIC 26306. LASL also tried to get the AEC to curtail the military’s influence by pointing out (in a later memorandum) that military involvement seriously compromised security by allowing access to personnel who had not been sufficiently ‘cleared.’ “Memorandum to Reuben E. Cole, Chairman from Dr. Ralph Carlisle Smith, LASL” May 8, 1953.

15 The conclusion is unavoidable that by July 1951 the ‘tail’ was energetically wagging the dog. The military demanded that the AEC report directly to the military liaison committee, and had decided that the AEC had become simply a “contractor” for the military—accordingly, the armed forces would present to the AEC its specifications for weapons that the AEC would then provide. A memorandum from the Military Liaison Committee to the Chairman of the AEC proposed that to avoid ‘misunderstandings’ the AEC report directly to the military on a monthly basis of “all the latest concepts and possibilities in the atomic weapon field plus the status and progress of all previously presented concepts” together with study plans, designs, specifications, and time estimates for delivery; quarterly reports from the AEC summarizing and updating the above and the same from the contractors and laboratories engaged in development; and letters “when there arises any change or an actual or foreseeable delay...including the reasons therefore, alternatives...and new times estimates.” “Memorandum for the Chairman, Atomic Energy Commission; Subject: Military Guidance in the Atomic Weapon Field” from Military Liaison Committee, July 18, 1951. RG 326 US Atomic Energy Commission, Location...
importance, not policy, may have harmed the lives of some of those who, perhaps unaware of it at the time, were touched by the atom bomb.

* * *

So, what did it mean to the Test Site, to Nevada, to the rest of the US, for the military to get the chance to play with atomic weapons? This section looks at the military’s use of the Test Site to explore the ways it not only maneuvered the AEC into developing the site; but, also, how it overran all AEC objections to military plans for the site that seemed (to the AEC) either irrelevant or hazardous.\(^{16}\) When the AEC asked the National Security Council and the president to dedicate a portion of the Nevada Bombing and Gunnery Range to the atom bomb, it promised to maintain vigilance (and although

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\(^{16}\) The AEC was, of course, in the best position to identify possible hazards—and also to have prevented them. Allan Favish, in a comprehensive article aimed at the burden-shifting provisions of the Federal Tort Claims Act and the consequences of those provisions on downwinders and atomic veterans, details the wide range of information available to, and even produced by, the AEC prior to the institution of continental testing. His research suggests that definitive links had been established 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. “Radiation Injury and the Atomic Veteran” Hastings Law Journal, 32:1 (1981), 939.

One of the sites under consideration, on the Carolina coast, offered the significant benefit of prevailing winds that would have swept fallout away from populated areas and over the Atlantic was discarded because of its “relatively great distance from Los Alamos, does not have the necessary Government-controlled land area . . .” Memorandum from Carroll L. Tyler, September 14, 1953, (see note. 4, supra.).
reliant upon the somewhat questionable objectivity of its “recognized experts”) optimistically declared:

some of the most urgent atomic weapons tests can certainly be conducted well within acceptable limits of public radiological safety. Each specific test operation would of course be subject to examination and approval by recognized experts.”17

On the contrary, although the AEC may have hoped it could retain authority, the military had only to cite a military necessity to overcome AEC reluctance or threatened disapproval. By 1951, even the AEC had to concede, at least privately, that the military was running the show.

The military wasted no time in positioning its objectives above those of the AEC. After the military’s successes with their first tests at the Nevada Test Site held in January 1951 (code-named Operation Ranger) they immediately began planning for two successive operations, Buster and Jangle. Problems arose, however, when the AEC’s test director, officially in charge of all tests at the site, objected to the Army’s planned use of animals, specifically 32 dogs and 26 sheep for thermal burn experiments and “bio-medical” experiments on 15 dogs and “some rats.” The director lodged his objections based upon adverse public reaction (a continual, and perhaps since so often mentioned, primary concern) and the fact that any data received from the experiments would only duplicate previous experiments. Identified in an AEC Operations Report as a “difference of opinion” the problem was summarized “as one of concept of responsibility and authority of the Test Director.” The Department of Defense, however, told the commission that “military requirements are not matters for decision by either the commission or its test

17 Ibid.
organization.” In the end, the AEC refused to support its test director’s recommendations against the planned experiments and surrendered instead to the Department of Defense.

The Army’s animal experiments remained features of Operations Buster and Jangle.¹⁸

Men, too, joined animals as victims of military requirements as the military sought not only to introduce troops to the atom bomb but also to explore the psychological reactions of exposed soldiers.¹⁹ In 1951, the AEC successfully limited troop participation to one shot and required that soldiers remain five and one-half miles from ground zero during Buster-Jangle.²⁰ Severely disappointed with the results of this limited exposure, the

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Affects to industry and public relations were a major feature of Buster-Jangle, even if radiation safety was not. The military ordered “long range cloud tracking to Atlantic Coast” not for possible fallout measurements to civilians, but “for purposes of industrial protection and AEC public relations.” The government had been concerned about radioactive fallout to Eastman Kodak laboratories, who threatened to claim extensive damages should its photographic processes suffer. It became one of the only private entities in the nation privileged to advance information of any atomic test after Trinity. Miller, Under the Cloud, 58-59.

¹⁹ “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.

²⁰ For Buster-Jangle, the military had requested permission to expose servicemen to excessive levels of radiation, considering the AEC’s limit of 3.9r “unrealistic.” Shields Warren objected, the AEC turned authority over to the Test Director Carroll Tyler, but Warren wasted no time in warning the him that the Division of Biology & Medicine took their job (at least under Warren’s direction) seriously. In a letter to the Santa Fe Operations office of October 11, 1951 conceded that although the Test Director had ultimate control over the military’s request, the Test Director would have to explain thoroughly to Warren why he allowed excesses: “this Division does not look lightly upon radiation excesses. Only true emergencies should be granted special privileges” and if such emergency should arise, the Test Director would be required to present thorough documentation including “full explanation as to why the job cannot be performed in

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Army planned more extensive maneuvers for the 1952 test series. The AEC rebuffed the Army's arguments and established a seven-mile limit for trenched troops for Operation Tumbler-Snapper in 1952. The Army, though, wanted its troops stationed less than four miles from the site of the explosion—a proposal considered ludicrous by Shields Warren. He was less concerned with the initial burst of radiation than with the thermal energy of the blast—energy which he calculated would scorch "most anything" within two and one-half miles. Considering Warren's limit "tactically unrealistic," the Army and Air Force

another manner, 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." Additionally, Warren told Tyler that he believed the military should be able to accommodate the requirements with only minimal inconvenience and "In other worlds, 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. Indoctrination of this attitude early in this series may save us much trouble, and possible radiation injuries, in the several series to come." Letter included in the "Minutes" of the Advisory Committee for Biology and Medicine, September 12 and 13, 1952. US DOE Archives, 326 US Atomic Energy Commission, Collection Secretariat, Box 1271, Folder B&M7 Biology & Medicine adv. CMTE, vol. 1. The meeting was held after Dr. Warren had left his position as Director of the division, and is indicative of insider recognition of Dr. Warren's strident refusal to back down to the military that his letter was used as an example of the "safe" nature of the 3.9r limit.

21 Shields Warren should not be confused with Stafford Warren, who left government service permanently right after Operation Crossroads.

22 Dr. Warren's first letter illustrates the disparate interests within the atomic testing program, and particularly the importance of public relations to the AEC:

"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. However the test and the Continental Proving Ground are the responsibility of the commission both in fact and in the public mind.

"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 adverse effects. 3. The explosion is experimental in
launched a letter-writing campaign, and the AEC backed down. The AEC's Los Alamos manager suggested that the AEC simply relieve itself of responsibility. That hint was the tool the commission needed; it suggested that the military prepare a safety plan acceptable to the test manager; if, however, "officials of the Department of Defense. . .still feel that a military requirement justifies the maneuver, the commission would enter no objection." The military ultimately decided to place its troops within 7,000 feet of ground zero—and the AEC, while indicating that its own safety precautions for civilians remained in effect, deferred to military objectives and admitted 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." The military may have readily admitted to the AEC in 1953 that it expected that serious injury could result from type and its yield cannot be predicted with accuracy." Warren to Brigadier General K.E. Fields, Director, AEC Division of Military Applications, March 25, 1952.

Additionally, the desert sand was "thermally nonideal." Since an intensely hot "preshock thermal layer" could be expected to surge ahead of the shock wave, carrying "dust, smoke, and heated air," the effects on troops in foxholes were unknown, but potentially lethal. Miller, Under the Cloud, 139.

Warren probably relied upon Stafford Warren's report after Trinity that emphasized the thermal effects of the blast, "several times greater than that expected." Trinity eviscerated jack rabbits more than 800 yards from zero and a farm house three miles away suffered "extensive damage" including doors torn loose. He predicted "severe casualties" to any personnel within two miles and severe eye damage to those within five to six miles of zero, "sufficient to put personnel out of action several days if not permanently." Warren to Groves, 21 July 1945, TSCMED.

23 "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. . ." "Designation of Authority as AEC Test Director for Buster-Jangle", US DOE Archives, 326 US 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.
troop maneuvers with atom bombs, but veterans since have spent years trying to get the government to admit that their service in Nevada trenches and in the midst of radioactive dust may have caused their cataracts, their cancers.\textsuperscript{25}

Warren tried (albeit fruitlessly) to protect not only troops, but also civilians, from military extravagance. Although there were civilian injuries from radioactive material at the test site (particularly employees of government contractors) it is clear that fallout needlessly constituted the greatest hazard to civilians off-site. As was demonstrated by both \textit{Trinity} and \textit{Baker}, the amount of radioactive material exploded into the air corresponded with the proximity of the bomb’s detonation to the surface. Accordingly, in 1951, Warren recommended against a military experiment that would involve a tower shot—a method to detonate a bomb close to the surface that deviates from a safer, plane-delivered “air-drop” bomb that would explode at a higher altitude. It appears that Warren recognized that the armed forces might not be convinced by his appeals to radiation safety, so he also mentioned the problem of public relations:

> It is not possible for us to disregard a potential long-term inhalation hazard. There would be a continually recurring problem of dust contaminated with material of long half-life being blown around by the winds. The arid character of the region increases this hazard. . . From the policy standpoint, hazards that might arouse alarm and prejudice against its future use should be avoided. . . We would have no objections to such a test being carried out in an area where much of the fallout material would land over the ocean. . . eliminating the problem of recurrent spread of contaminated dust by the winds.\textsuperscript{26}

\textsuperscript{24} Cited by Favish, “Radiation Injury and the Atomic Veteran” 945, n. 39.
\textsuperscript{25} Cataracts and eye injury was the most common immediately-recognizable consequence. Six soldiers from Harrisburg, Pennsylvania suffered eye injury from witnessing blasts. \textit{Las Vegas Sun}, March 20, 1955, 1.
\textsuperscript{26} 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. US DOE Archives, Collection DMA, Box 3783, Folder MRS 7.
Three months later, an unnamed committee met to “consider the feasibility and condition” for the shot that Warren had warned against. The committee overruled Warren, specifically addressing his warnings concerning inhalation hazards by relying, as had become the custom, on scientific opinion that conformed to the military’s (and thus, AEC’s) wishes:

It is not obvious that a very nonhomogeneous distribution of radiation is always more toxic and therefore less tolerable than a uniform distribution. . . Many pathologists do not believe that cancer is due to a somatic mutation which produces a malignant cell. . . when such [insoluble and radioactive] particles are breathed, however, large particles are filtered out. . . with the result that the number of particles of diameter greater than 5 microns which find their way into the lungs is negligible. 27

Later, Warren had to combat the military’s request for a “deep sub surface shot” to produce a “low cloud”—a shot that could have been disastrous. He won. AEC meeting no. 584, July 27, 1951. US DOE Archives, 326 US Atomic Energy Commission, Collection 1951-58 Secretary Files, Box 1261, Folder MA& A-7, Buster-Jangle, Vol. 1.

The AEC might have taken a lesson from history. Although under tremendous pressure to prove the viability of the first atomic bomb, General Groves noted the Manhattan Project’s considerations for civilian populations following a tower shot: “With the bomb explosion only one hundred feet off the ground, we expected a great deal of material from the tower and the ground surrounding it would be made radioactive and carried as small particles for great distances through the air. . . we did not want the cloud, if one developed, to pass over any populated areas until its radioactive contents were thoroughly dissipated. Groves, Now It Can Be Told, 291-292. While Groves’ own personal (and often self-serving) recollections are admittedly problematic, this statement is substantially verified by Stafford Warren’s report and his emphasis on fallout.

27 There was widespread interest in the possibility detonating a weapon that would remove “something on the order of 50,000 cubic yards” of material from a bomb crater. It was a large committee by AEC standards, 20 military, university, laboratory, and AEC individuals topped the list of those present, and the bottom of the list mentioned “(And a few more)” “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. US, Defendant’s Exhibit DX39024l.
Warren's warnings were ignored by a determined military, and tower shots—those that
carried a large amount of radioactive material onto off-site locations—confirmed his
predictions. The heavily-deleted minutes of an AEC meeting in May 1952 illustrate that
the commission considered (probably high) levels of off-site fallout. Warren warned the
commission that it could not risk any shots larger than those already fired, and additionally
to avoid tests when "winds in the upper air reach high velocities." Chairman Dean,
however, declined (apparently but not conclusively since a large portion of the minutes are
still classified) to address the health consequences to which Dr. Warren alluded. Instead,
recognizing the problem as one of public relations and information management,
suggested a "popular" article would "reduce the possibility of public anxiety." The
AEC has become not the watchdog, but the accomplice of the military.

* * *

As this discussion turns to the victims of atomic testing, it is important to
remember that the medical effects of radioactivity are, perhaps, as hard to pin down as the
motivations of historical actors. There are, after all, many different radioactive elements
with many different properties, potencies, and effects. While it is readily accepted that
radiation causes various forms of cancer and probably distresses the immune system, even
those "pure" sciences that promise to offer definitive answers become hesitant and
indecisive about the effects of radiation. It is a murky problem, compounded by the
presence of so many other carcinogenic substances in our environment. For example,

28 AEC Commission Meeting No. 694, minutes, May 14, 1952, item 3.
radiation can cause lung cancer, but so can cigarettes and petroleum fumes; radiation can cause colon cancer, but so can biscuits and gravy.\(^\text{29}\) Some scientists argue that any radioactive exposure equal to or less than "background" solar radiation must be harmless—others that human beings live in equilibrium with solar radiation and that there is no safe threshold beyond that equilibrium. Congress finally admitted in 1990 that the nation had to bear some responsibility and passed legislation designed to compensate some for their losses, but the claimants face a tremendous burden of proof.\(^\text{30}\) It may be impossible to prove that fallout caused increased rates of cancer (together with other illness and disease).

\(^{29}\) This last argument applied with biting success by a young Justice Department attorney during trial testimony in \emph{Prescott v. US.} When asked by the attorney to explain why she believed her late husband died prematurely of colon cancer, the widow of a deceased test site worker explained that while he worked in a tunnel at the Nevada Test Site he had been exposed to dangerously high levels of radiation and then collapsed. She went on to explain his lengthy hospitalization that followed this exposure. The attorney patiently waited through this explanation and then asked the woman whether her husband had ever eaten biscuits and gravy. The witness chuckled and explained that since she and her husband were both from the South, they had eaten a lot of biscuits and gravy. The attorney then asked the widow if she was aware that biscuits and gravy were high in fat, a substance known to contribute to the incidence of colon cancer.

\(^{30}\) The Radiation Exposure Compensation Act supports compensation for uranium miners, test site workers, and downwinders and each is faced with a strict burden of proof based upon the particular circumstances under which they were exposed. The disease criteria is limited to fifteen radiogenic cancers based upon the Radium Dial Painter legislation. This is interesting for two reasons. First, the circumstances of exposure differ between the two groups. Radium dial painters were exposed to radioactive substances primarily through ingestion. Fallout posed inhalation and ingestion hazards. Second, our understanding of radiogenicity has increased substantially since the approval of the Radium Dial Painter legislation. The National Academy of Science has published six "BIER" reports by the time Congress enacted the RECA legislation, and although those reports altered and expanded upon earlier categories of radiogenic cancers, Congress ignored those analyses.
that seem to have visited areas exposed to fallout, but important to consider those who firmly believe that their own government poisoned them.\textsuperscript{31}

Important, too, to look at the ways that the government \textit{did} recognize the problems of fallout yet how it also so woefully misdirected its concern: It warned the photographic industry because it feared lawsuits, and followed the clouds of radioactive fallout across the United States in planes for public relations purposes; but failed the people most affected. Instead, the government—too concerned with public relations—issued constant reassurances that any radiation off-site was harmless.\textsuperscript{32} The government pressed its emphasis on public relations at, probably, great cost.\textsuperscript{33} The circumstantial evidence is irrefutable—prior to atomic testing, the Mormon population of St. George suffered incidences of cancer at one-half the national average. By the 1960s, Irma Thomas, a woman who lived on a block with only five homes, noted that there had been seven cancer deaths and two additional cancer surgeries. Within another one-block radius, Irma identified another eight cancer or leukemia deaths and twenty-nine afflicted others.\textsuperscript{34}

\textsuperscript{31}Cancer, reduced immunities, and birth defects all have so many causes other than radiation and all are such complex physiological processes, that exact causes are all-but-impossible to discern.

\textsuperscript{32}During the first series at the Test Site, Operation Ranger, the AEC set a range for off-site exposures almost ten times that for workers, and emphasized not safety, but public relations: “It is felt that figures must be used as general guides but that no drastic action which might disturb the public should be taken unless it is clearly felt that such action is essential to protect local residents from almost certain damage.” cited in Jenkins, \textit{Allen v. US}, 386.

\textsuperscript{33}See Jay Gould and Benjamin Goldman, \textit{Deadly Deceit, passim}; and Fuller, who cites Dr. Joseph Lyon’s research that shows childhood leukemia in Southern Utah grew to two and one-half times the normal rate. \textit{The Day We Bombed Utah}, 152.

\textsuperscript{34}Fuller, \textit{The Day We Bombed Utah}, 152.
It is, perhaps, unlikely that radioactive fallout caused all of these cancers; but it is just as unlikely that it did not cause some.

Had secrecy and the government’s emphasis on public relations not been such important features of atmospheric testing, it could have addressed fallout and recommended simple precautions that would have effectively reduced the likelihood of exposure to hazardous levels of fallout. Martha Laird, in a televised interview, said that she lived within 80 miles of the test site and believes (without any doubt) that the government destroyed her family. Living on a small farm, Martha and her family drank milk from the family’s cow, drew their water from a shallow well, played in the spring, and ate vegetables from a backyard garden. When someone from the test site visited the Laird family, Martha asked about the fallout clouds that she said lasted, sometimes, “all day.” He told her that the radiation was harmless, no worse than an X-ray, and even though the representative must have noticed that the family was probably ingesting fallout that settled on its own produce and in the water, he gave her no precautionary advice. In 1955 she lost her son, a first-grader, to cancer. Shortly after that, she suffered a late-term miscarriage and delivered a stillborn child with no legs. The family left the farm and moved to northern Nevada. Martha, though, still mourning her losses, wrote a letter to the Chairman of the AEC, Lewis Strauss, who, she says responded to her coldly to her concerns: “former President Truman had said that any dangers that might result from fallout were a small sacrifice.” Martha, whose daughter had since contracted thyroid cancer, did not agree. Nor would many other victims.

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35 Martha Laird told her story to Peter Jennings during “Coverup at Ground Zero” a segment of “Turning Point” that aired on ABC in 1994.
Although Nevada's sparse population was one of the reasons for the test site's location, it appears that the AEC was unprepared to deal with the consequences of atomic testing upon Nevada's scattering of mines, ranches, farmhouses and temporary occupation by those who used large open range areas for periodic grazing of sheep and cattle. The Air Force's use of the bombing range had previously affected the people who earned their living in remote regions of Southern Nevada and it had established a procedure for rapidly compensating residents for broken windows, injured livestock, and short-term loss of use (as with mines). When it took over part of the bombing range, the AEC adopted this policy, and required only the submission of claims to settle with those who had suffered damage as a result of blast effects, e.g. shock wave damage to structures or livestock.\textsuperscript{36} Fallout damage, though, posed a new set of circumstances that often caused confusion between not only residents and the AEC, but among the various test site components and other governmental agencies involved in recompense.

The experiences of mine operator Daniel Sheahan and his wife provide a good example of the AEC's problems with a rural Nevada mine operator affected by testing.\textsuperscript{37}

\textsuperscript{36} A prominent Nevadan, Floyd Lamb, filed a claim against the AEC for radiation damage to cattle. Aware that Lamb had hired an attorney, the AEC decided to wait and see whether the animals' symptoms conformed to typical radiation disease progression: "A period of 60 to 90 days in the future may give us the clue to whether these animals will 'heal' or develop the typical Trinity lesions." US Attorney Madison B. Graves to Mr. Chester G. Brinch, Assistant General Counsel, US AEC, Albuquerque; CIC 1338.

\textsuperscript{37} This account is drawn primarily from government communications: a letter from the Manager of the Santa Fe Operations office to Brig. Gen Fields, Director of Military Applications dated August 20, 1954, CIC 78946; letter from Chalmers C. King, General Counsel Santa Fe Operations Office to William Mitchell, General Counsel (Washington) dated April 14, 1955, CIC 78937; Memorandum to Colonel Alfred D. Starbird, AEC Director of Military Application from Donald J. Leehey, Manager of Santa Fe Operations, September 9, 1955, CIC 78977; Daniel and Martha Sheahan filed a claim against the United States in District Court, Case No. 100-55.
During the early 1950s, the Sheahan’s Groom mine, located at the northeast corner of the test site, suffered damage from Air Force weapons practice and atomic tests, and although the government sometimes advised the family to evacuate because of either possible shock or radiation damage, its warnings and promises were often contradictory. Though radiation monitors advised them to leave the area because of fallout, they also told the Sheahans that the fallout posed no danger. Sheahan though, an avid diarist, believed differently—especially after he began to notice changes in resident animals. He recorded his impressions during those years and later testified:

that the hides of deer, horses, and cattle that grazed in the area were speckled with burn marks. . . A group of researchers from the University of California at Los Angeles . . fled the area [because of high radioactivity].

Contradiction characterized the information Sheahan received from the government. After the 1951 tests, an official (who he was unable to identify) told him that “such dangerous type tests” would not be held again within the US. He also claimed that on another occasion “health men” said that “none of us should live at Groom during the tests.” When confronted with irrefutable evidence of its contradictory statements to Sheahan, the government found a way to deny responsibility. Although the government had to admit that a Los Alamos employee had written a letter to Sheahan that advised him to reach a settlement with the AEC or try to initiate special legislation, others within the AEC simply claimed that the letter’s author lacked authority and though the employee “purported to act officially, had no authority to discuss the matter of the Groom Mine with the

39 Leehey to Starbird, September 9, 1955, CIC 78977.
Sheahan obviously had no idea of how to separate the authorized from the unauthorized statements of the AEC upon which he necessarily relied.

The government was willing, however, to admit responsibility for relatively-minor damage to Sheahan's property for not only structural damage, but also effects of fallout. As a result of 1952's Tumbler-Snapper series, the government paid (in 1953) $1,000 of a $1,138.78 claim to Sheahan for loss of income following a test-related mine shutdown. The AEC noted that during negotiations for that payment, Sheahan mentioned that his wife Martha had recently been diagnosed with skin cancer, and though he filed no claim, indicated that he thought her condition might be related to fallout. More damage to his mine followed, and the government had one of its contractors replace windows and repair building siding at the mine. Shortly thereafter, on June 14, 1953, Sheahan sent a letter to the AEC and requested that the government buy his mine for $150,000 since continued testing precluded its continued use. The government declined, not because it disagreed with Sheahan that radioactive and shock damage amounted to a 'taking,' that the AEC's activity precluded Mr. Sheahan's use of the property, but because "AEC appropriations do not permit purchase of property for which it has no use." In September, Sheahan filed a claim against the government for $100 for "radiation damage" to his 16-year old horse. The government had the horse appraised, twice, and based upon those estimates of value

40 See note 37, supra.
41 The Sheahans blamed the Air Force too because it (according to the government's own review) "dropped missiles over and upon and in the close vicinity of the...mine" while the Sheahans and other workmen were on the property, additionally "the Air Force discharged machine gun fire or dropped missiles...upon the mill with such devastating effect as to cause an explosion which resulted in the total destruction of the mill." April 14, 1955. See note 37, supra.
offered Sheahan $50.00. Unable to receive compensation for his mine and blaming the government for his wife’s eye disease, Sheahan contacted a lawyer and in 1955, when the AEC refused the proposed settlement, the Sheahans filed a lawsuit. They were unsuccessful.

Sheepmen, too, peppered the southern Nevada desert; but, unlike the ranchers and miners who had permanent residences or recorded locations of business, they used various areas for fall and winter grazing in Nevada that might only be accessible from horseback and were, thus, often more unaware than even the Sheahans. Kern and Mac Bulloch were two such sheepmen who lived through the late spring and early summer at their Utah homes. They knew that the government had begun to test atom bombs west of their traditional winter range, but without radio or newspapers, the Bullochs often found out about a test only when they saw the mushroom clouds in the west (the dawn shots, “bloodred and ugly”) after which they would be engulfed by debris that rushed relentlessly toward them and their sheep. One such onrushing radioactive dirt storm changed their lives forever.

Fallout from one of 1953s Upshot-Knothole series, Nancy, found the Bulloch brothers and their 2,000 Rambouillet sheep in Sand Springs Valley on March 24, 1953. Twenty miles south, radiation monitors from the AEC and scientists from UCLA who were performing experiments associated with the test took shelter in a mine. The monitors knew the two sheepmen were directly in the path of the highest radioactivity and

42 Unless otherwise noted, this summation of the Bulloch brothers and their problems with the government is taken from John G. Fuller’s The Day We Bombed Utah, passim and particularly here, 4.
called their superiors to discuss a helicopter rescue, but the idea was abandoned. Later that day, another radiation safety team on their way to the mine in a jeep told the Bullocks that they were “in a hell of a hot spot.” The team told the brothers that they should leave the area immediately. The two men, though, would not leave their sheep and since sheep graze as they walk, the group moved slowly. At six miles per day, the brothers continued their move toward the lambing sheds of Cedar City, Utah.

It proved a difficult and unusual trip for the experienced sheepmen. Many ewes gave birth prematurely to potbellied lambs without legs or wool; and equally strange, the ewes took no interest in their young, abandoning them on the desert floor and rejoining the flock. The lambing sheds of Cedar City offered no relief; deformed lambs were born and died, and hundreds of adult sheep succumbed. Some died standing, some while eating--frozen as if in a stupor. Their hooves became hard, their wool separated from their skin and oozing sores covered their bodies and the insides of their mouths. Other ranchers returning from the Nevada range suffered the same misfortunes as the Bullochs. Though thousands of animals died, the AEC denied responsibility, and the Bullochs and other sheepmen who finally filed suit in federal court, lost.\footnote{Ibid., 13}

\footnote{At a June 10, 1953 AEC meeting, the AEC’s medical officer Gordon Dunning reported that he estimated approximately 10,000 sheep grazing within 50 miles of the test site and some had beta burns in their nostrils and on their backs and that collected “specimens” would be tested. AEC Meeting No. 875, CIC 14013. Unfortunately, this section of the meeting identified as item 10, is the first declassified portion of the entire document. The \textit{Iron County Record} reported that the AEC cited “malnutrition” as the cause of the sheep deaths, but the Utah Health Commissioner said that although malnutrition was present, so was radiation. July 2, 1953, 7; July 16, 1953, 2.}
The bomb that so devastated the Bullochs, *Nancy* (24 KT) was only one of three
of the eleven Upshot-Knothole shots that became memorable. The other two, *Simon* (43
KT) resulted in high levels of radioactive rain in Albany, New York,\(^{45}\) and *Harry* (32
KT) was so consequential that it has come to be known as "Dirty Harry."\(^{46}\) Before
exploring the effects of *Harry* it is worthwhile to consider that the shot may provide an
excellent example of the way that the government compromised health and safety in its
effort to promote its public relations campaign; for although the AEC had been warned by
Shields Warren to avoid shots when the cloud might encounter high speed winds—that is

\(^{45}\) The second shot of Upshot-Knothole, *Simon*, caused a "hot-spot," isolated
concentrated fallout, that showed up in New York. Students at the Rensselaer
Polytechnic Institute in New York noticed their geiger counters registering radioactivity.
They alerted radiochemistry professor Herbert Clark who called the AEC. An official
denied that testing might be the culprit. Clark and his students turned the mystery into a
project, and measured radioactivity in outside puddles at 270,000 times more radioactive
than water approved for drinking. Finally, the AEC investigated and discovered that
Albany, New York, had had an "unfortunate" encounter with fallout carried by a
thunderstorm. The dose estimated for Albany ranged up to a "few thousand milirads."
Miller, *Under the Cloud*, 170. The AEC launched its investigation too late to have
warned residents, had it decided to do so at all. On March 20, the *New York Times* told
New Yorkers that radioactive rain had fallen, "City is sopping but safe." \(^{25}\)

\(^{46}\) Fallout was "planned" into Upshot-Knothole. In a memorandum from Test Director
Alvin C. Graves to Personnel concerned with Weapons Test Report Programs" dated May
6, 1953, one item (27.1) is defined as "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 up to 100 miles from ground zero." CIC 14169.

There is additional evidence that given the high kiloton range of testing planned for
Upshot-Knothole, fallout became a real concern for the AEC before the tests began. It is
presently impossible to learn more than that on on February 4, 1953, the AEC held and
meeting and developed an "information plan concerning the public health aspects of spring
tests" since the meeting minutes for that date, and others associated with Upshot-
Knothole remain almost completely classified. AEC Meeting no. 814, CIC 14001. As is,
for example, Meeting no. 845 on April 1, 1953 that discussed fallout and "PR aspects"
CIC 14003.
exactly what happened with *Harry.* The AEC planned the shot as a demonstration, and the government had invited a large group of Congressmen and (because of complaints that resulted from earlier testing) a large group of visitors from Utah together with an assortment of national observers to watch *Harry.* Originally scheduled for May 2, the test was postponed because high levels of radioactivity from a prior shot precluded workmen and scientists from entering the area. Rescheduled for May 16, rain and clouds against caused another delay. There must certainly have been some impatience on the part of those who had gathered in Las Vegas prior to May 2, the first scheduled date and then ended up waiting, only to be disappointed yet again. It is likely, too, that the AEC was also anxious to put on its show before everyone gave up and returned home. On May

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47 The AEC also apparently ignored the problems associated with fallout and weather systems. The *Las Vegas Review Journal* reported that the mushroom cloud was not visible from Las Vegas because of an “overcast” sky. May 19, 1953, 1. Additionally, *Harry*, was a ‘tower’ shot—the type that Warren had suggested was not appropriate for the continental test site.

48 Animosity had been building in Utah against the testing. One year before *Harry*, an article in Salt Lake’s *Deseret News* said “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. Ralph Hafen, a student at the University of Utah demanded that the AEC address plutonium inhalation, fallout-induced cataracts and radiation-induced mutation. *Iron County Record* May 7, 1953, 9.

The AEC invited hundreds of people from Utah to witness the test. One, Rae Ashton, president of the Women’s Auxiliary, said *Harry* had “spun like a child’s toy top” yet an editorial printed along with her article noted “The [AEC assurance] is comforting. But at the same time, an eminent and experienced nuclear scientist, Dr. Lyle Borst of the University of Utah expressed increasing concern. . .even a small amount of radiation can be harmful to a degree.” *Deseret News*, March 27, 1953. Dr. Borst later wrote an article for the *Bulletin of Atomic Scientists* that called into question the AEC’s reported ‘safe’ dose (3R) for downwinders was not appropriate. Saying that the AEC apparently made no allowance for *beta*, Dr. Borst complained: “Predictions of this level will cause the test organization to evacuate communities. Communities are not notified to keep children indoors in the case of fallout contamination unless predicted levels are near the 3R integrated limit. These levels are far above the levels set for [reporters] at the test. April, 1953, 73.
19, although the sky was overcast and winds aloft from the northeast, the AEC finally detonated *Harry* before the huge group of awed spectators. The cloud climbed to 38,484 feet before it met up with a 91 mph northwest wind. The problems began when the cloud began to fall; but, as will be shown, although the AEC did actively make some attempts to reduce the dangers posed by the highly-radioactive fallout—positive public relations again took precedence over precautions.\(^50\)

The AEC ordered a roadblock between Las Vegas and St. George and washed contaminated cars, but the most highly-populated area affected by *Harry*’s cloud was St. George, Utah, itself.\(^51\) The AEC instructed the Chief of Police to advise residents to stay indoors and wash their clothes, and the chief proudly claimed to have done so in such a way “as not to frighten or alarm the people.”\(^52\) Meanwhile, even inside their homes, residents noticed a “strange metallic taste in their mouths, possibly due to the presence in

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\(^49\) *Las Vegas Sun*, May 16, 1953, 1; May 19, 1953, 1.

\(^50\) Upshot-Knothole’s “Test Director’s Operation Order” instructed radiation safety monitors on the fine art of public relations. Above all, the monitors were “instructed to avoid causing fear” and to assist them in that task, the Order issued substantial dialogue to help the monitors deal with the public. Some phrases were particularly soothing, e.g. at check points: “If we find traces of fall-out 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 . . . 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.” 210 [italics mine]. Note that ‘fallout’ became innocuous ‘dust’ and ‘stuff’ in the mouths of radiation monitors. “Operation Order No. 1-53 (Upshot/Knothole)” 326 US Atomic Energy Commission, location LANL, Collection Records Center E-7 B-39; Folder Test Director’s Operation Order No. 1-53.

\(^51\) *Ibid.*, May 20, 1953. The local press (in typical fashion) stressed the relatively-small number of cars that ended up contaminated: “Fewer than 100 automobiles required washing following yesterday morning’s atomic cloud fallout, although . . . hundreds of vehicles at six check points . . . were monitored.” *Idem.* 1.

the air of microscopic iron particles—remnants of the shot tower." The AEC told its radiation monitors to avoid arousing concern among the public. People were already concerned, however, and anxiety spread out of Utah.

To counter adverse publicity, the AEC took its case to the press. Two additional radiation safety officers went to Utah to "reassure miners" who blamed their illness on fallout; but, according to the AEC the trip was meaningless since "radiation fallout from yesterday's shot was not hazardous." Residents in Utah were not convinced, and neither was president Eisenhower who ordered a re-study of civil defense precautions, a fact that went unreported in both Las Vegas newspapers. On May 24, Utah's Congressman Stringfellow began calling for an end to testing altogether. The AEC and the local press trivialized the complaints, "information men yesterday were working like proverbial one-armed paper hangers trying to deflate the mass hysteria."

The radiation safety personnel that the AEC pressed into service after Harry did, indeed, monitor radiation but they did very little that could have been done to guarantee safety. One of the monitors assigned to St. George, Frank Butrico, later said he contacted

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53 Miller, Under the Cloud, 175.
54 "Doubt Illness Caused by Fallout" Review Journal May 20, 1953, 3.
56 Stringfellow said that AEC assurances that there was no danger contrasted with their warnings to St. George to the residents to remain inside was "disquieting...particularly when we find nuclear scientists themselves voicing a considerable difference of opinion on the possible harmful effects of radioactive fallout...Human life is too precious to be risked in experimentation and guess-work." Deseret News, May 20, 1953, 1; May 24, 1953, 1. "Nevadans Fight to Retain A-Tests" Review Journal, May 24, 1953, 1.
the test site for instructions when his monitoring instrument in the middle of St. George began registering radioactivity, but it took more than an hour after his monitor reached the maximum range of the instrument (300-350 m/kr/hr) for the site to approve a warning to stay indoors. Later, he said, many apparently had not received it. As he drove through town, he said that cars were on the road, people on streets, and grade-school children still played outside on morning recess. In contact with the site, he received instructions to keep changing and washing his clothes and taking showers until his personal readings decreased; when he asked if he should issue the same instructions to the community, he received a "resounding 'no'" because it might cause "panic." Additionally, and despite the fact that the readings after *Harry* were extraordinarily high, the AEC performed no internal monitoring (urine, fecal, or blood samples) even though that procedure was customary at the time in laboratories when workmen had been exposed to even lesser dosages. The AEC also neglected a device that could have offered a more complete picture of the damage in St. George: instruments used routinely to detect radiation to the thyroid. Important, too, is the fact that the AEC refused, again in the service of public relations, to allow its monitors to sample local milk—even though the monitors asked if they should. After the furor had died down, the AEC—in the interests of "public

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58 Frank Butrico’s story was one included in "Coverup at Ground Zero", see n.35, *supra.*
60 *Ibid.*, 375. Fuller states that Butrico decided to check local milk supplies for radioiodine, but feared public alarm if he requested samples from local dairies or backyard cows. He bought a quart of milk from a store, but whether it was ever tested remains a mystery. *The Day We Bombed Utah*, 34. In any event, the milk would only have reflected radioactivity from earlier tests since it would have been bottled before *Harry*. Times have changed: The government evacuated pregnant women and children at Three Mile Island when radiation doses reached 2 to 25 millirems per hour. *Harry* has been estimated to have caused exposures reaching 1,000 millirems per hour. *Idem.*, 218.
education”—re-situated Frank Butrico in St. George and asked the residents and shopkeepers to appear in a government film that ostensibly recreated the day *Harry* struck St. George. It emphasized that the residents were good, patriotic citizens and that the AEC was a sympathetic, safety-conscious, outfit. Some of the “actors” have become bitter over the years over the ways that the AEC co-opted them into its public relations campaign. Elmer Pickett, a St. George shopkeeper, lost his wife to cancer in 1959. Claudia Peterson remembers that she was in school on the day of *Harry* and when someone checked her with a geiger counter, he told her the clicking meant “you had a dental x-ray.” Claudia’s father later died of brain cancer and her sister and daughter Bethany succumbed to leukemia.

A later analysis by the Public Health Service in 1962 compared *Harry*’s dosage to milk as comparable to those at Windscale in Britain. Britain’s response to radioactive contamination of milk following the Windscale accident on October 10, 1957 that caused an immediate release of radioactive material and an immediate analysis of milk supplies. As a result of that analysis, the government instituted a ban on milk deliveries stretching for 200 square miles. Interestingly, this work references American downwinders and problems with the AEC. “It seems as if the people of Nevada should join forces with the people of Japan in asking for suspension of all nuclear bomb tests. Because of the fantastic secrecy with which the United States Atomic Energy Commission surrounds its test explosions in Nevada, there is little quantitative data about the spread of radioactive fallout. A. Pirie, ed., *Fallout* (London: MacGibbon & Kee, 1958), 120; 78-79. Windscale provides a test case for the ability of a government agency to both prevent ‘panic’ and deal with radioactivity responsibly. A report after the incident stated “The sober, coolheaded handling of the incident will serve as a classic model. . .it undoubtedly prevented general panic in the area and prevented the mishap from turning into a disaster.” cited in Jenkins, *Allen v. US*, 376.

61 Reviewing Upshot-Knothole, the AEC emphasized public relations, not fallout. “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.” “Atomic Energy commission Public Information and Public Education Programs” December 6, 1954, US DOE Archives, 326 US Atomic Energy Commission, Collection 1951-1958 Secretariat File, Box 1263, Folder MR & A-7 Teapot Vol. 1.

The institutional framework of the AEC resulted in the filtering out of vital information that could have mitigated the danger of atomic testing. Only positive reports made their way to the commission, those which reflected poorly upon operations were never considered. Dr. Gordon Dunning of the Division of Biology and Medicine played a large role in reassuring the commission after Upshot-Knothole. Seven veterinarians analyzed the sheep deaths, two from the State of Utah, one from the Navy Radiological Defense Laboratory, one from Los Alamos, and three from the US Public Health Service. All concluded that radiation caused the animals’ deaths, but their written reports never saw the light of day. Instead, the commission relied upon the conclusions of its own advisor, Dr. Dunning, who also had examined citizens complaining of puzzling skin conditions after *Harry*. Those skin conditions, Dunning claimed, were the result of "allergic dermititis [sic]" or "sunburn." Though reassuring, Dunning’s diagnosis could

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63 In August, a large gathering of livestockmen met with the AEC and other US officials and representatives from Iron County and the State of Utah to discuss the sheep deaths. Though the AEC consistently tried to place the blame on other disease (p. 1), lack of rainfall (p. 2), photosensitivity (p. 4) the livestockmen and the State Health Department logically countered most of the AEC’s statements. Because it was unable, though, to address knowledgably details about radiation, the AEC ended with the upper hand, for example:

Livestockmen: When you made your tests, you mentioned some sheep were hot. What did you mean?

AEC: It is true that some sheep had relatively high values who weren’t ill. The Thorley herd has as high an external value on the instruments as any.

Livestockmen: You said, “This sheep isn’t as hot” or “This is a hot one”. What did you mean? A dead one was usually hot.

AEC: Any radiation was hot. It didn’t mean anything special. External readings have no consistency.

“Notes From Meeting of Atomic Energy Commission, State Health Department, Livestockmen and Others Held at the City and County Building In Cedar City August 9, 1953” CIC 14039.
have been checked more thoroughly—his only technical expertise was as a high school physics teacher and his only credential a Ph.D. in education from Syracuse University.\footnote{Fuller, The Day We Bombed Utah, 40-42. The secreted reports (along with many others that had been hidden) came to light in the 1970s as a result of a Congressional subpoena. Idem., 217. That subpoena provided the investigators with a revelation: “All evidence suggesting that radiation was having harmful effects, be it on the sheep or the people, was not only disregarded by actually suppressed.” US House Subcommittee on Oversight and Investigations of the Committee on Interstate and Foreign Commerce, The Forgotten Guinea Pigs, 11. Plaintiffs in the Allen trial presented evidence that Dunning’s repertoire of deceit continued. At a workshop for radiation monitors in 1980 Dunning destroyed an experiment that allowed the evaluation of iodine in a milk sample: “So, anyway, Frank and I did a few of these . . . and we showed it to Gordon Dunning. He got mad, red in the face, took it, threw it on the floor and stomped on it. ‘Don’t you do that.’ So I don’t know whether it meant a damn thing or not, it is immaterial, but it sure got Gordon excited.” Judge Jenkins, too, remained at a loss to explain the significance of Dunning’s action. cited by Jenkins, Allen v. US, 376, n. 125.}

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Fallout from *Harry* aroused the public’s curiosity and fear. It joined international events and forced the AEC (perhaps for the first time) to explain its activities. Public safety concerns escalated as the AEC admitted that radioactive fallout had caused injuries in the Pacific. Shortly after Americans learned the devastating potential of hydrogen weapons they learned to their horror that the Soviets, too, possessed hydrogen weapons. The consequences of the escalated experimentation were so dreadful that even Churchill asked for a re-evaluation of atomic testing. The national conversation about radioactivity and the fears of citizens, despite the AEC’s emphasis on secrecy and governmental attempts to control atomic information, had begun to play out in the press.

The hydrogen bomb caused increasing concern. The AEC, through Chairman Strauss, admitted that it had exposed twenty-eight Americans and 236 “natives” to
radiation in the Pacific. Fallout had unexpectedly descended onto an atoll that the government had reckoned safe. Radioactive material also fell on the Japanese fishing crew of the inappropriately-named *Lucky Dragon*, who, unaware of the source of the ash that fell on them, made no effort to avoid the fallout and suffered burns and blisters. When they returned to port, the Japanese government quickly blamed American weapons tests. Soon, the Japanese accused both the Soviets and Americans of poisoning its people and its fisheries, and demanded schedules for testing. Strauss denied that the Pacific testing had injured the Japanese. Under intense scrutiny, though he did discuss another issue—strontium 90—and said that strontium 90 might cause bone damage if it entered the body. The American public grew only more apprehensive as they finally began to learn the serious consequences posed by atomic testing posed.

The boasting from Russians and Americans startled and appalled an American and international public that had finally begun to confront the morbid absurdities of the arms race. On March 26, 1954, the Russians announced that their hydrogen bomb could be used tactically and that it was “eight to ten times” the power of an atomic bomb. Chairman Strauss responded to Russia’s announcement on March 31 and (probably) no one laughed when the full text of his speech appeared in the *New York Times* on April Fools Day. Strauss’ answer to the American public and to the Russians smacked (perhaps

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67 The request was, of course, refused in the interests of national security. *New York Times*, March 26, 1954, 5.

68 Ibid.

to much) of a schoolyard taunt: Strauss admitted that although the Soviet’s weapon
could destroy New York City, the American’s H-bomb could level cities with a
destructive capacity “600 to 700 times that of Hiroshima and Nagasaki.” Americans,
astounded at the magnitude of destruction possible, publicly demanded realistic
alternatives to the arms race and the government announced an increased emphasis on civil
defense. Fears on this side of the Atlantic were joined by those on the other. On May 5,
1954, the same day that the AEC detonated a 13.5 MT atomic device (Yankee) in the
Pacific, a group of scientists and engineers in Great Britain called for an end to testing,
and by November, Churchill joined them. In an attempt to stem the rising tide of
national and international fear, Chairman Strauss disclosed that three divisions of the AEC
were studying the effects of fallout, but that he could not comment on those studies until a
later date.

Congress, too, began to recognize that the AEC had, perhaps, become
dangerously self-assured and too willing to hide behind notions of “national security” and
called upon not only the AEC Chairman Strauss to explain himself, but also a non-
governmental scientist to try and learn the truth. Before the subcommittee, Strauss

70 *New York Times*, April 1, 1954, 1. Strauss could have promised even more complete
devastation had he included fallout considerations in his estimates.
72 *New York Times*, May 5, 1918, 18. Churchill announced that he had information that
indicated radiation exposure was cumulative (a fact scientists had known for a long, long
time) and could pose serious problems for the earth for as long as 5,000 years. He also
expressed concern that hydrogen weapons only increased the danger. Baldwin Hansen,
74 The damage that had been done to the reputations of (particularly non-governmental
and sometimes critical) scientists had already become firmly entrenched in some segments
of the public before Congress decided to rely upon them. Westbrook Pegler, in a
admitted that the AEC had purposely kept the report on the Pacific Test that had injured the crew of the *Lucky Dragon* "hidden" for three months because, he said, he feared "adverse affects" concerning international situations and that disclosure would only have led to "confusion." George W. Leroy, a dean from the University of Chicago, addressed the committee concerning fallout, and castigated the AEC for its security regulations, telling the committee that "vital medical information was being withheld from the public needlessly."75

By 1955, Congress' reliance on an independent scientist spurred a rash of articles that not only called into question the government's stringent security measures, but also focused upon fallout and its consequences.76 In July, the *New Yorker* published a twelve-page article on the fallout question with regard to both atomic and thermonuclear testing that reveals that the public feared not only Soviet weapons, but US experimental testing as well. As an example of the very real fear that began to circulate concerning fallout, the AEC's New York office regularly received phone calls on rainy days from concerned citizens:

76 See, for example, the *Bulletin of Atomic Scientists*, January, February, June, October, and November, 1955 *passim*; and *Life* March 21, 1955, 32.
That's a perfectly rational question, but then they suddenly break down completely—crying and carrying on about what's going to become of the world.

Additionally, noting that elements of radioiodine and radiostrontium had been "found in the thyroids of cattle and sheep grazing near the Nevad Proving Grounds," it quoted Dr. John Bugher of the AEC who stated that the levels in humans were less than those found in animals. The reporter pressed further, reminding Burger that he had earlier told a gathering that radiation could shorten life expectancy "apparently from a general acceleration of the aging process." Burger sidestepped a conclusion by saying that the entire issue was problematical: "human beings have yet to experience the distinction between a condition that does not cause death but shortens life." The article concluded that the disagreements within the scientific community were not only "both exasperating and baffling, if not actually frightening." While fallout alarmed Congress, frightened the public, and alerted the reporters—the military, and the militarily-directed AEC, continued its business, seemingly unaware or at least unaffected by, the controversy that surrounded it.

Hindsight should not preclude the recognition that the AEC did have its supporters. Whilst many on the national front became increasingly concerned about the testing program, at least one Nevada newspaper editor remained nonplussed. In 1955, Las Vegas Sun editor Hank Greenspun believed that a Los Angeles article focusing on fallout might threaten Southern Nevada's tourism industry, he claimed that the only concerned tourist he had encountered feared that if his wife found out he was in Las

Vegas, she might worry about his “procreative processes.” Greenspun said he “assured this person that there is danger of losing one’s potency in Las Vegas but it wouldn’t necessary come from atomic radiation.” Greenspun believed atomic testing was a godsend:

Be brave. Face squarely to the north and breathe a silent prayer every time another nuclear device hits the dust of Yucca Flat. . .At last Las Vegas has found a good reason for its existence.  

* * *

Military objectives certainly drove the development and operation of the Test Site, but other features built into the AEC as an institution also contributed to the hazardous nature of testing at the Nevada Test Site. The commissioners themselves showed increasing reluctance to try to understand the fundamental nature of atomic testing and, relying on only those scientists who would provide approving analyses, allowed the military to virtually control testing. Additionally, the AEC not only isolated itself from the public and refused to address in any meaningful way the widespread and growing fears of radioactive fallout, its multiple components also remained virtually independent entities, unaware (or unwilling to accept) information generated within alternate strata of the organization. A document prepared by a “group leader” after Operation Upshot-Knothole illustrates a complete failure to integrate known facts into the planning of testing programs that permeated the AEC and atomic weapons testing in the US.

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78 Las Vegas Sun, March 25, 1955, 1.
That group leader, one Gaelen Felt, prepared his 1954 document at least six years after Stafford Warren had issued his voluminous reports of Trinity and Operation Crossroads that urged caution relative to detonation size, location and weather. Additionally, it was prepared at least two years after Shields Warren recommended that tower shots be prohibited at the Nevada Proving Ground and additionally that shot size be limited. It was, too, prepared after fallout problems associated with high-yield tower shots distinguished the Upshot-Knothole (a series of incidents that Felt interestingly referred to as “the troubles”— as though the fallout from atomic testing could, perhaps, be equated with some unavoidable plague or divine retribution.) Yet, Gaelen Felt, Group Leader for Group J-15 had (quite proudly) concluded:

> 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.  

Felt, of course, may have been unaware that his insights were unoriginal. But if he harbored any notion that his (by then so well-worn) input might make some small difference in the continued operation of the Nevada Test Site, he was wrong.

In 1955, the AEC addressed public concern, but only through re-education— not by any reevaluation of its own responsibility for causing injury. Despite growing scientific reconsideration of risks attendant to atomic testing and the conclusions reached by Gaelen Felt (and others before him) the AEC launched Operation Teapot, preceded, of

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80 It perhaps does not have to be pointed out that the “education” did not involve providing legitimate answers to questions about fallout, rather it was designed specifically to minimize any chance that the public might object to continued tests and so concentrated on the lack, rather than the presence, of hazards.
course, by an elaborate educational campaign. It was a large undertaking and brought over 9,000 military personnel and 3,500 AEC and civil defense workers to the site and Las Vegas—a town with a population of 40,000. Of the fourteen atom bombs detonated during the series, ten were exploded from towers, one with a yield of 43 KT, and all released radiation off site.

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81 Moehring, Resort City in the Sunbelt, 99, 106.
CHAPTER VII

CONCLUSION

The darkness drops again: but now I know
That twenty centuries of stony sleep
Were vexed to nightmare by a rocking cradle
And what rough beast, its hour come round at last,
Slouches towards Bethlehem to be born.
William Butler Yeats

This has been a history of but one element of the cold war, but it has also emphasized that a chronological characterization of regimes matters less than the practices and behaviors of individuals who participated within those regimes. According to the DOE’s official record of nuclear tests, one hundred mushroom clouds rose from the Nevada desert before the United States suspended atmospheric testing in 1962. After that, radioactivity continued to stray out of government tunnels and shafts periodically, with the last reported escape in April of 1986 from Mighty Oak. Of the 815 nuclear experiments performed, only 31 were not weapons related.\(^1\) In the change of governmental philosophy that accompanied the development of the atom bomb, did the markers that separate chronological events matter that much?—the end of World War II? the cessation of conflict in Korea? the cooling and thawing of the cold war?

\(^1\) Twenty-seven under the auspices of Operation Plowshare and four related to storage and transportation of nuclear materials.
I cannot say whether all of the atomic and nuclear tests the United States carried out were necessary and can only aver that those who argue that policy was a crucial factor in all of this are not entirely wrong. While I have purposefully disengaged this study of the bomb’s development from its role as a mechanism solidifying US interests within the international realm, I can not deny the bomb’s influence. No Wall Street public relations firm could have crafted a more efficient means of advertising American power and resolve than the US government did with its experimentation with atomic weapons. Mushroom clouds that majestically bloomed tens of thousands of feet into the atmosphere and obliterated Pacific islands were, without a doubt, persuasive. Admittedly, then, the atom bomb served US policy, but this history has shown that policy neither directed nor controlled the nation’s atomic weapons testing program.

Throughout this examination I have urged the reader to think about atomic weapons development and testing in a different way: to separate its ends as a component of national security from its means, atomic governance. Doing so has required a willingness to consider that policy played only an indirect role in the hazardous nature of atomic weapons experimentation—that the inceptual and authorizational nature of policy does not sufficiently explain its implementation. Instead, discrete components—secrecy, militarism, manipulation of scientists and media—became integrated and coalesced into increasingly important (and increasingly dangerous) functional attributes of the weapons testing program. It is against these governmentally-instituted practices and the simultaneous self-serving behaviors of individual actors—not policy or national security—that the rage of victims must resonate.
Others, too, admit that the blame must lie at the feet of the participants. Dr. John Gofman, former chief of the biomedical division of Lawrence Livermore Laboratory wrote in 1979 that he considered his own participation, and that of hundreds of other scientists, criminal. We should have been, he lamented, "candidates for Nuremberg-type trials for crimes against humanity for our gross negligence and irresponsibility." Yet, despite this disturbing confession, the government has steadfastly maintained that policy alone deserves the blame. In 1981, Rex Lee of the Department of Justice blamed policy alone:

"Decades ago, federal policymakers decided to run some enormous risks. Innocent American citizens were involuntarily and unwittingly made the subjects of those risks."

Likewise, the government applied the same reasoning in its apology to radiation victims, the Radiation Exposure Compensation Act of 1990. Since I hope to have made clear in earlier chapters why my argument against a policy-centered approach is reasonable, I should now like to briefly address why, aside from historical understanding, that the government’s refusal to acknowledge any other reason for fallout and its consequences is significant.

Like the behaviors and practices of atomic weapons testing that became simplytoo useful, the government’s reliance upon “policy” initiatives or “national security” serves a functional purpose—that trope allows the government to avoid litigation and operates against any reappraisal of governmental institutions and behavior. Lawsuits can be brought against the government only through the Federal Tort Claims Act; however, a provision of

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that Act, the Discretionary Function Exemption, precludes any claim resulting from an
initiative grounded in "policy" or "national security." Thus, the government is actually
absolved from responsibility as long as it asserts that its activities (however regrettable)
flowed directly from the exigencies of national security. The rubrics of "national security"
and "policy" operate as a shield against embarrassing and costly litigation and also, under
the provisions of the Act, discourage any investigation of the very real and potentially
lethal influence of *habitus* within the government's own institutions, its departments and
employees—whether that investigation might prevent future harmful practice or more
carefully explore the behaviors of the past.

* * *

Since the government seems so disinclined to examine the disturbing mistakes of
its past, is it possible that scientists today still sit around tables and bargain away lives in
the interests of institutional goals? That question may only be answered by historians who
have yet to be born. We, however, should now finish the business of this thesis and bring
to a close that with which it started—the AEC's meeting of the Division of Biology and
Medicine. Only by doing so can historians, at least, address the tragic nonchalance of
scientists who, in 1956 and with such ease, bartered with humankind.

It is an interesting paradox that while the National Security Council justified
immense precautionary measures against every imaginable worst-case scenario, another
high-level component of government, the AEC, cavalierly dismissed so many precautions
on the basis of best-case prognostications. Despite the fact that the scientists admitted that
further testing posed an increasing environmental burden of strontium 90 and the
accumulation already approached hazardous levels ("there is not very much leeway for additional tests")\(^4\) the committee decided to take no immediate action. Dr. Dunham, in particular, was especially reluctant to reach any printable decision, saying:

> There is a lag obviously between body burden of strontium and fallout. This would appear to me, then, to give us a fairly reasonable assurance that we can go ahead for some time, and see what the proof of the pudding is. 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 really likely to be.\(^5\)

Dunham chose to gamble with childrens’ lives, and so did all of the others at that meeting who agreed with him. That they did so demonstrates that those who attended that 1956 meeting clearly placed favorable publicity and sustained testing ahead of more worthy, ethical and moral, considerations.

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I began this study with the hope that I could find answers to the many perplexities that infiltrated the processes of the nation’s atomic testing program, yet conclude it in full recognition that more questions remain. How, for example, could some people decide years ago to take risks with the lives of children for the sake of yet another testing season; or why, so many years later, some seem so disturbingly willing to threaten nuclear annihilation?\(^6\) The remaining curiosities and puzlements, though, are useless in

\(^4\) Transcript, “Special Meeting of the Advisory Committee on Biology & Medicine to the Atomic Energy Commission” November 26, 1956, 118.
\(^5\) Ibid., 121-122.
\(^6\) “We will create new Hiroshimas and Nagasakis. I will not hesitate to deploy nuclear weapons. You know what Chernobyl meant for our country. You will get your own Chernobyl in Germany.” Russian ultranationalist Vladimir Zhirinovsky, quoted in *Newsweek*, December 27, 1993, 13.
themselves—it is, after all, the unanswered questions that energize historians. One can never, of course, learn all the answers; but I should like to think that by encouraging the examination of a national endeavor in terms of individuals, I have called into serious question the notion of the state as a dominant, controlling force that manages the behavior of its employees and agents. This study has instead illustrated the impressively important roles played by individuals who negotiated through the state’s own framework, directing and channeling a national endeavor, atomic development, toward the fulfillment of individually myriad motivations and appetites. Additionally, and while I have not been able to do justice to the many people that I believe became victims of atomic weapons experimentation, I have tried also to show that the apparatuses of state power—as exemplified by something as terrifyingly grand as a mushroom cloud—can only be properly understood with reference to an ultimate consequence: an intersection easily exemplified and imagined, perhaps, by the vision of a bowtied and beribboned teenage couple in Kansas, caught unawares on prom night in a radioactive rainstorm.
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