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The Scientists, the Statesmen, and the Bomb

A case study in decision-making around the development of powerful technologies

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Abstract

This paper examines the dynamics of control and decision-making surrounding the development of nuclear weapons in the mid-20th century.

Well before the technology came to fruition, some people, predominantly scientists, foresaw the destructive potential of nuclear fission and the global problems that it would create. A few of these foresighted people, some of the most brilliant minds of their time, dedicated much of the rest of their lives to ensuring that the technology was developed in a way that minimized or eliminated the risk of catastrophic nuclear war.

They failed. Exactly the scenario they dreaded, one in which multiple opposed powers would possess great numbers of nuclear weapons, has come to be. They believed that such a scenario would inevitably result in mass destruction. Luckily, that hasn't happened, but it has been just a matter of luck.

We propose that their failure was not for lack of effort or ingenuity. These scientists penetrated to the highest levels of government and to the center of the secret project to build the bomb. They gained the attention of the most powerful people of their time. They conceived of sophisticated schemes for international control. Still, it did not work. The Analysis section of this paper attempts to make sense of this failure, with the underlying notion that understanding it will help in trying to solve similar problems in our own time.

We identify the core problem as one of cultural misfit, arising from the division of labor between scientists and statesmen. To abolish this division would however mean doing away with the role of scientist as we have known it in the 20th and 21st centuries. Additional research explores why this division is a crucial civilizational vulnerability and what abolishing it might entail.

Contents

Case Study Methodology

Theory must be made to fit and explain reality, not the other way around. To be practical, such theories should lead to the discovery of novel solutions to problems. Social science in the 20th century rushed into quantification, overusing statistical models to disguise conceptual confusion. As an analogy, consider that to measure temperature, you must first have a coherent concept of temperature. How would you go about building the world's first thermometer without a theory that at least partially defined temperature? In the social sciences, comparably unskippable developments were prematurely rushed to seeming completion, partially due to 20th century states' need for scientific legitimacy in order to justify exercises of power. Metrics such as the Polity Score, American Gross Domestic Product (GDP), and Soviet Net Material Product (NMP), purport to reflect social reality to a degree that exceeds their theoretical validity. These politically necessitated claims to knowledge leave us with a badly compromised body of theory and empirical datasets. These problems have only been partially acknowledged in scholarly discourse due to the recent replication crisis, in which a great deal of previously accepted experiments in academic psychology have failed to replicate.

To rebuild a better body of knowledge would require a cautious approach that doesn't assume that a given field is epistemically healthy. Case studies provide such a basis for constructing novel theory and datasets. In addition, case studies provide the background against which existing theories of society can be checked. If a theory fails to explain a certain set of events, it is likely incorrect, or at least incomplete.

Most importantly, case studies are useful because it is impossible to run a scientific experiment on a societal scale. Much as in the field of geology, in the analysis of society we must also rely on natural experiments to guide our pursuit of knowledge. Moreover, seeking to "control for" various pre-selected social phenomena reflects an implicit pre-existing theory of society on the part of the researcher, rather than an open-ended engagement with reality as it occurs.

To produce the analysis set forth in this document, we relied as much as we could on primary sources from the era. This allowed us to construct our analysis from a foundation as close as possible to the events as they were, rather than relying on previous analyses. For analysis of strategy, conflict, and coordination we applied Empire Theory,[1] supplemented with ethnographic descriptions.

The most important primary sources regarding the events described in this document are the memoirs, memos, correspondences, and meeting minutes of the individuals involved. Among secondary sources, Richard Rhodes' books *The Making of the Atomic Bomb*[2] and *Dark Sun: The Making of the Hydrogen Bomb*[3] are by far the most comprehensive and authoritative. They are frequently referenced (as MAB and MHB respectively) and excerpted in this document because they collect together the various primary sources for a particular set of events in a way that is useful for the reader not interested in an in-depth study of the primary sources.

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[1] Samo Burja, "Empire Theory, Part I: Competitive Landscape," *Samo Burja* (blog), June 11, 2018, http://samoburja.com/empire-theory-part-i-competitive-landscape/; Samo Burja, "Empire Theory, Part II: Power Dynamics," *Samo Burja* (blog), June 27, 2018 https://samoburja.com/empire-theory-part-ii-power-dynamics/.

[2] Richard Rhodes, *The Making of the Atomic Bomb*, 25th Anniversary ed. edition (New York, NY: Simon & Schuster, 1986).

[3] Richard Rhodes, *Dark Sun: The Making of the HydrogenBomb* (New York, N.Y: Simon & Schuster, 1996).

There are however some filtered online collections of primary sources for the reader who does want to read further, including:

- The National Security Archive: https://nsarchive2.gwu.edu/nukevault/ebb525-The-Atomic-Bomb-and-the-End-of-World-War-II/
- The Atomic Heritage Foundation: https://www.atomicheritage.org/key-documents
- The Truman Library: https://www.trumanlibrary.org/whistlestop/study_collections/bomb/large/index.php
- A Leo Szilard enthusiast website: http://www.dannen.com/decision/index.html
- atomicarchive.com: http://www.atomicarchive.com/Docs/index.shtml
- A transcript of the reactions of captured scientistsfrom the Nazi atomic bomb project and wider German physics community, as they were fed information by their British captors, as part of Operation Epsilon: http://germanhistorydocs.ghi-dc.org/pdf/eng/English101.pdf
- Mokusatsu: One Word, Two Lessons, an unclassified National Security Agency (NSA) document that sheds some light on issues of ambiguous communication that likely exacerbated poor decision-making around the use of nuclear weapons in 1945: https://www.nsa.gov/Portals/70/documents/news-features/declassified-documents/tech-journals/mokusatsu.pdf

We provide a historical summary and overview of relevant strategic players for the reader unfamiliar with the history of 20th century nuclear weapons development. Those who are familiar with this history can proceed to the Analysis section on page 7.

After the Analysis, some of the crucial events are described in more detail, so as to concretely illustrate the general ideas and to give the visceral understanding provided by episodic examples and primary source quotations. Four especially notable examples are described at length, after which a few others are briefly summarized with reference to further reading in case a closer look is desired. We conclude with reflections on the roles of scientists and statesmen that we develop more thoroughly in additional papers..

Historical Summary

A series of scientific breakthroughs from the late 19th century to the 1930s led to the discovery that, given the right configuration of raw materials and engineering, it would be possible to engineer a nuclear chain reaction which would unleash a vast amount of energy. As the great powers of the world mobilized for total war in the late 1930s and early 1940s, leaders in Britain, America, Germany, and the Soviet Union began working on secret weapons development projects to harness this newfound power for the creation of atomic bombs.

In America, these efforts led to the Manhattan Project, which in 1945 resulted in the first detonation of an atomic bomb (the Trinity Test) and culminated in the nuclear bombings of Hiroshima and Nagasaki in Japan. These developments, coinciding with the end of World War II, radically altered the balance of power in the world and set the stage for a new geopolitical order centered on nuclear weapons—one that continues to dominate world politics.

It was within this emerging technological and political landscape that scientists and statesmen shaped the future. Chief among the scientists were the eminent physicists Leo Szilard and Niels Bohr, both recent European emigres to the United States from Hungary and Denmark, respectively. Szilard would work on the world's first successful artificial nuclear reactor at the University of Chicago, and then on the Manhattan Project, which he would attempt to influence from within. He would also try to lobby President Harry Truman as the US was deliberating whether or not to use the atomic bomb on Japan. Bohr would gain access to President Franklin Delano Roosevelt and British Prime Minister Winston Churchill, and attempt to persuade them to establish international control of nuclear weapons.

Of course, not all scientists agreed on the desirability of these objectives. Many scientists, for example, were in favor of aggressive expansion of the US nuclear arsenal following World War II. The scientists who favored controlling and limiting the development and proliferation of nuclear weapons, and whose actions we analyze in this paper, could be called the "internationalists"—of whom Leo Szilard, the man who first conceived of the nuclear chain reaction, was the most active.

Relevant Players

Leo Szilard: Hungarian physicist and prewar emigre to the United States who first conceived of the nuclear chain reaction. Worked with Enrico Fermi at the University of Chicago to create the world's first artificial nuclear reactor and later on the Manhattan Project. Developed lofty ambitions to build a new ruling class called the "Bund," selected from promising teenagers, that would govern nuclear weapons development and other emerging global problems.

Niels Bohr: Danish physicist and wartime emigre to Britain who pioneered much of modern atomic and quantum theory. Attempted to lobby British and American elites at the highest level of their respective states in order to establish international control of nuclear weapons.

Franklin Roosevelt (FDR): President of the United States from 1933 to 1945, only President ever to serve four terms. Gave the go-ahead to start nuclear weapons research. Initially in favor of reaching out to the Soviets regarding international control of nuclear weapons, but ultimately opposed.

Winston Churchill: Prime Minister of the United Kingdom from 1940 to 1945. Staunchly opposed to international nuclear arms control efforts during the war.

Frederick Lindemann (Lord Cherwell): British aristocrat and scientist, close friend to Churchill and his main advisor on technical matters. Served as a conduit between nuclear scientists and Churchill. Important player on the British scientific scene, which was significantly ahead of American science in realizing the possibility of, and pushing for, nuclear weapons development.

Felix Frankfurter: Supreme Court Justice and confidant of President Roosevelt. Served as a conduit between nuclear scientists and Roosevelt.

Robert Oppenheimer: American theoretical physicist and wartime head of the Los Alamos Laboratory, the site of the Manhattan Project which created the first nuclear weapons. After the war, he became the chairman of the General Advisory Committee of the new United States Atomic Energy Commission, where he pushed for international control of nuclear weapons until his political career was scuttled in the 1950s thanks to his past communist sympathies.

Vannevar Bush: American scientist and political elite who held various powerful positions at MIT and headed the Office of Scientific Research and Development, the central institution responsible for American R&D during the Second World War. Instrumental in the creation of the Manhattan Project and in much of the early decision-making regarding nuclear weapons development.

James Conant: President of Harvard and chairman of the National Defense Research Committee during the war. Worked with Bush on the establishment of the Manhattan Project and the decision-making around early nuclear weapons.

Leslie Groves: Officer in the US Army Corps of Engineers who directed the Manhattan Project.

Harry Truman: President of the United States from 1945 to 1953; Roosevelt's successor in the final year of the war. Decided to drop the atomic bomb on Japan

Analysis

The "internationalist" scientists had varying political objectives depending on their understanding of the changing strategic landscape at a given time. Their objectives can be summarized as follows, listed roughly in chronological order of pursuit:

- Start and accelerate the Allied nuclear weapons program to ensure that the Allies developed nuclear weapons before their enemies, primarily out of fear that the Germans would develop the weapons first and use them recklessly.[4]
- Shape the bomb project to be run more like a university and less like a military project, with scientists having more authority.
- Prevent the bomb from being used on Japan.
- Bring about global coordination around the control of nuclear technology.
- Prevent the United States from dramatically expanding its nuclear arsenal.

They failed to achieve all but the first of these objectives and, as can be seen in Example 1 below, they were not very effective even in that.

Their strategy was to identify key decision-makers, gain access to those decision-makers, and convey their analysis and recommendations to them. The decision-makers they identified were usually statesmen and their method for gaining access was usually to leverage their scientific prestige. In many cases, they succeeded in doing just this. However, in nearly every case, their counsel was ill-received. Decision-makers closely guarded their authority and were distrustful of outside advice. Moreover, they were often offended by the implication that the scientists knew what to do better than they did. The only area in which they deferred to scientists was the technical aspect of the creation of nuclear weaponstechnology.

Even on technical matters, however, scientists' recommendations were sometimes ignored. For example, by 1945 there was a consensus among scientists that the knowledge and resources necessary to develop nuclear weapons were already available to technologists in the Soviet Union and elsewhere, and consequently the United States and Britain could not unilaterally prevent other countries from developing nuclear weapons. They communicated this to statesmen and military leaders on many occasions. Nonetheless, many elites, including Prime Minister Churchill and President Truman, maintained that a monopoly on the technology could be retained.

The scientists who most influenced decision-making were those who maneuvered into key administrative positions in the government research bureaucracy. These administrators had the ear of the statesmen, and they themselves had authority over many aspects of the development of the technology, such as resource allocation. Even so, they did not make decisions regarding the deployment of the technology, though they were sometimes consulted—but not deferred to—in that regard, and they also generally restricted their

[4] Though there was no way for Allied-aligned scientists to know it at the time, this fear may have been misplaced, given the testimony of German scientists from the Farm Hall Tapes, collected in 1945 during Operation Epsilon (in which Allied forces captured German scientists who had worked on Germany's nuclear program and detained them in a bugged room in England).

influence to the sphere that was granted to them by their superiors in the government. That they limited themselves in this way, concerning themselves mostly with technical matters within their circumscribed bureaucratic roles while not building owned power[5] is part of why they were given these positions in the first place. They were also often just as dismissive of the other scientists who tried to influence them as other decision-makers were, as can be seen in Example 4 below. In many respects, the culture of these institutionalized scientists was much closer to that of contemporary statesmen, rather than that of other scientists.

The implication of these historical outcomes is that in order to reliably affect decision-making, you must yourself be the decision-maker. Prestige, access to decision-makers, relevant expertise, and cogent reasoning are not sufficient; even with all these you are liable to be ignored. By understanding the complex workings of decision-making at the highest levels, you can improve your chances of influencing outcomes in the way you desire, but even if you understand how the game is played, you are ultimately subject to the judgment of those who wield power, and this judgment can be frustratingly capricious. Without even such an understanding, you stand little or no chance whatsoever.

Culture clash as major obstacle

A large part of the failure of the scientists can be attributed to the mismatch between the culture of scientists and the culture of government elites. The difference between these two cultures was significant. Scientific culture at the time was characterized by open discourse in which deference within a field was determined on the basis of directly-assessed technical ability, which then produced a reputation that was used for deference outside of the field. The culture was informal and its hierarchy was not rigid. Scientific culture was also international—in few military circles of the time would you see Hungarians, Italians, and Americans working closely together, as in the case of Szilard, Fermi, and their collaborators on the Chicago Pile experiment (the world's first artificial nuclear reactor). Crucially, most of the scientists were recent emigres from continental Europe, and likely experienced significant culture shock upon their arrival in the United States. The picture that emerges here is one of European scientists, recently torn from their previous cultural and professional context, trying to operate within Anglo-American state and military hierarchies. This doubtlessly compounded the difficulty of the scientists' efforts.

Lastly, scientific culture contained an additional ethnic element in the overrepresentation of Hungarians, especially Jewish Hungarians, who immigrated to the United States to work on the American bomb project, many of whom were educated at the same few schools in the same district of Budapest. These scientists were a subset of a group of Hungarian emigre scientistswho would famously earn the moniker "The Martians."[6]

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[5] Owned power is power that cannot be easily taken away from its holder, as opposed to borrowed power, which can be taken away at someone else's whim. See Samo Burja, "Borrowed Versus Owned Power," *Samo Burja* (blog), March 23, 2018, https://samoburja.com/borrowed-versus-owned-power/.

[6] This group, which emigrated to the US in the early 20th century, included luminaries such as polymath John von Nuemann, known among other things for his foundational contributions to the field of computing; eminent mathematician Paul Erdős; Edward Teller, the father of the hydrogen bomb; and of course Leo Szilard himself. Importantly, the group *self-described* as "The Martians," which is telling regarding their state of cultural alienation from American society.

These scientists had prepared to be scientists, but were suddenly required to assimilate into the cultural protocol of the political and military elite. Elite culture, unlike scientific culture, was characterized by closed discourse through official channels in a relatively rigid hierarchy, with strict compartmentalization of information. Areas of authority were delineated in the formal hierarchy and generally used to determine patterns of deference (e.g. Administrator Smith is officially in charge of communicating research findings to the government and so people in the hierarchy defer to him when communicating with the outside and do not meddle).

Scientists who attempted to influence decision-making operated on the model of intellectual authority developed in scientific circles. They usually circumvented official channels to make recommendations and, for this fact alone, their recommendations were often disregarded. Even if they attempted to operate within the official channels, they lacked the embodied knowledge of a civil service or military careerist necessary to navigate elite coordination. The typical scientific personality also clashed with the personalities of government elites. All this is most evident in the case of Leo Szilard, who, to his great frustration and despite his extensive efforts to be involved, found himself totally shut out of high-level decision-making. As can be seen in the examples involving him below, he flagrantly disregarded established procedures and was socially and culturally distant from governmental elites.

Example 1: The genesis of the Manhattan Project

In early 1941, the United States' nuclear weapons research program was practically non-existent. There was a small nuclear research committee called the Uranium Committee buried in the government wartime research bureaucracy, but it received little attention compared to projects that attempted to refine conventional weapons. It had been formed due to the efforts of Szilard, well illustrated by the Einstein-Szilard letter—a letter written by Leo Szilard and signed by Albert Einstein that warned President Roosevelt of the potential of nuclear weapons technology—but it was basically inactive. Most of the important work in the US was being done by independent scientists at universities. British scientists were carrying out a more centralized, more productive research program overseen by a committee of scientists called the MAUD Committee, but were also without much government involvement or support.

In March 1941, James Conant, the second-highest-ranking administrator of wartime government research in the US and president of Harvard, visited England to coordinate with their research program. Scientists at Oxford involved in the British program told him there that the bomb could be made and should be prioritized. Conant did nothing because, he said, nuclear research was not his official responsibility, and the information was not coming through official channels.

Around the same time, Ernest Lawrence, a leading nuclear physicist working at Berkeley, became convinced that the program towards the bomb must be accelerated. He badgered the president of MIT, also a high-ranking government research administrator, who relayed his concerns to the head of government research, Vannevar Bush.[7] Bush was annoyed and met with Lawrence to convey that he is "running the show", and if Lawrence doesn't like it he'll find himself "utterly on the outside"; but Bush also did arrange a meeting between Lawrence and the head of the Uranium Committee. However, nothing seems to have come of this meeting.

Bush also, in May 1941, commissioned a committee of the National Academy of Sciences (NAS) to submit a report on the potential of nuclear technology. Their report recommended greatly accelerating nuclear research and estimated that a bomb would not be ready until 1945. Skeptical of the report, Bush commissioned another NAS committee to report on the report.[8]

Meanwhile MAUD, the British committee, produced a more comprehensive report and published it in July 1941. It concluded that a bomb could be made by the end of 1943, that it would be decisive in the war, that its development should be a top priority, and that the Americans and the British should collaborate on its development. It also provided detailed estimates of the resources required. Bush received an unofficial summary and was persuaded that nuclear research should be accelerated. He discussed the matter with the

[7] Vannevar Bush was also previously a student at MIT, and a member of the MIT faculty, both times in the electrical engineering department.

[8] This recursive reporting on reports, common in scientific bureaucracies, appears to indicate the use of reports for something other than the information contained within them. One use of them, perhaps the use by Bush in his case, is that the amount of information not covered by any given report can be narrativized as infinite, and so recursively rechecking claims inside one report can be used to stall for an indefinite amount of time. Secondly, recursive reporting on reports can be used to bolster the "truthiness" of claims in a given report by making their citation web more complex, or simply adding to the list of endorsing names.

Vice President, but did little further until the British officially transmitted the report, which wouldn't happen until several months later, on October 3, 1941.

In the meantime, a British physicist, Mark Oliphant, was also dismayed at the sluggishness of the American program and so came to America to work with Lawrence on accelerating things. He met with the major American administrators, but again nothing seems to have come of it—though in later years some of them would say that he persuaded them.[9] Lawrence continued to badger administrators into late September. Still nothing happened. Conant and Bush commissioned a third report from the NAS around this time.

Finally, the British report was officially transmitted. Six days afterward, Bush discussed it with FDR and the Vice President. At this point Bush recommended initiating a serious research program. FDR agreed, promised to fund the program with a "black budget" (a classified government funds allocation), and assigned control of nuclear weapons policy to a "Top Policy Group" under his authority consisting of the VP, the Secretary of War, the Chief of Staff of the Army, Bush, and Conant. This was the beginning of the Manhattan Project.[10]

[9] Oliphant made no impression on Bush but may have helped somewhat to sway Conant. He did succeed in convincing William D. Coolidge, head of research at General Electric and the temporary chairman in charge of the second NAS report, but this had no effect on speeding things along.

[10] Further reading on the leadup to this decision can be found on pages 357-379 of MAB. This passage includes information on the British influence on the Manhattan Project, Conant's visit to England, the lobbying efforts undertaken by Lawrence and Oliphant in the US, the process by which Bush and Conant decided to approach Roosevelt and propose what would become the Manhattan Project, and Roosevelt's enthusiastic assent to their proposal.

Example 2: Szilard fights in vain to shape the Manhattan Project

Throughout the war, Szilard was dissatisfied with how the Manhattan Project was being run. He thought that the corporations brought in (chiefly Du Pont, an American chemical company) and the military had too much authority. He wanted scientists, particularly himself and his friends, to have more authority.

The project leaders had instituted restrictions on information-sharing between different parts of the project. Szilard wanted there to be fewer restrictions, saying that the restrictions hamper the project because open discussion is necessary to facilitate invention. He also believed that the security policies—especially discrimination of "foreign-born" and "American-born" scientists—was both unwarranted from an operational perspective and obstructive to the goal of international scientific cooperation that he believed was essential for peace in an atomic age.

He initially voiced his concerns and was ignored. He then bent the rules and was reprimanded and placed under surveillance by General Groves, the military leader of the Manhattan project, who also drew up a proposal to have Szilard "interned" as an "enemy alien" which was never acted upon.

Szilard later tried to leverage his intellectual property rights to relevant inventions he made before the government became involved, and his talent, threatening to leave the project unless his demands were met. He also assembled documents in order to show the role he had played in convincing the US government to undertake atomic research in the first place. He seemed to believe that if he demonstrated his pivotal scientific accomplishments he would gain some deterrence from the chain of command.

The government research administrators, chiefly Vannevar Bush, the head of US government wartime research, were frustrated by what they saw as Szilard's "obstructive" behavior that hindered the "efficient operation" of the project.

The administrators also did not believe that Szilard's claims of intellectual property had much merit and called Szilard's bluff on resigning from the project. While the government administrators further noted that Szilard had probably not filed the necessary paperwork to prevail in his intellectual property claims, they did offer Szilard a large lump-sum settlement to cover prior work Szilard had done without pay from the government in exchange for yet another secrecy commitment from Szilard. In the end, very few if any changes were made to how the project was run.[11]

[11] Further reading can be found on pages 502-510 of MAB. This passage details Szilard's clash with Groves, his interaction with a sympathetic but unmoved Bush, correspondences between the three, and excerpts from Szilard's personal notes on the treatment of scientists by state elites.

Example 3: Bohr's attempt to facilitate global coordination

In 1944, Niels Bohr, one of the great, Nobel Prize-winning physicists of the 20th century and whose reputation was very well established at the time, was very concerned about the threat of nuclear war and a nuclear arms race after the inevitable end of the war. He wanted the Allies to cooperate with the Soviets on the control of nuclear technology so as to avoid a nuclear arms race or all out war. Towards this end, he wanted the Allies to tell the Soviets about the existence of the atomic bomb project, in the hopes that this would build goodwill and foster future coordination.

Bohr then developed relationships with three top British statesmen, all allies of Prime Minister Churchill: (1) Lord Halifax, the British ambassador to the United States, (2) Sir John Anderson, who, as Home Secretary and Minister of Home Security, was a top-ranking member of Churchill's cabinet, and (3) Frederick Lindemann (Lord Cherwell), a respected scientist, British aristocrat, and close friend of Churchill's, whom Churchill called his main advisor on scientific issues. Bohr convinced them that the Allies ought to at least negotiate with the Soviets on the control of nuclear technology. The three attempted to convince Churchill without success.

It should be noted that Lindemann was in many ways the success case of scientist influence, and likely the best person that Bohr could've possibly connected with in order to reach Churchill. He was enmeshed in European elite culture, which was instrumental in allowing him to develop a close relationship with Churchill. Churchill called him "my chief adviser on the scientific aspects of modern war." Despite this, as can be seen below, he was entirely unable to persuade Churchill to listen to Niels Bohr.[12]

Meanwhile, Bohr also gained access to FDR through his personal relationship with one of FDR's advisors, Supreme Court Justice Felix Frankfurter. Frankfurter discussed Bohr's concerns with FDR, and relayed to Bohr that FDR was very open to coordinating with Churchill on the relevant problems and wanted Bohr to meet with Churchill to discuss them and report back to FDR.

Bohr, along with Lindemann, met with Churchill in London. Off the bat, Churchill was aggressively opposed to any cooperation with the Russians, or even to telling them of the existence of the bomb project. The meeting went nowhere. Churchill seemed to intend for the US and Britain to keep the knowledge of how to create nuclear weapons secret, despite the fact that all of the relevant experts believed at the time that this would not be possible, and that the Soviets would develop their own bomb within a decade or so.

Dejected, Bohr informed FDR about the meeting through Frankfurter. FDR said he wanted to meet with Bohr. Ahead of the meeting, Bohr sent FDR a memo expressing that a nuclear arms race and the associated dangers can only be avoided through a "universal agreement in true confidence."[13] He was explicit in his deference to statesmen on the matter, and in his understanding that such an agreement may be extraordinarily

[12] For further reading, see MAB 222-223.

[13] The reader can find the full text of Bohr's 1944 memorandum to President Roosevelt, in which he describes the implications of nuclear weapons technology and pushes for the establishment of international control. See: "Niels Bohr's Memorandum to President Roosevelt," *atomicarchive.com*, July 1944, https://www.atomicarchive.com/resources/documents/manhattan-project/bohr-memo.html.

difficult to achieve. At the meeting, FDR told Bohr that he read Bohr's memo, that he agrees that the Soviets ought to be approached, and that he is optimistic about the prospects of cooperation based on his assessment of Soviet leader Joseph Stalin. He also said that he was optimistic that Churchill would come around, and that they would discuss the topic at their upcoming conference at Roosevelt's estate in Hyde Park, New York, after which he would love to see Bohr again.

The next month, FDR and Churchill convened in Hyde Park. They had a short, secret agreement written up on the nuclear question that included the following resolutions: the nuclear program will continue to be kept absolutely secret; the US and Britain will continue to develop nuclear weapons after the end of the war; Professor Bohr should be put under surveillance.

The next day, Churchill wrote to Lindemann saying he was considering imprisoning Bohr (which did not happen). The letter speaks for itself:

> The President and I are much worried about Professor Bohr. How did he come into this business? He is a great advocate of publicity. He made an unauthorized disclosure to Chief Justice [sic] Frankfurter who startled the President by telling him he knew all the details. He says he is in close correspondence with a Russian professor, an old friend of his in Russia to whom he has written about the matter and may be writing still. The Russian professor has urged him to go to Russia in order to discuss matters. What is all this about? It seems to me Bohr ought to be confined or at any rate made to see that he is very near the edge of mortal crimes. I had not visualized any of this before...I do not like it at all.

FDR and Bohr never met again.[14]

[14] Further reading can be found on pages 525-538 of MAB. This passage describes Bohr's meetings with Roosevelt and Churchill, and relays the personal reflections and correspondences of the two statesmen. It also details Bohr's process of accessing them both through their elite allies, namely Frankfurter and Lindemann, Bohr's interactions with them, and his personal reflections.

Example 4: Szilard's efforts to affect decision-making about the use of the bomb

Leo Szilard's efforts to personally control the development of the atomic bomb may stretch back to his own discovery of the nuclear chain reaction in 1933. Given that he applied for a patent that year for the neutron-assisted nuclear chain reaction, and that he assigned that patent to the British Admiralty in order to ensure the concept's secrecy, it seems very likely that Szilard intended to influence the use of nuclear science from an early date.

His actions most relevant to the Manhattan Project began in 1939. That year, after realizing that uranium might be the element capable of sustaining a nuclear chain reaction, he ghost wrote a letter for Albert Einstein to send to President Roosevelt, with additional consultation from Eugene Wigner and Edward Teller.[15] The "Einstein-Szilard letter" warned that the nuclear chain reaction might be used to create "extremely powerful bombs of a new type" and that the Germans might successfully create nuclear technology before the Americans, and explained that the physics community would continue research into the subject and required support—something that they were only really able to achieve after the Japanese attack on Pearl Harbor two years later in 1941. Szilard, Enrico Fermi, and others built the Chicago Pile, the first artificial nuclear reactor, in 1942, while they were employees of the Metallurgical Laboratory of the University of Chicago.

Notably, during the Chicago Pile phase of the atomic bomb project, Szilard is said to have offended Brigadier General Leslie R. Groves, the military director of the Manhattan Project, in a heated argument on the choice of coolants; Groves attempted to dismiss his expertise (this was eventually blocked by Secretary of War Henry Stimson). Groves' status in the overall project was likely sufficient that this single incident might have been enough to marginalize Szilard politically, while allowing him to retain his status scientifically.

Szilard had been involved in nuclear weapons development from the beginning, coordinating the biggest names in the physics community, declaring the Manhattan Project and taking the technology from theory to practice. By 1945, Szilard's goals remained unchanged from his goals in 1939. Yet he had made almost no progress towards realizing them. Research had progressed, yet his social standing was nearly the same, with the exception of new friends (who were either not incumbent elites or, if they were, were sympathetic but not ultimately aligned), new enemies, and his status as a naturalized American citizen as of 1943. Szilard still wanted scientists, particularly himself, to play a greater role in decision-making over the use and control of atomic bombs. He made multiple efforts towards this end, all of which were unsuccessful:

1) In early 1945, he drafted a memo recommending the creation of a small scientific panel to advise the US Presidential Cabinet on atomic matters, and tried to deliver it to President Truman. Gaining access to the President was difficult, but he managed it by going to Truman's original political base in Kansas City and getting an appointment with the President through contacts he made there. At the White House, before the appointment began, Truman, aware of what the meeting was about, had his secretary tell Szilard to go see James Byrnes instead, one of Truman's advisors and soon-to-be Secretary of State. Szilard and two scientist

[15] Einstein was chosen as sender primarily for his brand value. He admitted to Szilard that he hadn't thought of the chain reaction himself.

compatriots went to see Byrnes in May 1945 and delivered the memorandum. Byrnes found them and their proposal ridiculous and dismissed them.

2) He went to Washington in May 1945, while the Interim Committee—the committee commissioned to make recommendations about the use of the atomic bomb—was meeting. There he met with Oppenheimer, one of four scientists on the scientific advisory panel to the Interim Committee, and tried to convince him that the bomb shouldn't be used against Japanese cities. Oppenheimer disagreed. He may have contacted others involved in the committee, but we have not found a record of this. The scientific panel eventually recommended immediate use of the bomb against Japanese cities.

3) Soon afterwards, he drafted a petition to the President recommending that the bomb not be used against Japan unless Japan refuses a clear, detailed offer for surrender, and circulated it among Manhattan Project scientists, collecting about 70 signatures. Then, in mid July 1945, weeks before the bombings, he submitted the petition to his superiors in the project hierarchy. There is a good chance that the petition never reached Truman. [This is not described in *The Making of the Atomic Bomb*, but Szilard recounts the experience in a 1960 interview which we have excerpted below.]

4) Around the same time, he participated in (and given his track record was probably instrumental in the organization of) a small committee of scientists at the Chicago section of the Manhattan Project which in June 1945 submitted a report, called the Franck Report, to the Secretary of War Henry Stimson, who would play a major role in the decisions about the use of atomic weapons at this time. The report forecasted an arms race (and consequently the risk of catastrophic nuclear war) in the absence of credible international agreement to ban nuclear weapons and control nuclear technology, and recommended demonstrating the bomb non-violently rather than using it on a "military target" (e.g. Japanese cities, often euphemistically referred to as such). We have not found any record that the report was read by Stimson, and according to Szilard none of the scientists from the Franck Report panel were able to get a meeting with him. It *was* read by at least one of the four members of the panel of scientists advising the Interim Committee, Arthur Compton, the head of the Chicago section.

Despite Szilard's prominence within the scientific hierarchy of the Manhattan Project from day one, he was never able to gain any meaningful standing in the state hierarchy, and thus depended entirely on action through intermediaries or creating unofficial channels to communicate with statesmen. Naturally, the same reasons that he was unable to gain status in the state hierarchy in the first place caused these strategies to fail altogether.[16,17]

[16] Further reading can be found on pages 635-642 of MAB. This focuses on Szilard's efforts to lobby the White House and dissuade them from dropping the atomic bomb on Japan. Initially it appeared that he would be able to access Roosevelt, but upon Roosevelt's death he was forced to vie for the attention of an unwilling Truman, whose cabinet entirely rebuffed Szilard.

[17] The reader may also want to consult a 1960 interview with Szilard, in which he reflects on his failure to prevent the dropping of the bomb on Japan, his assessment of theTruman administration, and contemporary geopolitics. See the Appendix on page 22.

Scientific Culture Misunderstands Power

The internationalist scientists failed to bring about international control of nuclear weapons, as we have noted, because they were not political and military elites themselves. From this a scientist might draw the conclusion that in order to avert future technological disasters, they need to develop better strategies for getting elites to listen to scientists, or for empowering scientists. However, the problem we seek to illustrate here runs much deeper than this: it is embedded in our very concepts of politics and science.

A statesman might correctly note that scientists will attempt to meddle in delicate political matters beyond their scope of competence, risking political disasters. After all, any international body of scientists controlling nuclear weapons would have, for example, been easily circumvented by the Soviet Union's intelligence services. The statesman's only viable option would seem to be constraining scientists to their own domain and hoping that whatever scientific understanding the statesmen have of relevant technologies is enough to muddle through.

The social scripts and institutions we associate with "science" and "scientists" are not naturally necessary forms, but are rather historically contingent. The defining feature of the modern technical system, the compartmentalization of institutional science from political authority, isn't inevitable. Rather it is merely one political architecture among many alternatives. Under this architecture, the political system restrains the authority of scientists, but also finds itself separated from science and therefore has difficulty governing it proactively. In his influential 1918 lecture "Science as a Vocation" the German sociologist Max Weber proposed a model of the separation between science and politics: "The qualities that make a man an excellent scholar and academic teacher are not the qualities that make him a leader to give directions in practical life or, more specifically, in politics." Of course, Weber still aspired to be read by statesmen of his own era and likely realized that descriptions of society are normative even when they try to be purely descriptive. Indeed, several of the prominent scientists and administrators examined in this study who grappled with the question of the vocation of scientists and their role in politics and society, such as Oppenheimer, were familiar with Weber's work.[18]

The assumption of the scientists working on the Manhattan Project that they would have a say in how the weapons they built would be used thus amounted to proposing a political revolution in this relation between elites. They did not understand the nature of their implicit revolution, which doomed their activism from the start. Their unexamined beliefs about politics and power led many of them to contribute to an end they claimed to abhor: a real life Faustian bargain, where their curiosity and understandable enmity to Germany was indulged at the cost of putting the world in a terrible predicament. The analogy to contemporary researchers in fields such as virology or artificial intelligence makes itself.

The problem cannot be reduced to one of making politics listen to science, since this demand in reality entails incumbent elites deciding to empower a new elite faction of technologists. We therefore have to question not only incumbent elites' often understandable conservatism in this regard, but also ask whether scientists and technologists aren't in reality quite comfortable with their position of intellectual freedom absolved of the

[18] Charles Thorpe, "Violence and the Scientific Vocation" *Theory, Culture & Society* 2004 (SAGE, London, Thousand Oaks and New Delhi), Vol. 21(3): 59–84 DOI: 10.1177/0263276404043620.

responsibility of governance. For scientists to effectively engage in governance would mean for them to adopt a culture of statesmanship.

What might that have looked liked? The scientists could have maneuvered to official positions of authority over the domains they wanted to influence. Further, they could have gained the trust of decision-makers so that their advice was more likely to be received by their new political colleagues. These things require understanding elite culture and the complex dynamics of elite decision-making and deference. Finally, they would have had to understand American domestic politics, as well as geopolitical competition with the Soviet Union. In short, this strategy requires becoming a statesman oneself. Vannevar Bush, the head of US government wartime research, and Frederick Lindemann, a close friend of Churchill and his most trusted advisor on scientific matters, provide examples of this being done successfully, and some of their exploits are described in the Additional Examples section below.

After all, if scientists could make decisions regarding use of weapons and technology, they would cease to be scientists as we today understand the term. Thinking through the implications of this might result in a very different approach to knowledge about the natural world.

This wartime crystallization of America's dominant institutions leaves our knowledge of nature and of society schizophrenically split between regulators and creators. This split—one that has only widened since the time when Churchill could maintain a friendship with Frederick Lindemann—is perhaps ultimately to blame for the myriad of shortcomings of our technical systemstoday.

Since scientists are not compelled to understand governance, it is understandable that politics would suppress science in order to avert uninformed technological disaster, but this comes at the price of failing to drive forward technological progress. Contemporary technological stagnation, then, is best thought of as a result of a political stalemate. Having exhausted this 20th century paradigm of technology governance, we must pursue new social technologies that might heal the split between scientist and statesman. We need to integrate technical expertise with power in a way that breaks out of stagnation while still allowing elites to prudently direct technological development. Doing so will require a class of people who can think about both people and technology, a possibility which we explore in additional research.

Additional Examples

When undertaking case studies, researchers naturally come across material that isn't merely downstream of their thesis, but rather reflects the holistic nature of subject matter and provides trailheads for future work. Some of this material we discovered is detailed below. It includes, among other things, key examples of actions of Vannevar Bush and Robert Oppenheimer throughout their careers, as well as a stillborn US-led effort at the United Nations to establish international control of nuclear weapons in 1945, which illustrates the political difficulty of any such scheme.

The Einstein-Szilard letter

In 1939, Leo Szilard organized the creation and delivery of a letter signed by Albert Einstein to President Roosevelt about the potentialities of nuclear fission.[19] Crucially, the letter was delivered by a statesman and close ally of Roosevelt, who crafted the delivery so as to maximize its persuasiveness. It resulted in the first steps by the US government towards the bomb and provided some measure of security to the group of independent scientists coordinated around Szilard—as they could not then be said to be working in secret from the government—but got bogged down by slow-moving government bureaucrats until Vannevar Bush decided to accelerate it in late 1941, as described in Example 3 above.[20]

Vannevar Bush takes control of wartime research

Vannevar Bush was an American scientist who climbed the hierarchy at MIT to be its vice president. In 1938, he left MIT to become the head of the Carnegie Institution, a prestigious research foundation in Washington, D.C. with close ties to the government, so that he would be positioned to play a major role in wartime research. He made his move in the middle of 1940, when, after gaining buy-in from other major DC authorities, he persuaded one of President Roosevelt's lieutenants of his idea to head an overarching wartime research organization, the National Defense Research Committee. He and the lieutenant then persuaded Roosevelt, and the NDRC was established. Bush said of the process: "There were those who protested that the action of setting up NDRC was an end run, a grab by which a small company of scientists and engineers, acting outside established channels, got hold of the authority and money for the program of developing new weapons. That, in fact, is exactly what it was."[21]

Manhattan Project scientists protest corporate authority

In 1942, as the Manhattan Project was ramping up, the Army hired corporate engineers to oversee a large part of the project.[22] The scientists found them unacceptably incompetent and protested en masse to their superiors. The engineers were replaced, but it is not clear if the scientists' protest was the cause.

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[19] The letter itself can be read here: https://www.atomicheritage.org/key-documents/einstein-szilard-letter.

[20] For further reading, see MAB 302-309 and 312-317.

[21] For further reading, see MAB 336-338.

[22] For further reading, see MAB 422-424.

Manhattan Project scientists protest militarization

The original plan for Los Alamos was that the scientists there would be in the military and under military authority. As Oppenheimer tried to recruit for the lab, he encountered resistance to this plan on the basis of maintaining scientific autonomy. Oppenheimer negotiated with his civilian and military superiors to have the lab and its security measures officially under civilian authority, specifically his authority, though he was subordinate to the military leader of the project. Ultimately the scientific culture had some influence and, although the security measures used were military-like in their strictness, the lifestyle of researchers within Los Alamos was far more akin to that of a university than that of a military base.[23]

Decision-making about what do with the bomb in 1945

Knowing the bomb would soon be ready, top statesmen, at the suggestion of top research administrators, convinced the President to create an eight-member committee for making recommendations about the wartime use of the bomb. This committee was composed of high-level non-military government officials, including top research administrators Bush, Conant, and Karl Compton. Some of its meetings also included military leaders, corporate leaders, and the scientists Oppenheimer, Ernest Lawrence, Enrico Fermi, and Arthur Compton.[24] The committee recommended to the President that the bomb be used immediately against Japan without warning. James Byrnes, soon-to-be Secretary of State and close advisor of the President, dominated the process. The decision was unanimous according to the record (though a few weeks later one of the committee members, the Under Secretary of the Navy, changed his mind). Byrnes relayed the recommendation to the President, who agreed.[25]

The Acheson-Lilienthal Report and the United Nations Atomic Energy Commission

The events surrounding the Acheson-Lilienthal Report might be the closest the world ever came to international control of nuclear technology.

In late 1945, the war was over and the US was the only country capable of producing nuclear weapons. The United Nations had just been established in San Francisco. There was much debate among US elites concerning what to do about controlling the spread of nuclear technology. Top State Department officials created a committee on atomic energy, which in turn commissioned a group to produce a report making recommendations about the matter. The group consisted of David Lilienthal, a high-level government utilities bureaucrat (who would eventually be the top US bureaucrat in charge of nuclear weapons); three executives from technology companies, and Oppenheimer, who had just left Los Alamos to teach at Caltech. They spent seven weeks intensively working on the report.

The report recommended the creation of an international agency staffed by scientists and bureaucrats from

[23] For further reading, see MAB 454.

[24] The Truman Library has a collection of documents including minutes of Interim Committee meetings which are available at: https://www.trumanlibrary.org/whistlestop/study_collections/bomb/large/index.php.

[25] For further reading, see MAB 620-635 and 639-651.

around the world that would control all "dangerous" aspects of nuclear technology.[26] It would own all of the crucial raw materials and operate all of the mining facilities and nuclear reactors thereto. Facilities of the agency would be scattered internationally. No new nuclear weapons would be manufactured; existing ones would at some point be destroyed. The idea was that, if a country were to take any steps towards the development of nuclear weapons, they would have to seize the international nuclear facilities in their territory, and so the rest of the world would know and would have years to act against the offender before any nuclear weapons would be operable. There would also be no real advantage to the first mover, since other countries would be able to seize the facilities in their country immediately afterwards. Thus nuclear weapons development would be strongly disincentivized and a peaceful equilibrium maintained. It was very much the kind of proposal the scientists would make. Bohr read the report and loved it.

The organization that was expected to serve as the locus for the development of this plan was the United Nations Atomic Energy Commission. President Truman appointed the financier Bernard Baruch as the US representative to this commission. Baruch used the plan as the basis for his proposal to the commission, with the addition that offenders would be punished with sanctions, and that UN Security Council resolutions on offences would not be not subject to veto.[27] US disarmament would happen once the international organization had control of all dangerous materials. The Soviets rejected the proposal and countered with the proposal that the US disarm before the international organization is established. The negotiations then stalled, no plan was approved, and the commission was disbanded.[28]

Oppenheimer resists working on bombs after the war

After the war, Oppenheimer was opposed to further nuclear weapons development, believing that efforts should be focused on bringing about international control of nuclear technology. He went to Washington and lobbied high-level statesmen, including the Secretary of State and President Truman. Both were unreceptive. Afterwards, in reference to the meeting, Truman called Oppenheimer a "cry baby scientist" and reportedly said, "I don't want to see that son of a bitch in this office ever again."[29] Oppenheimer's resistance to further weapons development was eventually used against him in an attack that destroyed his political career in the 1950s.[30]

[26] The full Acheson-Lilienthal report is available to read at: http://fissilematerials.org/library/ach46.pdf.

[27] Naturally, this would allow the US and its allies to circumvent the Soviets and China.

[28] For further reading, see MHB 229-242.

[29] For further reading, see MHB 203-206.

[30] Documents from the political trial of Oppenheimer are available at: http://www.atomicarchive.com/Docs/Oppenheimer/index.shtml.

Appendix

Szilard reflects on his failure to prevent the use of atomic weapons on Japan

The following is excerpted from a 1960 U.S. News & World Report interview with Leo Szilard:[31]

Q. *Dr. Szilard, what was your attitude in 1945 toward the question of dropping the atomic bomb on Japan?*

A. I opposed it with all my power, but I'm afraid not as effectively as I should have wished.

Q. *Did any other scientists feel the same way you did?*

A. Very many other scientists felt this way. This is particularly true of Oak Ridge and the Metallurgical Laboratory of the University of Chicago. I don't knowhow the scientists felt at Los Alamos.

Q. *At the Oak Ridge and Chicago branches of the A-bombproject, was there any division of opinion?*

A. I'll say this: Almost without exception, all the creative physicists had misgivings about the use of the bomb. I would not say the same about the chemists. The biologists felt very much as the physicists did.

Q. *When did your misgivings first arise?*

A. Well, I started to worry about the use of the bomb in the spring of '45. But misgivings about our way of conducting ourselves arose in Chicago when we first learned that we were using incendiary bombs on a large scale against the cities of Japan.

This, of course, was none of our responsibility. There was nothing we could do about it, but I do remember that my colleagues in the project were disturbed about it.

Q. *Do you feel that President Truman and those immediately below him gave full and conscientious study to all the alternatives to use of the atomic bomb?*

A. I do not think they did. They thought only in terms of our having to end the war by military means.

I don't think Japan would have surrendered unconditionally without the use of force. But there was no need to demand the unconditional surrender of Japan. If we had offered Japan the kind of peace treaty which we actually gave her, we could have had a negotiated peace.

Q. *In retrospect, do you think your views got a full hearing?*

A. Let me answer this by describing in detail just what kind of hearing my views got.

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[31] See "Leo Szilard, Interview: President Truman Did Not Understand," U.S. News $ World Report, August 15, 1960, http://members.peak.org/~danneng/decision/usnews.html.

In March, 1945, I prepared a memorandum which was meant to be presented to President Roosevelt. This memorandum warned that the use of the bomb against the cities of Japan would start an atomic-arms race with Russia, and it raised the question whether avoiding such an arms race might not be more important than the short-term goal of knocking Japan out of the war. I was not certain that this memorandum would reach the President if I sent it "through channels." Therefore, I asked to see Mrs. Roosevelt, and I intended to transmit my memorandum through her - in a sealed envelope - to the President.

When Mrs. Roosevelt set the date for the interview which I had requested, I went to see Arthur H. Compton, who was in charge of the Chicago project. I rather expected him to object to the contents of my memorandum, and I was therefore much relieved when he told me that he hoped I would get the memorandum into the hands of the President and that it would receive the attention of the President. I then went back to my own office, and I hadn't been there for more than five minutes when there was a knock at the door and there stood Dr. Norman Hilberry. "We have just heard over the radio that President Roosevelt died," he said.

For a while I was at a loss to know how to bring my memorandum to President Truman's attention. I knew many people who knew Roosevelt, but President Truman didn't seem to move in the same circles. Then it occurred to me that we must have several men from Kansas City in the project and that some of these might know how to reach Truman.

When I was asked to go to the White House and see Matt Connelly, Truman's Appointments Secretary, I suggested to Walter Bartky, associate director of our project, that he accompany me. Mr. Connelly read my memorandum with attention. "I can see that this is serious business," he said. "Frankly, at first I was a little suspicious because this appointment came through Kansas City." He told us that the President had an inkling of what our business might be and that he wanted us to go to Spartanburg and see James Byrnes. We didn't know why we were sent to see Byrnes, since at that point Byrnes held no Government position. We were quite willing to go, of course, and we asked for permission to take [atomic scientist] H. C. Urey along. On May 27 we took the night train to Spartanburg.

Q. *What happened then?*

A. Having read the memorandum, the first thing that Byrnes told us was that General Groves [head of the Manhattan District, which developed the A-bomb] had informed him that Russia had no uranium. Of course, if Russia did not have any uranium then she would not be able to participate in an atomic-arms race, but to me this seemed to be an exceedingly unlikely assumption. It was conceivable that Russia might have no high-grade uranium-ore deposits - deposits of pitchblende. The only known pitchblende deposit within the control of Russia was the deposit in Czechoslovakia, and this was not believed to be very extensive. But I found it difficult to believe that within the vast expanse of Russia there should be no low-grade uranium-ore deposits which could be used to obtain uranium for the production of bombs.

When I saw Mr. Byrnes I was very much concerned about the fact that no governmental policy had been developed on the issue of how to cope with the problem that the bomb would pose to the world. I raised the question of whether it might be wise to gain time for developing such a governmental policy by postponing the testing of the bomb. It seemed to me that once the bomb had been tested its existence could not be kept secret for long. Byrnes did not think that postponing the test was a good idea, and, in retrospect, I am

inclined to agree with him. In retrospect, I don't think that postponing the test would have solved our problem.

Byrnes was concerned about Russia's having taken over Poland, Rumania and Hungary, and so was I. Byrnes thought that the possession of the bomb by America would render the Russians more manageable in Europe. I failed to see how sitting on a stockpile of bombs, which in the circumstances we could not possibly use, would have this effect, and I thought it even conceivable that it would have just the opposite effect.

When I returned to Chicago and learned that Byrnes had been appointed Secretary of State, I concluded that the arguments that I regarded as important would receive no consideration. I didn't realize at that time that Secretary Stimson would play a major role in the final decision and that he might be able to understand my point of view better than Mr. Byrnes had done.

In Chicago I collaborated in the writing of the so-called Franck Report. This report was addressed to Secretary Stimson, but none of those who participated in the writing of the report, including Prof. James Franck, had an opportunity to see Mr. Stimson.

In the meantime I drafted a petition to the President which did not go into any considerations of expediency but opposed, on purely moral grounds, the use of atomic bombs against the cities of Japan. This petition was signed by about 60 members of the Chicago project. Some of those who signed insisted that the petition be transmitted to the President through "official channels." To this I reluctantly agreed. I was, at this point, mainly concerned that the members of the project had an opportunity to go on record on this issue, and I didn't think that the petition would be likely to have an effect on the course of events. The petition was sent to the President through official channels, and I should not be too surprised if it were discovered one of these days that it hadn't ever reached him.