

- A. *The building of the Hanford Plant.*
- B. *The fight against the use of the bomb.*

Material for page 14 of 5/22/56 Recording (preliminary transcription)

Memorandum, A.H. Compton to L.S.  
"Engineering of Bismuth Cooled Plant"

Oct. 7, 1942

"Memorandum, on Metallurgical Problems Connected with the  
Power Unit which is Cooled by Liquid Metal" by L.S.

June 12, 1943

*Compton*

*NRD*  
*Tom*

(Hist-G) (6653)  
X

THE UNIVERSITY OF CHICAGO

DATE October 7, 1942

To Mr. Leo Szilard

DEPARTMENT

FROM A. H. Compton

DEPARTMENT

~~SECRET~~

IN RE: Engineering of Bismuth Cooled Plant

In accord with instructions from General Groves, I have requested Mr. Moore to proceed at once with the engineering of a bismuth cooled power plant.

May I ask you to act as consultant to Mr. Moore on the design of this plant. One of the most useful things you could do now would be to recommend to him by Friday of this week an engineer with whom you could work to advantage and who under Mr. Moore's direction would have the immediate responsibility for designing the plant.

In accord with the directive which I have been given by General Groves, the immediate objective is to design a plant that can be ready for operation by June 15, 1943. We have in mind the dissipation of roughly 100,000 kw. This figure is, however, flexible if there should arise important advantages in a plant of larger or smaller capacity.

In case it should appear impracticable at this time to design a bismuth cooled plant to be ready by June 15, work on such a plant will cease to be of the greatest urgency. Interest in it will nevertheless continue both as a possible plant for large capacity and as a possible means of utilizing the power that is developed. Studies aimed toward such developments would be continued.

*A. H. Compton*

KT  
cc: Mr. Moore  
Mr. Allison  
Mr. Doan

~~SECRET~~

CLASSIFICATION CANCELLED  
Date 10/3/56  
For The Atomic Energy Commission  
E. L. Marshall/nck  
Director, Division of Classification

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MUC-LS. #1  
This document consists of 2 pages and 0 figures  
No. 4 of 7 copies, Series A

L. Szilard  
June 12, 1943

Memorandum on Metallurgical Problems Connected with the Power Unit which is Cooled by Liquid Metal

The possibility of using a liquid bismuth, liquid lead and bismuth-lead alloys for cooling both graphite and heavy water power units is at present under investigation. Of particular interest is the eutectic alloy of bismuth and lead which has a melting point of about 130°C; and at the first step, it might be advisable to use this alloy between 150°C up to 300°C.

1. No particular metallurgical problems arise in connection with graphite power unit if uranium is used in the form of uranium carbide.

It will, however, be desirable to determine at what velocities does true erosion occur, if at all, in graphite and uranium carbide under the conditions of flow which may be expected to exist in the power unit.

2. If uranium is used in the form of uranium metal, we obtain wetting of the uranium by the eutectic Bi-Pb alloy. An experiment is being prepared for seeing if uranium is soluble in the liquid eutectic. It is known that uranium is soluble in liquid bismuth and an experiment is being prepared to determine whether uranium is soluble in liquid lead in order to determine whether there is any hope that bismuth-lead alloys, sufficiently rich in lead, can be used in direct contact with uranium.

3. If it should prove impossible to use uranium metal in direct contact with bismuth-lead alloys, the uranium metal will have to be protected by some other material. It is also of interest to see what materials other than uranium can be used to form tubes through which the bismuth-lead alloys can be led through the power unit. The following materials are under discussion: graphite, beryllium, aluminum, iron.

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Date 10/31/56  
For The Atomic Energy Commission  
L. Marshall McR  
Director, Division of Classification

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Graphite appears to be safe from the point of view of chemical action or carbide formation at low temperatures. Carbon is insoluble in bismuth and no bismuth carbide is known to exist.

Beryllium does not appear to be wetted by eutectic lead-bismuth alloys at 400°C. It would be desirable to see if beryllium is soluble in liquid bismuth, liquid lead and bismuth-lead alloys. No such experiments have been prepared so far.

Aluminum does not appear to be wetted at 400°C by the eutectic bismuth-lead alloy. Aluminum is not soluble in liquid lead but is slightly soluble in liquid bismuth. An experiment has been planned to determine whether or not aluminum is soluble in the eutectic bismuth-lead alloy. It appears likely that aluminum will prove to be insoluble in bismuth-lead alloys which are sufficiently rich in lead.

Iron is not soluble in either liquid bismuth or lead and it is expected that it is insoluble in lead-bismuth eutectic. Iron could be used in the form of a thin coating to protect the uranium and iron tubes have been successfully ground down by Creutz to .01 inch. It is expected it would be possible to grind down iron tubes from .022 inch which is a commercial size to .005 inch.

The behavior of 18-8 stainless steel and of duraluminum has a certain degree of interest and an experiment has been prepared to see whether the lead-bismuth eutectic wets either of these substances.

- CC: Reading File
- J. Chyman
- F. Foote
- E. Wigner ✓
- E. Creutz
- H. Smyth
- S. Allison

~~SECRET~~

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Hist. ( )

(b.b.s # 3)

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As soon as it became clear that the chain reaction will succeed my attention and also the attention of \_\_\_\_\_ turned toward the problem of having an effective cooling system and of solving the technological

and engineering problems belonging to these cooling systems, So that a reactor high-powered output can be constructed and sufficient quantities of plutonium can ~~ben~~ be manufactured. There was a feeling in the Project that the cooling of a reactor is not a problem for physicists to worry about, that this is an engineering problem and should be entrusted to engineers. There was an engineering group set up in the project which set up an advisory committee having 8 members and I was one of the members but B. P. Wigner was not put on the committee since it was clear that Wigner thought more about engineering problems taking due regard to the physics involved than anyone has. I tried to correct this omission but I did not succeed and \_\_\_\_\_ took a position that they did want to enlarge the committee for it would be ~~unworkable~~ unwieldy. This engineering group then decided to adopt the cooling system such as a car cooling system, Number 1, and develop the process design along this line. ~~Neither~~ Neither I nor Dr. Wigner thought that this design was good or that \_\_\_\_\_ approach of the cooling system # 1 was acceptable. Wigner therefore tried to get an engineer attached to his group of physicists in order to work out an alternative system which I shall call system #2. It took a long time before the engineering group agreed that he should have an engineer, but finally he was given an engineer and they walked away quietly trying to develop with one engineer and a number of \_\_\_\_\_ physicists what we

might call a cooling system #2. When, at the end of 1942, the ~~Co.~~ <sup>(Dec. 1)</sup> \_\_\_\_\_

Company took over the construction of the plant for the ~~production~~ <sup>manufacture</sup> of plutonium

the official recommendation of the Project adopted the cooling system #1 advocated

by the engineering group. After the \_\_\_\_\_ Company had a few weeks opportunity to

study the system Dr. Wigner presented to them a process designed for system #2

which he had worked out with one engineer. <sup>(Report dated Jan. 9, 1943)</sup> The \_\_\_\_\_ company decided to use

system #2 rather than system #1 which was unworkable. Physicists in the project

were unhappy about the way cooperation with the \_\_\_\_\_ Co. was set ~~up~~ up. The

DuPont (?) Co. had very good engineers but they did not have the required

knowledge of nuclear physics. They were supposed to draw up the plans and

the Project was given the right to object to any given solution ~~with~~ which the

DuPont Company may put forward. Clearly this is a very peculiar way of arriving

at a design and for a long time most physicists on the Project did not believe

that the DuPont Company will be able to produce a workable design on the

basis of this trial and error procedure. The ..... decided that it

was not a good design but a design that worked. At least it worked for a

while. And after ..... went into operation they were able to deliver

material during the war without any serious hitch. The disagreement

about the cooling system to be used put the form of a fight between the

physicists and the engineers. The issue was, should the physicists be

~~allowed~~ permitted to make their own designs or should all designing be



concentrating in the engineering group and the physicists merely act in an advisory capacity. This fight reached its end, of course, automatically at this time, when the Dupont Company took over the construction of the plant (Dec. 1, 1942) parts, for the responsibility was then clearly assigned to the Dupont Company. But gradually, ..... the fight ended to the temporary victory of the engineers. Dr. Compton instructed ~~the~~ the physicists to cease working on the process designs and to act as consultants to the engineering group. When the engineers came over to ask Dr. Wigner for his cooperation, Dr. Wigner asked, "What do you want to do?" "I mean, what do you want me to do?" "Well," they said, "~~all~~ all we want you to do is ~~answer our questions~~ answer our questions." "Oh," said Wigner, "if you know the answer to which what questions to ask, you will find/~~that~~ any question/you might ask and which I can answer in my files. All I have to do then, is give you the key to my file, which I shall be very glad to do. Obviously, in order to know ~~what~~ the right answers otherwise you dont know what the right questions are." And this kind of cooperation would have lead ~~up~~ us ~~to~~ nowhere had we, in fact, adopted it.

standstill for the next six months. Mr. Wigner wrote a very polite letter to the chairman of the Uranium Committee saying that he would hold himself in readiness to work for the government on all matters related to defense, with the exception of uranium.

After reorganization in Washington, which put the Uranium Committee under Dr. Vannevar Bush's committee, Columbia University was given a contract in the amount of \$40,000 to develop the Fermi-Szilard system. On November 1, 1940, I was put on the payroll of Columbia University under this contract. Since I was instrumental in inducing the government to assume expenditures for exploring the possibility of setting up a chain reaction, and with a view to the possibility that our efforts might come to nothing, it was deemed advisable to set my salary at a low figure, *i.e.*, \$4,000 a year.

While up to this point we had suffered from the lack of official recognition, during this period we were suffering from having official recognition. H. C. Urey was under orders not to discuss with Fermi and myself the possibility of preparing substantial amounts of Uranium 235. Because of this compartmentalization, we failed to put two and two together, and at no time were we or any other physicist able to say to the American government that atomic bombs could be made with amounts of Uranium 235 which it was practicable to obtain. Thus our project and Urey's remained projects of low priority until the British colleagues, who were not so compartmentalized (hamstrung?), pointed out that making atomic bombs of Uranium 235 must be regarded as a practical proposition.

This led to a reorganization of the project and the group working at Columbia University was transferred to Chicago [in February 1942].

[EDITORS' NOTE: In these oral reminiscences Szilard does not cover his activities at the "Metallurgical Laboratory" in Chicago from February 1942 to the spring of 1945. During that time his title was Chief Physicist. The scientific aspects of this period, in the form of some thirty reports written by Szilard, will be included in the forthcoming collected works. Szilard picks up the story again in 1945.]

In the spring of '45 it was clear that the war against Germany would soon end, and so I began to ask myself, "What is the purpose of continuing the development of the bomb, and how would the bomb be used

if the war with Japan has not ended by the time we have the first bomb?"

Initially we were strongly motivated to produce the bomb because we feared the Germans would get ahead of us, and the only way to prevent them from dropping bombs on us was to have bombs in readiness ourselves. But now, with the war won, it was not clear what we were working for.

I had many discussions with many people about this point in the Metallurgical Laboratory of the University of Chicago, which was the code name for the uranium project which produced the chain reaction. There was no indication that these problems were seriously discussed at a high government level. I had repeated conversations with Compton<sup>42</sup> about the future of the project, and he too was concerned about its future, but he had no word of what intentions there were, if there were any intentions at all.

There was no point in discussing these things with General Groves<sup>43</sup> or Dr. Conant<sup>44</sup> or Dr. Bush,<sup>45</sup> and because of secrecy there was no intermediate level in the government to which we could have gone for a careful consideration of these issues.<sup>46</sup> The only man with whom we were sure we were entitled to communicate was the President. In these circumstances I wrote a memorandum addressed to the President, and was looking around for some ways and means to communicate the memorandum to him. Since I didn't suppose that he would know who I was, I needed a letter of introduction.

I went to see Einstein and I asked him to write me such a letter of introduction, even though I could tell him only that there was trouble ahead, but I couldn't tell him what the nature of the trouble was. Einstein wrote a letter and I decided to transmit the memorandum and the letter to the President through Mrs. Roosevelt, who once before had

42. Arthur Holley Compton, then director of the "Metallurgical Laboratory" at the University of Chicago.

43. Major General Leslie R. Groves, Manhattan Engineer District, director of all army activities of the Project at that time.

44. James B. Conant, President of Harvard University and chairman of the National Defense Research Committee at that time.

45. Vannevar Bush, director of the Office of Scientific Research and Development at that time.

46. The "Metallurgical Laboratory" was transferred from the civilian OSRD to the War Department Manhattan District in April 1943.

channelled communications from the project to the President. I have forgotten now precisely what I wrote to Mrs. Roosevelt; I suppose that I sent her a copy of Einstein's letter—but not the memorandum. This I could not do. The memorandum I couldn't send her, because the memorandum would have been considered secret.<sup>47</sup>

Mrs. Roosevelt gave me an appointment for May 8th. When I had this appointment I called on Dr. Compton, who was in charge of the project, and told him that I intended to get a memorandum to the President, and I asked him to read the memorandum. I was fully prepared to be scolded by Compton, to be told that I should go through channels rather than go to the President directly. To my astonishment, this is not what happened.

Compton read the memorandum very carefully, and then he said, "I hope that you will get the President to read this." Elated by finding no resistance where I expected resistance, I went back to my office. I hadn't been in my office for five minutes when there was a knock on the door and Compton's assistant came in, telling me that he had just heard over the radio that President Roosevelt had died [April 12, 1945].

There I was now with my memorandum, and no way to get it anywhere. At this point I knew that I was in need of advice. I went to see the associate director of the project, Dr. [Walter] Bartky, and told him of my plight. He suggested that we go and see Dr. [Robert M.] Hutchins, president of the University of Chicago. This was the first time that

47. Letter, Einstein to Roosevelt, March 25, 1945, introducing Szilard. Einstein recalls his letter of 1939 on the importance of uranium and Szilard's work, says he has "much confidence in his judgment," and explains that secrecy prevents his knowing about Szilard's current work:

However, I understand that he now is greatly concerned about the lack of adequate contact between scientists who are doing this work and those members of your Cabinet who are responsible for formulating policy. In the circumstances I consider it my duty to give Dr. Szilard this introduction and I wish to express the hope that you will be able to give his presentation of the case your personal attention.

This letter has been published in *Einstein on Peace*, cited in note 36 above, pp. 304-305.

The memorandum by Szilard to the President, entitled "Enclosure to Mr. Albert Einstein's Letter of March 25, 1945 to the President of the United States," warns of precipitating an atomic arms race between the United States and Russia, suggests delay in our use of the atomic bomb, calls for setting up a system of international controls, and asks for formation of a cabinet-level committee through which scientists could express their views to the government. The document is printed in its entirety below as Appendix II to these Reminiscences.

I had met Hutchins. I told him briefly what the situation was, and this was the first time he knew that we were close to having an atomic bomb, even though the Metallurgical project had been on his campus for several years. Hutchins grasped the situation in an instant. He used to be an isolationist before the war, but he was a very peculiar isolationist, because where most isolationists held that the Americans should keep out of war because those foreigners do not deserve to have American blood shed for them, Hutchins' position was that the Americans should keep out of war because they would only mess it up. After he heard my story he asked me what this all would mean in the end, and I said that in the end this would mean that the world would have to live under one government. Then he said, "Yes, I believe you are right." I thought this was pretty good for an isolationist. As a matter of fact, a few days after the bomb was dropped on Hiroshima, Hutchins went on the radio; he gave a speech about the necessity of world government.

In spite of the good understanding which I had with Hutchins, he was not able to help with the task immediately at hand. "I do not know Mr. Truman," Hutchins said. I knew any number of people who could have reached Roosevelt, but I knew nobody offhand who could reach Truman. Truman just did not move in the same circles, so for a number of days I was at a complete loss as to what to do. Then I had an idea. Our project was very large by then, and there ought to be somebody from Kansas City. And three days later we had an appointment at the White House.

I asked the associate director of the project, Dr. Bartky, to come to Washington; and armed with Einstein's letter and my memorandum we went to the White House and were received by Matt Connelly, Truman's appointment secretary. I handed him Einstein's letter and the memorandum to read. He read the memorandum carefully from beginning to end, and then he said, "I see now this is a serious matter. At first I was a little suspicious, because this appointment came through Kansas City." Then he said, "The President thought that your concern would be about this matter, and he has asked me to make an appointment with you with James Byrnes, if you are willing to go down to see him in Spartanburg, South Carolina." We said that we would be happy to go anywhere that the President directed us, and he picked up the

phone and made an appointment with Byrnes for us. I asked whether I might bring Dr. H. C. Urey<sup>48</sup> along, and Connelly said I could bring along anyone whom I wanted. So I phoned Chicago and asked Urey to join us in Washington, and together we went down the next day to Spartanburg, taking an overnight train from Washington.

We were concerned about two things: we were concerned first about the role which the bomb would play in the world after the war, and how America's position would be affected if the bomb were actually used in the war; we were also concerned about the future of atomic energy, and about the lack of planning as to how this research might be continued after the war. It was clear that the project set up during the war would not be continued but would have to be reorganized. But the valuable thing was not the big projects; the valuable things were the numerous teams, which somehow crystallized during the war, of men who had different abilities and who liked to work with each other. We thought that these teams ought to be preserved even though the projects might be dissolved.

We did not quite understand why we had been sent by the President to see James Byrnes. He had previously occupied a high position in the government, but was now out of the government and was living as a private citizen in Spartanburg. Clearly the President must have had in mind appointing him to a government position, but what position? Was he to be the man in charge of the uranium work after the war, or what? We did not know.

Finally we arrived in Spartanburg, and I gave Byrnes Einstein's letter to read and the memorandum which I had written. Byrnes read the memorandum, and then we started to discuss the problem. When I spoke of my concern that Russia might become an atomic power—and might become an atomic power soon, if we were to demonstrate the power of the bomb and use it against Japan—his reply was, "General Groves tells me there is no uranium in Russia."

I told Byrnes that there was certainly a limited amount of rich uranium ore in Czechoslovakia to which Russia had access; but apart from this, it was very unlikely that in the vast territory of Russia there should be no low-grade uranium ores. High-grade uranium ore is, of course,

48. Harold C. Urey, then professor of chemistry at Columbia University.

another matter: high-grade deposits are rare, and it is not at all sure whether new high-grade deposits can be found. In the past, only the high-grade deposits were of interest because the main purpose of mining uranium ores was to produce radium, and the price of radium was such that working low-grade uranium ores would not have been profitable. But when you are dealing with atomic energy you are not limited to high-grade ores; you can use low-grade ones, and I doubted very much that anyone in America would be able to say, in a responsible way, that there were no major low-grade uranium deposits in Russia.

I thought it would be a mistake to disclose the existence of the bomb to the world before the government had made up its mind how to handle the situation after the war. Using the bomb certainly would disclose that the bomb exists. As a matter of fact, even testing the bomb would disclose that the bomb exists. Once the bomb has been tested and shown to go off, it would not be possible to keep it a secret.

Byrnes agreed that if we refrained from testing the bomb, people would conclude that its development did not succeed. However, he said that we had spent two billion dollars on developing the bomb, and Congress would want to know what we got for the money spent. "How would you get Congress to appropriate money for atomic energy research if you do not show results for the money which has been spent already?"

I saw his point at that time, and in retrospect I see even more clearly that it would not have served any useful purpose to keep the bomb secret, waiting for the government to understand the problem and to formulate a policy; for the government will not formulate a policy unless it is under pressure to do so, and if the bomb had been kept secret there would have been no pressure for the government to do anything in this direction.

Byrnes thought that the war would be over in about six months, and this proved to be a fairly accurate estimate. He was concerned about Russia's postwar behavior. Russian troops had moved into Hungary and Rumania; Byrnes thought it would be very difficult to persuade Russia to withdraw her troops from these countries, and that Russia might be more manageable if impressed by American military might. I shared Byrnes's concern about Russia's throwing around her weight in the

postwar period, but I was completely flabbergasted by the assumption that rattling the bomb might make Russia more manageable.

I began to doubt that there was any way for me to communicate with Byrnes in this matter, and my doubt became certainty when he turned to me and said, "Well, you come from Hungary—you would not want Russia to stay in Hungary indefinitely." I certainly didn't want Russia to stay in Hungary indefinitely, but what Byrnes said offended my sense of proportion. I was concerned at this point that by demonstrating the bomb and using it in the war against Japan, we might start an atomic arms race between America and Russia which might end with the destruction of both countries. I was *not* disposed at this point to worry about what would happen to Hungary.

After all was said that could be said on this topic, the conversation turned to the future of the uranium project. To our astonishment, Byrnes showed complete indifference. This is easy to understand in retrospect because, contrary to what we had suspected, he was not slated to be director of the uranium project but he was slated to be secretary of state.

I was rarely as depressed as when we left Byrnes's house and walked toward the station. I thought to myself how much better off the world might be had I been born in America and become influential in American politics, and had Byrnes been born in Hungary and studied physics. In all probability there would have been no atomic bomb, and no danger of an arms race between America and Russia.

When I returned to Chicago, I found the project in an uproar. The Army had violently objected to our visit to the White House, and to Byrnes. Dr. Bartky was summoned to see General Groves; General Groves told him that I committed a grave breach of security by handing a secret document to Byrnes, who did not know how to handle secret documents. To calm the uproar, Dr. Compton, the leader of the project, decided to regularize the discussions by appointing a committee under the chairmanship of James Franck<sup>49</sup> to examine the issue of whether or not the bomb should be used, and if so, how.<sup>50</sup> The report

49. James Franck, physicist at the Chicago Laboratory. Other members of the Franck Committee were Hogness, Hughes, Nickson, Rabinowitch, Seaborg, Stearns, and Szilard.

50. Szilard wrote an unpublished article called "The Story of a Petition," dated July 28, 1946, which essentially covers the same ground as the oral tape. In this article, he says the Franck report,



of the committee has been published, and it was meant to be presented to the secretary of war, Mr. Stimson. Whether it ever reached his desk I do not know.

On my way from Spartanburg to Chicago I stopped in Washington to see Oppenheimer, who had arrived there to attend a meeting of the Interim Committee.<sup>51</sup> I told Oppenheimer that I thought it would be a very serious mistake to use the bomb against the cities of Japan. Oppenheimer didn't share my view. He surprised me by starting the conversation by saying that the atomic bomb is no good.<sup>52</sup> "What do you mean by that?" I asked him. He said, "Well, this is a weapon which has no military significance. It will make a big bang—a very big bang—but it is not a weapon which is useful in war." He thought it would be important, however, to inform the Russians that we had an atomic bomb and that we intended to use it against the cities of Japan, rather than taking them by surprise. This seemed reasonable to me, and I know that Stimson also shared this view. However, while this was necessary, it was certainly not sufficient. "Well," Oppenheimer said, "don't you think if we tell the Russians what we intend to do and then use the bomb in Japan, the Russians will understand it?" And I remember that I said, "They'll understand it only too well."

The time approached when the bomb would be tested. The date was never communicated to us in Chicago, nor did we ever receive any of-

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was rushed to Stimson and advised against the outright military use of atomic bombs in the war against Japan. It took a stand in favor of demonstrating the power of the atomic bomb in a manner which will avoid mass slaughter but yet convince the Japanese of the destructive power of the bomb. By the beginning of July it became evident, at least to me, personally, that the use of the bomb will be examined by the Interim Committee purely on the basis of expediency, and that great weight will be given by them to the immediate effect, rather than to the long range effects.

51. The Interim Committee was organized in early May of 1945 by Secretary of War Henry L. Stimson to consider uses of the bomb and possible international control. He was chairman; members were Bush, Conant, Karl T. Compton, Under Secretary of the Navy Ralph Bard, Assistant Secretary of State William Clayton, and as the personal representative of President Truman, James Byrnes, who at that point held no official position. Robert Oppenheimer, director of the Los Alamos laboratory, was on the scientific advisory panel to the Interim Committee, whose other members were Arthur Compton, Fermi, and Lawrence. Richard G. Hewlett and Oscar E. Anderson, Jr., *The New World, 1939/1946: A History of the United States Atomic Energy Commission* (University Park, Pa., 1962-), I, 344-346.

52. A stronger word was used in the tape.

ficial indication of what was afoot. However, I concluded that the bomb was about to be tested when I was told that we were no longer permitted to call Los Alamos over the telephone. This could mean only one thing: Los Alamos must get ready to test the bomb, and the Army tried by this ingenious method to keep the news from the Chicago project.

I knew by this time that it would not be possible to dissuade the government from using the bomb against the cities of Japan. The cards in the Interim Committee were stacked against such an approach to the problem. Therefore all that remained was for the scientists to go unmistakably on record that they were opposed to such action. While the Franck Report argued the case on grounds of expediency, I thought the time had come for the scientists to go on record against the use of the bomb against the cities of Japan on moral grounds. Therefore I drafted a petition which was circulated in the project.<sup>53</sup>

This was again violently opposed by the Army. They accused me of having violated secrecy by disclosing in the petition that such a thing as a bomb existed. What the Army thought that we thought we were doing all this time, I cannot say. However, we did not yield to the Army's demand. The right to petition is anchored in the Constitution, and when you are a naturalized citizen you are supposed to learn the Constitution prior to obtaining your citizenship.

The first version of the petition which was circulated drew about fifty-three signatures in the Chicago project. What *is* significant is that these fifty-three people included *all* the leading physicists in the project and many of the leading biologists. The signatures of the chemists were conspicuously absent. This was so striking that I went over to the chemistry department to discover what the trouble was. What I discovered

53. In "The Story of a Petition" Szilard wrote, "A petition to the President was thus drafted in the first days of July and sent to every group leader in the 'Metallurgical Laboratory,' with the request to circulate it within his group." Szilard's covering letter to the group leaders is especially intense on the moral position, raising the analogy of individual Germans' guilt for Germany's acts. The text of this letter, dated July 4, 1945, appears below as Appendix III. The first version of the petition was dated July 3, 1945, and was signed by fifty-nine scientists. The final paragraph states: "In view of the foregoing, we, the undersigned, respectfully petition that you exercise your power as Commander-in-Chief to rule that the United States shall not, in the present phase of the war, resort to the use of atomic bombs." The text of the petition is printed in full below, as Appendix IV.

was rather disturbing: the chemists argued that what we must determine is solely whether more lives would be saved by using the bomb or by continuing the war without using the bomb. This is a utilitarian argument with which I was very familiar through my previous experiences in Germany. That some other issue may be involved in dropping the bomb on an inhabited city and killing men, women, and children did not occur to any of the chemists with whom I spoke.

Some of the members of the project said that they would sign the petition if it were worded somewhat more mildly, and I therefore drafted a second version of the petition which drew a somewhat larger number of signatures—but not a significantly larger number.<sup>54</sup> The second petition was dated one day before the bomb was actually tested at Alamogordo, New Mexico.<sup>55</sup>

After the petition had been circulated we were faced with the decision of what channels to use to communicate it to the White House. Several

54. The second version was dated July 17, 1945, and drew seventy signatures. The final three paragraphs, concluding in a significant modification of the final paragraph of the original petition, are as follows:

If after this war a situation is allowed to develop in the world which permits rival powers to be in uncontrolled possession of these new means of destruction, the cities of the United States as well as the cities of other nations will be in continuous danger of sudden annihilation. All the resources of the United States, moral and material, may have to be mobilized to prevent the advent of such a world situation. Its prevention is at present the solemn responsibility of the United States—singled out by virtue of her lead in the field of atomic power.

The added material strength which this lead gives to the United States brings with it the obligation of restraint and if we were to violate this obligation our moral position would be weakened in the eyes of the world and in our own eyes. It would then be more difficult for us to live up to our responsibility of bringing the unloosened forces of destruction under control.

In view of the foregoing, we, the undersigned, respectfully petition: first, that you exercise your power as Commander-in-Chief, to rule that the United States shall not resort to the use of atomic bombs in this war unless the terms which will be imposed upon Japan have been made public in detail and Japan knowing these terms has refused to surrender; second, that in such an event the question whether or not to use atomic bombs be decided by you in the light of the consideration presented in this petition as well as all the other moral responsibilities which are involved.

Both petitions were declassified finally on July 23, 1957.

55. While Szilard mentions that the petition was dated one day before the Alamogordo test, which was July 16, 1945, we have not found in the files any version dated July 15th. There is one dated the 16th, the day of the test, which is almost identical to the July 17th version, but without any signatures. All the copies with signatures are dated either the 3rd or the 17th.

people, and above all James Franck, took the position that they would sign the petition because they agreed with it, but they could do this only if the petition were to be forwarded to the President through the regular channels rather than outside of these channels. I did not like this idea because I was just not sure whether the regular channels would forward the petition or whether they would sabotage it by filing it until the war was over. However, to my regret, I finally yielded and handed the petition to Compton, who transmitted it to Colonel Nichols,<sup>56</sup> who promised that he would transmit it to General Groves for immediate transmittal to Potsdam. I have no evidence that this petition ever reached the President.<sup>57</sup>

56. Letter of transmittal, Szilard to A. H. Compton, July 19, 1945, requesting that he "forward this petition to the President via the War Department." The final paragraph of this letter, significant for its anticipation of an arms race with Russia, reads:

It would be appreciated if in transmitting these copies you would draw attention in your covering letter to the fact that the text of the petition deals with the moral aspect of the issue only. Some of those who signed the petition undoubtedly fear that the use of atomic bombs at this time would precipitate an armament race with Russia and believe that atomic bombs ought not to be demonstrated until the government had more time to reach a final decision as to which course it intends to follow in the years following the first demonstration of atomic bombs. Others are more inclined to think that if we withhold such a demonstration we will cause distrust on the part of other nations and are, therefore, in favor of an early demonstration. The text of the petition does not touch upon these and other important issues involved but deals with the moral issue only.

In his memorandum to Colonel K. D. Nichols, July 24, 1945, entitled "In re: Transmittal of Petitions addressed to the President," A. H. Compton urged speed in transmitting the documents, and enclosed the result of an opinion poll of 150 scientists, conducted by Farrington Daniels, director of the Chicago laboratory. Compton commented that "the strongly favored procedure . . . to give a military demonstration in Japan, to be followed by a renewed opportunity for surrender before full use of the weapons is employed . . . coincides with my own preference . . ." Fletcher Knebel and Charles W. Bailey, "The Fight over the A-Bomb; Secret Revealed after 18 Years," *Look*, 27 (August 13, 1963), 22-23.

57. The petition never reached the President, according to Knebel and Bailey. Nichols delivered the petition on July 25 to Groves, they write, who kept it until August 1, when it was delivered to Secretary of War Stimson's office by messenger. But President Truman was then at the Potsdam conference, about to embark for home aboard the *U.S.S. Augusta*. On August 6, the day of Hiroshima, Truman was still on the Atlantic. Knebel and Bailey quote a memorandum written almost a year later, May 24, 1946, by Army Lieutenant R. Gordon Arneson, secretary of the Interim Committee. ". . . since the question of the bomb's use 'had already been fully considered and settled by the proper authorities,' . . . it was decided that 'no useful purpose would be served by transmitting either the petition or any of the attached documents to the White House, particularly since the President was not then in the country.'" "The Fight over the A-Bomb," p. 23.

After the bomb was dropped on Hiroshima, I called the responsible officer of the Manhattan District in Chicago and told him that I was going to declassify the petition and asked him if there were any objection. There could not have been any objection, and there wasn't, and so I declassified the petition. A short time thereafter I sent a telegram to Matt Connelly, the President's secretary, to advise him that it was my intention to make the contents of the petition public, and that I wanted to advise him of this as a matter of courtesy.<sup>58</sup> When the telegram was not acknowledged I phoned the White House, upon which I received a telegram saying that the matter had been presented to the President for his decision, and that I would be advised accordingly.<sup>59</sup> Shortly thereafter I received a call from the Manhattan District saying that General Groves wanted the petition reclassified "Secret." I said that I would not do this on the basis of a telephone conversation, but that I wanted to have a letter explaining why the petition, which contained nothing secret, should be reclassified. Soon after, I received a three-page letter, stamped "Secret," in which I was advised that while the officer writing the letter could not possibly know what was in General Groves's mind when he asked that the petition be reclassified "Secret," he assumed that the reason for this request was that people reading the petition might conclude that there must have been some dissension in the project prior to the termination of the war; this might have slowed down the work of the project which was conducted under the Army.<sup>60</sup>

58. We have so far not found this telegram to Connelly, but have found a corresponding letter, Szilard to Connelly, August 17, 1945.

59. Telegram, Connelly to Szilard, August 25, 1945.

60. This letter, which is in the Szilard files, is from Captain James S. Murray, Intelligence Officer, Manhattan Engineer District, dated August 27, 1945. Page three contains a paragraph giving exactly the explanation here summarized by Szilard. This letter was eventually declassified on May 13, 1960, and returned to Dr. Szilard. A few days after receiving it in 1945, Szilard commented in a letter to Robert M. Hutchins, dated August 29, 1945: "The Manhattan District's definition of 'Secret' includes 'information that might be injurious to the prestige of any governmental activity,' which is, of course, very different from the definition adopted by Congress in passing the Espionage Act."

Hist-G

b. b. s. 3

Recording, 5/22/56

page 16

Record S-13

After it became clear that half our plans were successfully operating, the Chicago project relaxed. It then became possible for the physicists to take a <sup>more</sup> detached view and some of us began to think of the wisdom of making bombs, testing bombs, and using bombs. In March 1945, which was clear that Germany was defeated and after the defeat of Germany

p. 16

p. 122

In the spring of '45 it was clear that the war against Germany would soon end, and so I began to ask myself, "What is the purpose of continuing the development of the bomb, and how would the bomb be used

p. 122

# Petition

July 3  
" 17 ↓ see history of a petition —

most §'s changed, esp. § 5 and 6.  
July 16 - transition between 3 and 17

July 17: No. of signatures:  $3 + 2 + 5 + (11) + 7 + 7 + 14 + 9 + 11 =$   
 $(67)$

July 3 - base orig + copies signed by 59 scientists

July 17 - 4 only copies signed by 67 scientists  
 $3 + 2 + 5 + (12) + 7 + 7 + 14 + 9 + 11 = (68)$

$12 + 8 + 12 = 32$



Dr. Edward Teller

January 16, 1971

Lawrence Radiation Laboratory  
University of California, P.O.B. 808  
Livermore, Calif. 94550

Dear Edward :

The only direct correspondence that we could find in the matter of the petition, between you and Leo, is your letter to Leo, dated July 2, 1945. This is obviously in response to an oral discussion, and I am enclosing a Xerox copy.

It is also possible that a set of the petition and the covering letter to group leaders has reached you through Creutz, and I am therefore enclosing Leo's letter to Creutz, dated July 10, 1945 with the following enclosures : Letter to F. (?) Oppenheimer, dated July 10, 1945; A Petition to the President of the United States, dated July 3, 1945 and Leo's covering letter to group leaders, dated July 4, 1945.

We also found in the files an unpublished manuscript ' The Story of a Petition',<sup>\*</sup> dated July 28, 1946 with a revised version of the petition; dated July 17, 1945. I am sending this too for your information; please return it to me at your convenience.

I hope that this will be helpful to you.

Kindest regards and best wishes,

as always,

\* xerox from F-12  
orig. in 3 b.s.7

July 4, 1945

Dear *Miss Wang*

Inclosed is the text of a petition which will be submitted to the President of the United States. As you will see, this petition is based on purely moral considerations.

It may very well be that the decision of the President whether or not to use atomic bombs in the war against Japan will largely be based on considerations of expediency. On the basis of expediency, many arguments could be put forward both for and against our use of atomic bombs against Japan. Such arguments could be considered only within the framework of a thorough analysis of the situation which will face the United States after this war and it was felt that no useful purpose would be served by considering arguments of expediency in a short petition.

However small the chance might be that our petition may influence the course of events, I personally feel that it would be a matter of importance if a large number of scientists who have worked in this field went clearly and unmistakably on record as to their opposition on moral grounds to the use of these bombs in the present phase of the war.

Many of us are inclined to say that individual Germans share the guilt for the acts which Germany committed during this war because they did not raise their voices in protest against those acts. Their defense that their protest would have been of no avail hardly seems acceptable even though these Germans could not have protested without running risks to life and liberty. We are in a position to raise our voices without incurring any such risks even though we might incur the displeasure of some of those who are at present in charge of controlling the work on "atomic power".

The fact that the people of the United States are unaware of the choice which faces us increases our responsibility in this matter since those who have worked on "atomic power" represent a sample of the population and they alone are in a position to form an opinion and declare their stand.

Anyone who might wish to go on record by signing the petition ought to have an opportunity to do so and, therefore, it would be appreciated if you could give every member of your group an opportunity for signing.

*Herb Lund*

*in general  
stay  
of a  
petition*

July 3, 1945

**A PETITION TO THE PRESIDENT OF THE UNITED STATES**

Discoveries of which the people of the United States are not aware may affect the welfare of this nation in the near future. The liberation of atomic power which has been achieved places atomic bombs in the hands of the Army. It places in your hands, as Commander-in-Chief, the fateful decision whether or not to sanction the use of such bombs in the present phase of the war against Japan.

We, the undersigned scientists, have been working in the field of atomic power for a number of years. Until recently we have had to reckon with the possibility that the United States might be attacked by atomic bombs during this war and that her only defense might lie in a counterattack by the same means. Today with this danger averted we feel impelled to say what follows:

The war has to be brought speedily to a successful conclusion and the destruction of Japanese cities by means of atomic bombs may very well be an effective method of warfare. We feel, however, that such an attack on Japan could not be justified in the present circumstances. We believe that the United States ought not to resort to the use of atomic bombs in the present phase of the war, at least not unless the terms which will be imposed upon Japan after the war are publicly announced and subsequently Japan is given an opportunity to surrender.

If such public announcement gave assurance to the Japanese that they could look forward to a life devoted to peaceful pursuits in their homeland and if Japan still refused to surrender, our nation would then be faced with a situation which might require a re-examination of her position with respect to the use of atomic bombs in the war.

Atomic bombs are primarily a means for the ruthless annihilation of cities. Once they were introduced as an instrument of war it would be difficult to resist for long the temptation of putting them to such use.

The last few years show a marked tendency toward increasing ruthlessness. At present our Air Forces, striking at the Japanese cities, are using the same methods of warfare which were condemned by American public opinion only a few years ago when applied by the Germans to the cities of England. Our use of atomic bombs in this war would carry the world a long way further on this path of ruthlessness.

Atomic power will provide the nations with new means of destruction. The atomic bombs at our disposal represent only the first step in this direction and there is almost no limit to the destructive power which will become available in the course of this development. Thus a nation which sets the precedent of using these newly liberated forces of nature for purposes of destruction may have to bear the responsibility of opening the door to an era of devastation on an unimaginable scale.

In view of the foregoing, we, the undersigned, respectfully petition that you exercise your power as Commander-in-Chief to rule that the United States shall not, in the present phase of the war, resort to the use of atomic bombs.

July 3, 1945

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In view of the foregoing, we, the undersigned, respectfully petition that you exercise your power as Commander-in-Chief to rule that the United States shall not, in the present phase of the war, resort to the use of atomic bombs.

~~SECRET~~

*Teller*

P. O. BOX 1663  
SANTA FE, NEW MEXICO

This document consists of 2 Page(s)  
No. 1 of 2 Copies, Series A

July 2, 1945

*Handwritten* →  
Dr. Leo Szilard  
P. O. Box 5207  
Chicago 80, Illinois

Dear Szilard:

CLASSIFICATION CANCELLED  
Date 10/30/57  
For The Atomic Energy Commission  
*C. R. Marshall / n.c. Reigter*  
Director, Division of Classification

Since our discussion I have spent some time thinking about your objections to an immediate military use of the weapon we may produce. I decided to do nothing. I should like to tell you my reasons.

First of all let me say that I have no hope of clearing my conscience. The things we are working on are so terrible that no amount of protesting or fiddling with politics will save our souls.

This much is true: I have not worked on the project for a very selfish reason and I have gotten much more trouble than pleasure out of it. I worked because the problems interested me and I should have felt it a great restraint not to go ahead. I can not claim that I simply worked to do my duty. A sense of duty could keep me out of such work. It could not get me into the present kind of activity against my inclinations. If you should succeed in convincing me that your moral objections are valid, I should quit working. I hardly think that I should start protesting.

But I am not really convinced of your objections. I do not feel that there is any chance to outlaw any one weapon. If we have a slim chance of survival, it lies in the possibility to get rid of wars. The more decisive a weapon is the more surely it will be used in any real conflict and no agreements will help.

Our only hope is in getting the facts of our results before the people. This might help to convince everybody that the next war would be fatal. For this purpose actual combat-use might even be the best thing.

And this brings me to the main point. The accident that we worked out this dreadful thing should not give us the responsibility of having a voice in how it is to be used. This responsibility must in the end be shifted to the people as a whole and that can be done only by making the facts known. This is the only cause for which I feel entitled in doing something: the necessity of lifting the secrecy at least as far as the broad issues of our work are concerned. My understanding is that this will be done as soon as the military situation permits it.

All this may seem to you quite wrong. I should be glad if you showed this letter to Eugene and to Franck who seem to agree with you rather than with me. I should like to have the advice of all of you whether you think it is a crime to continue to work. But I feel that

H3210

~~SECRET~~ 4058

I should do the wrong thing if I tried to say how to tie the little  
toe of the ghost to the bottle from which we just helped it to escape.

With best regards.

Yours,

*E. Teller*

E. Teller



(Hist-C)

Metallurgical Laboratory

P.O. BOX 5207  
CHICAGO 80, ILLINOIS

July 19, 1945

BUTTERFIELD 4300

WDN-35430

1

~~SECRET~~

Dr. A. H. Compton  
Metallurgical Laboratory  
Chicago, Illinois

Dear Dr. Compton:

Enclosed is a petition to the President of the United States signed by 67 scientists residing in Chicago. You were good enough to say that you would forward this petition to the President via the War Department. Since those who have signed this petition are exercising a privilege under the Constitution, I believe that we are not free to disclose their names to anyone but to those who are authorized to open the mail of the President. May I, therefore, suggest that the petition be placed in an envelope addressed to the President and that the envelope be sealed before it leaves your office.

Enclosed are six unsigned copies of the petition which you may wish to communicate to others who ought in your opinion to be informed of the text of the petition.

It would be appreciated if in transmitting these copies you would draw attention in your covering letter to the fact that the text of the petition deals with the moral aspect of the issue only. Some of those who signed the petition undoubtedly fear that the use of atomic bombs at this time would precipitate an armament race with Russia and believe that atomic bombs ought not be demonstrated until the government had more time to reach a final decision as to which course it intends to follow in the years following the first demonstration of atomic bombs. Others are more inclined to think that if we withhold such a demonstration we will cause distrust on the part of other nations and are, therefore, in favor of an early demonstration. The text of the petition does not touch upon these and other important issues involved but deals with the moral issue only.

Very sincerely yours,

*Leo Szilard*

Leo Szilard

jjp  
encls.

~~SECRET~~

*July 13/60*

4415 (3)  
4466

Additional Material for page 132

re: DELIVERY OF PETITION, also COUNTER PROPOSALS AND OPINIONS

Letter, L.S. to A.H. Compton July 19, 1945  
 While Szilard says the petition was "signed by 67 scientists," an actual count of the signatures on our copies shows ~~70~~ names. (KW)  
*68 on the July 17 version.*

Memorandum, Arthur H. Compton to Col. K.D. Nichols July 24, 1945  
 "In re: Transmittal of Petitions addressed to the President"

"A Petition (sic) to the Administration of Clinton Laboratores" Undated  
 Urges: "...let us use this weapon - now!" Two signatures.

"To the President of the United States" Undated  
 Another petition from Clinton Labs, 67 signatures  
*urging demonstration of bomb before use.*

Memorandum, Farrington Daniels to A.H. Compton July 13, 1945  
 "Re: Poll on the use of weapon"

Letter, Teller to L.S. July 2, 1945

Letter, Robert M. Hutchins to L.S. July 26, 1945

~~SECRET~~

THIS DOCUMENT CONTAINS 1 PAGES  
COPIES 3 OF 4 COPIES

July 24, 1945

DCVT# - 55443

H

To: Colonel K. D. Nichols (2)

From: Arthur H. Compton

In re: Transmittal of Petitions addressed to the President

I have been requested to transmit the enclosed petition to the President of the United States. At the suggestion of General Groves, I am herewith handing it to you for disposition. Since the matter presented in the petition is of immediate concern, the petitioners desire the transmittal to occur as promptly as possible. It will be appreciated if you will inform me with regard to its disposition.

You will note that the signed draft of the petition is enclosed within a sealed envelope. I have personally verified that this envelope contains only signed copies of a petition, identical in text with the carbon copy attached, together with receipt forms for classified material. Mr. Szilard, in his covering letter, has requested that this envelope be opened only by those authorized to read the President's mail.

You have requested me to evaluate this petition and likewise those submitted to you by Mr. Whitaker on behalf of certain members of Clinton Laboratories.

The question of use of atomic weapons has been considered by the Scientific Panel of the Secretary of War's Interim Advisory Committee. The opinion which they expressed was that military use of such weapons should be made in the Japanese war. There was not sufficient agreement among the members of the panel to unite upon a statement as to how or under what conditions such use was to be made.

A small group of petitioners initially canvassed certain groups of scientists within the project seeking signatures requesting no use of the new weapons in this war. The response was such as to call forth several counter petitions, of which those submitted through Mr. Whitaker are typical, and to cause the formulator of the original petition to rephrase it so as to approve use of the weapons after giving suitable warning and opportunity for surrender under known conditions.

In order to obtain a fair expression of the opinion of a typical group of scientists, an opinion poll was conducted on a group of 150. The results are described in the enclosed memo to me from Dr. Daniels. You will note that the strongly favored procedure is to "give a military demonstration in Japan, to be followed by a renewed opportunity for surrender before full use of the weapons is employed." This coincides with my own preference, and is, as nearly as I can judge, the procedure that has found most favor in all informed groups where the subject has been discussed.

~~SECRET~~

H4115

4

This document contains information which, if disclosed, would be injurious to the national defense.

~~SECRET~~

Hist-C

Jan 19/64 DIN-55435

A PETITION TO THE ADMINISTRATION OF CLINTON LABORATORIES

This paper has been drawn up in view of a recent petition addressed to Pres. Truman by L. Szilard, a noted physicist working on the Metallurgical Project. This petition requested the President to forego the use of a new powerful weapon in the war on Japan because of the moral issue involved. It went on to state that morally it was wrong to use such a powerful force but if practical necessities demand its use, then the moral issue should be bypassed. It should be used if the nation's life were endangered, the petition went on to say.

Are not the men of the fighting forces a part of that nation? Are not they, who are risking their lives for the nation, entitled to the weapons which have been designed? In short, are we to go on shedding American blood when we have available a means to a speedy victory? No! If we can save even a handful of American lives, then let us use this weapon -- now!

Furthermore, we fail to see the use of a moral argument when we are considering such an immoral situation as war. Any new weapon is regarded with some fear as to its inevitable consequences, but, with further developments, new weapons become everyday implements of war. Future generations will come to regard this latest device with less and less regard.

These sentiments, we feel, represent more truly those of the majority of Americans and particularly those who have sons and daughters in the foxholes and warships in the Pacific.

In initiating this counter-petition we feel that the greatest good it can serve is to vividly point to the jeopardy to which the original Szilard petition has exposed the Security of the DSM project. Certainly, if one such petition, with the information and dangerous implications it has, can pass through (or around as it may have) plant and project administration, we feel that every individual may assume open season and compete to be sure that his own acquiescence or dissension is equally well broadcast, all costs notwithstanding.

*George W. Parker*  
*D. B. Ballentine*

H1662

H4115

~~SECRET~~

10

NDN-55432  
~~SECRET~~  
5/13/60

To the President of the United States:

We, the undersigned scientific personnel of the Clinton Laboratories, believe that the world-wide social and political consequences of the power of the weapon being developed on this Project impose a special moral obligation on the government and people of the United States in introducing the weapon in warfare.

It is further believed that the power of this weapon should be made known by demonstration to the peoples of the world, irrespective of the course of the present conflict, for in this way the body of world opinion may be made the determining factor in the absolute preservation of peace.

Therefore we recommend that before this weapon be used without restriction in the present conflict, its powers should be adequately described and demonstrated, and the Japanese nation should be given the opportunity to consider the consequences of further refusal to surrender. We feel that this course of action will heighten the effectiveness of the weapon in this war and will be of tremendous effect in the prevention of future wars.

Signed:

Charles D. Coryell  
Jack Siegel  
Norman Elliott  
Nathan E. Ballou  
Waldo E. Cohn  
S. G. English  
Harrison S. Brown  
Edward Shapiro  
L. E. Glendenin  
Melvin G. Bowman  
Bernard J. Finkle  
R. K. Maney  
James G. Barrick  
R. F. Leininger  
John R. Dam  
Elton H. Turk  
Robert A. Penneman  
A. W. Adamson  
B. H. Ketelle  
J. O. Blomeke  
Robert L. Butenhoff  
Jim Kroner  
John B. Otto

~~Major~~ Cecil M. Nelson  
Ralph Livingston  
Joseph Khym  
Clinton R. Vanneman  
John P. McBride  
Donald S. Schover  
Dwight C. Lincoln  
Edward G. Gohlmann  
Jack K. East  
John P. Hunt  
Walton A. Rodger  
D. E. Koshland, Jr.  
Joseph Halperin  
Robert B. Scott  
Louis B. Wenner  
Russell R. Williams, Jr.  
Glenn H. Jenke  
William G. Leslie  
Charles W. Stanby  
L. H. Gevantman  
J. E. Sattzaher  
Stanley Rasmussen

Paul C. Tompkins  
R. W. Stoughton  
Leionel S. Golding  
Theodore B. Novey  
Earl R. Purchase  
Edward L. Brady  
Howard Gest  
A. J. Miller  
William J. Knox  
F. Boldridge  
W. H. Burgess  
M. Creek  
Alan S. Jarrett  
Kurt D. Kraus  
Elwin H. Covey  
Raymond R. Edwards  
L. T. McClinton  
A. R. Brosi  
John A. Chormley  
C. J. Barkowski  
Gordon Johnson  
D. N. Hume

~~SECRET~~

~~SECRET~~

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H4662  
~~H4115~~

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(Hist-C)

This document contains information affecting the national defense of the United States within the meaning of the Espionage Act, U. S. C. 50; 31 and 32. Its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law.

~~SECRET~~

Metallurgical Laboratory

P.O. BOX 5207  
CHICAGO 80, ILLINOIS

MUC-FD-L 15

This document consists of 1 pages and 0 figures  
No. 1 of 5 copies, Series A

BUTTERFIELD 4300

July 13, 1945

DCV#-55042

To: A. H. Compton  
From: Farrington Daniels  
Re: Poll on the use of weapon

Following the suggestions of your letter, AC-2757. I took copies of excerpts of your letter individually to the eight different section chiefs and asked them to show the questions individually to some of the members of their group. These extracts which went to the section chiefs were marked "Secret", delivered in person, and all copies returned and destroyed.

Each person polled read the questions and placed in an envelope the number which most closely represented his choice. All the balloting was done on Thursday afternoon, July 12. The ballots were returned to me, and the counts are as follows:

<u>Suggestion No.:</u>	<u>No. of Votes:</u>	<u>% of Total Vote:</u>
(1)	23	15
(2)	69	46
(3)	39	26
(4)	16	11
(5)	3	2
	<u>150</u>	<u>100</u>

The Argonne Laboratory and the Patent Division were not polled. Approximately 2/3 of the remaining academic personnel voted.

The suggested procedures were as follows:

- (1) Use the weapons in the manner that is from the military point of view most effective in bringing about prompt Japanese surrender at minimum human cost to our armed forces.
- (2) Give a military demonstration in Japan, to be followed by a renewed opportunity for surrender before full use of the weapons is employed.
- (3) Give an experimental demonstration in this country, with representatives of Japan present; followed by a new opportunity for surrender before full use of the weapons is employed.
- (4) Withhold military use of the weapons, but make public experimental demonstration of their effectiveness.
- (5) Maintain as secret as possible all developments of our new weapons, and refrain from using them in this war.

H4662

H4115

~~SECRET~~

Farrington Daniels

9

Hutchins Hist D  
(bbs 2)

THE UNIVERSITY OF CHICAGO

CHICAGO 37 ILLINOIS

THE CENTRAL ADMINISTRATION

ROBERT M. HUTCHINS *Chancellor*  
ERNEST CADMAN COLWELL *President*  
R. G. GUSTAVSON *Vice-President*  
*and Dean of Faculties*  
W. C. MUNNECKE *Vice-President*  
NEIL H. JACOBY *Vice-President*  
WILLIAM BENTON *The Assistant to the Chancellor*

July 26, 1945

Dear Mr. Szilard:

The petition looks good to me. I hope it may be effective.

As I understand it, the Psychological Corporation--or maybe it is Fortune Magazine--is developing a poll of experts which is supposed to represent informed public opinion. The University of Denver also has a foundation working in this general field, which releases its results to the public.

I think Mr. Marschak is right about the difficulties. Nevertheless, through Professor Samuel Stouffer, who will return to the University at the end of the war, we are beginning to lay plans for some kind of a development in this area. I shall keep you informed.

I regret that you have not recently had any reason to come to see me.

Sincerely yours,



Mr. Leo Szilard  
Metallurgical Laboratory  
Faculty Exchange

F-51

P. O. BOX 1663  
SANTA FE, NEW MEXICO

This document consists of 2 pages  
Number of 3 Copies, Series *AC*

*Teller*

July 2, 1945

Dr. Leo Szilard  
P. O. Box 5207  
Chicago 80, Illinois

CLASSIFICATION CANCELLED  
Date 10/30/57  
For The Atomic Energy Commission  
*C. R. Marshall/n.c. Reuther*  
Director, Division of Classification

Dear Szilard:

Since our discussion I have spent some time thinking about your objections to an immediate military use of the weapon we may produce. I decided to do nothing. I should like to tell you my reasons.

First of all let me say that I have no hope of clearing my conscience. The things we are working on are so terrible that no amount of protesting or fiddling with politics will save our souls.

This much is true: I have not worked on the project for a very selfish reason and I have gotten much more trouble than pleasure out of it. I worked because the problems interested me and I should have felt it a great restraint not to go ahead. I can not claim that I simply worked to do my duty. A sense of duty could keep me out of such work. It could not get me into the present kind of activity against my inclinations. If you should succeed in convincing me that your moral objections are valid, I should quit working. I hardly think that I should start protesting.

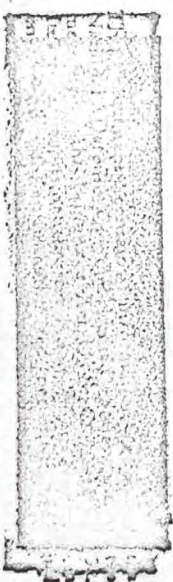
But I am not really convinced of your objections. I do not feel that there is any chance to outlaw any one weapon. If we have a slim chance of survival, it lies in the possibility to get rid of wars. The more decisive a weapon is the more surely it will be used in any real conflict and no agreements will help.

Our only hope is in getting the facts of our results before the people. This might help to convince everybody that the next war would be fatal. For this purpose actual combat-use might even be the best thing.

And this brings me to the main point. The accident that we worked out this dreadful thing should not give us the responsibility of having a voice in how it is to be used. This responsibility must in the end be shifted to the people as a whole and that can be done only by making the facts known. This is the only cause for which I feel entitled in doing something: the necessity of lifting the secrecy at least as far as the broad issues of our work are concerned. My understanding is that this will be done as soon as the military situation permits it.

All this may seem to you quite wrong. I should be glad if you showed this letter to Eugene and to Franck who seem to agree with you rather than with me. I should like to have the advice of all of you whether you think it is a crime to continue to work. But I feel that

*See above*



1038



I should do the wrong thing if I tried to say how to tie the little  
toe of the ghost to the bottle from which we just helped it to escape.

With best regards.

Yours,

*E. Teller*

E. Teller

NOT FOR RELEASE

F-12

THE STORY OF A PETITION

L. Szilard - July 28, 1946.

Throughout most of the war many of us who worked on the atomic bomb, believed, as we now know mistakenly, that we are in a neck-to-neck race with the Germans and at times we even believed that the Germans were ahead of us. Had the Germans obtained substantial quantities of atomic bombs before we had completed our own work and before we had been in the position to retaliate, we would have been in danger of losing the war. With this possibility constantly before our eyes we were impatient with the many delays and setbacks which we found hindering the progress of our work. By the Spring of 1945 our outlook began to change. At that time it became obvious that Germany would lose the war within a short time. Some branches of the project, for instance the branch located at the University of Chicago, had essentially completed their task and could begin thinking beyond their daily problems. Between March 1945 and the end of May, I drafted a number of memoranda dealing with the question of whether or not atomic bombs, if perfected, should be used in this war, ~~and dealing with this problem~~ from the point of view of the long range problem that will face us *after the war.* ~~rather than the point of view of the immediate effect of the use of the bomb.~~ In June of 1945, after President Truman appointed <sup>the</sup> ~~a~~ so-called Interim Committee, under the chairmanship of Stimson, the Metallurgical Laboratory was officially asked to take a stand on

this question and the Director of the Laboratory, A. H. Compton, appointed a committee composed of Franck, Seaborg, Stearns, Hughes and Szilard. The report of this committee was rushed to Stimson and advised against the outright military use of ~~the~~ atomic bombs in the war against Japan. It took a stand in favor of demonstrating the power of the atomic bomb in a manner which will avoid mass slaughter but yet convince the Japanese of the destructive power of the bomb. By the beginning of July it became evident, at least to me, personally, that the use of the bomb will be examined by the Interim Committee purely on the basis of expediency, and that great weight will be given by them to the immediate effect, rather than to the long range effects. It appeared in the circumstances that those of us who were opposed to the use of the bomb on moral grounds ought to go on record and that we should address ourselves to the President directly, rather than to the Secretary of War. A petition to the President was thus drafted in the first days of July and sent to every group leader in the Metallurgical Laboratory, with the request to circulate it within his group. This petition was based purely on moral considerations. "Many of us are inclined to say", so the covering letter stated, "that individual Germans share the guilt for the acts which Germany committed during this war because they did not raise their voices in protest against those acts. Their defense that their protest would have been of no avail hardly seems acceptable even though these Germans could not have protested without running risks to life and liberty. We are in a position to raise our voices without incurring any such risks even though we might incur the dis-

pleasure of some of those who are at present in charge of controlling the work on 'atomic power'."

We did not have to wait for ~~very~~ long for signs of this displeasure. Naturally, the Army did not like the idea of a petition to the President on such a subject. However the Constitution states clearly 'the right to petition shall not be abridged' and the Constitution won out.

"Atomic bombs are primarily a means", so the petition stated, "for the ruthless annihilation of cities. Once they were introduced as an instrument of war it would be difficult to resist for long the temptation of putting them to such use".

"The last few years show a marked tendency toward increasing ruthlessness. At present our Air Forces, striking at the Japanese cities, are using the same methods of warfare which were condemned by American public opinion only a few years ago when applied by the Germans to the cities of England. Our use of atomic bombs in this war would carry the world a long way further on this path of ruthlessness."

And finally, the last paragraph read, "In view of the foregoing, we, the undersigned, respectfully petition that you exercise your power as Commander-in-Chief to rule that the United States shall not, in the present phase of the war, resort to the use of atomic bombs".

Fifty-nine members of the Staff of the Metallurgical Laboratory at the University of Chicago, signed this petition, a substantial minority of the Staff.

Since a number of the staff members who did not sign the petition indicated that they would be willing to sign it if some of the paragraphs of the petition were re-phrased, a new petition was drafted and began to circulate in the Laboratory on the 17th of July, one day after the test at Alamogordo, New Mexico. This petition was sent to the President of the United States through the official channels and was signed by sixty-seven members of the Staff. Its text is given in the following:

The Story of a Petition

(Insert 1)

In the world of science and on its fringes, we find two different species of men working together at times, and at times working at cross-purposes. One of these species is composed of the men who are able to cope with thought, and the other is composed of men who are able to cope with things, such as machines, and men. The scientist who becomes an administrator belongs to this second species. During the war thought became concealed under the blanket of secrecy, and the scientist administrators who crawled around on the top of this blanket were the only ones exposed to the public eye. Some of these were men of great ability. Men like Conant and Bush rendered the nation an immense service. Were it not for this species which forms the evolutionary link between the military brass and the human beings, our scientific war effort might have been seriously crippled. Although we were quite aware of this fact even during the war, we were unable to accept them as our spokesmen.

July 17, 1945

## A PETITION TO THE PRESIDENT OF THE UNITED STATES

Discoveries of which the people of the United States are not aware may affect the welfare of this nation in the near future. The liberation of atomic power which has been achieved places atomic bombs in the hands of the Army. It places in your hands, as Commander-in-Chief, the fateful decision whether or not to sanction the use of such bombs in the present phase of the war against Japan.

We, the undersigned scientists, have been working in the field of atomic power. Until recently we have had to fear that the United States might be attacked by atomic bombs during this war and that her only defense might lie in a counterattack by the same means. Today, with the defeat of Germany, this danger is averted and we feel impelled to say what follows:

The war has to be brought speedily to a successful conclusion and attacks by atomic bombs may very well be an effective method of warfare. We feel, however, that such attacks on Japan could not be justified, at least not unless the terms which will be imposed after the war on Japan were made public in detail and Japan were given an opportunity to surrender.

If such public announcement gave assurance to the Japanese that they could look forward to a life devoted to peaceful pursuits in their homeland and if Japan still refused to surrender our nation might then, in certain circumstances, find itself forced to resort to the use of atomic bombs. Such a step, however, ought not to be made at any time without seriously considering the moral responsibilities which are involved.

The development of atomic power will provide the nations with new means of destruction. The atomic bombs at our disposal represent only the first step in this direction and there is almost no limit to the destructive power which will become available in the course of their future development. Thus a nation which sets the precedent of using these newly liberated forces of nature for purposes of destruction may have to bear the responsibility of opening the door to an era of devastation on an unimaginable scale.

If after this war a situation is allowed to develop in the world which permits rival powers to be in uncontrolled possession of these new means of destruction, the cities of the United States as well as the cities of other nations will be in continuous danger of sudden annihilation. All the resources of the United States, moral and material, may have to be mobilized to prevent the advent of such a world situation. Its prevention is at present the solemn responsibility of the United States--singled out by virtue of her lead in the field of atomic power.

The added material strength which this lead gives to the United States brings with it the obligation of restraint and if we were to violate this obligation our moral position would be weakened in the eyes of the world and in our own eyes. It would then be more difficult for us to live up to our responsibility of bringing the unloosened forces of destruction under control.

In view of the foregoing, we, the undersigned, respectfully petition: first, that you exercise your power as Commander-in-Chief, to rule that the United States shall not resort to the use of atomic bombs in this war unless the terms which will be imposed upon Japan have been made public in detail and Japan knowing these terms has refused to surrender; second, that in such an event the question whether or not to use atomic bombs be decided by you in the light of the considerations presented in this petition as well as all the other moral responsibilities which are involved.

"The Atomic Age"  
pp 28-29

27

2. D.

4

*Before Hiroshima*

means of destruction, the cities of other nations will be in control of the resources of the United States mobilized to prevent the adverse at present the solemn responsibility of her lead in the field of

The added material strength brings with it the obligation of maintaining our moral position and in our own eyes. It would be our responsibility of bringing control.

In view of the foregoing, first, that you exercise your power the United States shall not resort to the terms which will be imposed in detail and Japan, knowing that that in such an event the question decided by you in the light of as well as all the other moral re

A Petition to the President of the United States

*Leo Szilard*

JULY 17, 1945

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Section 9

From Boylin  
folder  
red 9.

2nd set  
May, 1969 ✓

Additional Material for pages 123-125

ATTEMPTS TO GET A MEMORANDUM TO THE PRESIDENT, SPRING 1945

Letter, Einstein to Roosevelt March 25, 1945

Memorandum, "Enclosure to Mr. Albert Einstein's  
Letter of March 25, 1945, to the President of  
the United States," by L. Szilard.

Letter, Malvina C. Thompson, Secretary to Mrs.  
Roosevelt, to Mr. Irving S. Lowen April 3, 1945

Letter, Mrs. Roosevelt to L.S. April 18, 1945

Letter, L.S. to President Truman May 25, 1945

\* Memorandum, "Atomic Bombs and the Postwar Position  
of the United States in the World," by Szilard.  
This is a revised version of the memorandum  
of March 25, 1945. Spring, 1945

White House stationery, with phone number in Spartanburg, S.C.

Draft of letter, L.S. to Byrnes May 26, 1945

(? where is it?)

\* Variant version, dated Apr. 15, 1945, is in Hist. Box.  
(This note not included on 'B' set.) 4/15/45 version is essentially  
identical to "spring" version. HH

112 Mercer Street  
Princeton, New Jersey  
March 25, 1945

The Honorable Franklin Delano Roosevelt  
The President of the United States  
The White House  
Washington, D. C.

Sir:

I am writing you to introduce Dr. L. Szilard who proposes to submit to you certain considerations and recommendations. Unusual circumstances which I shall describe further below induce me to take this action in spite of the fact that I do not know the substance of the considerations and recommendations which Dr. Szilard proposes to submit to you.

In the summer of 1939 Dr. Szilard put before me his views concerning the potential importance of uranium for national defense. He was greatly disturbed by the potentialities involved and anxious that the United States Government be advised of them as soon as possible. Dr. Szilard, who is one of the discoverers of the neutron emission of uranium on which all present work on uranium is based, described to me a specific system which he devised and which he thought would make it possible to set up a chain reaction in un-separated uranium in the immediate future. Having known him for over twenty years both from his scientific work and personally, I have much confidence in his judgment and it was on the basis of his judgment as well as my own that I took the liberty to approach you in connection with this subject. You responded to my letter dated August 2, 1939 by the appointment of a committee under the chairmanship of Dr. Briggs and thus started the Government's activity in this field.

The terms of secrecy under which Dr. Szilard is working at present do not permit him to give me information about his work; however, I understand that he now is greatly concerned about the lack of adequate contact between scientists who are doing this work and those members of your Cabinet who are responsible for formulating policy. In the circumstances I consider it my duty to give Dr. Szilard this introduction and I wish to express the hope that you will be able to give his presentation of the case your personal attention.

Very truly yours,

*A. Einstein*

## APPENDIX II

ENCLOSURE TO MR. ALBERT EINSTEIN'S LETTER OF  
MARCH 25, 1945, TO THE PRESIDENT OF THE UNITED STATES,  
BY L. SZILARD

The work on uranium has now reached a stage which will make it possible for the Army to detonate atomic bombs in the immediate future. The "demonstration" of such bombs may be expected rather soon and naturally the War Department is considering the use of such bombs in the war against Japan.

From a purely military point of view this may be a favorable development. However, many of those scientists who are in a position to make allowances for the future development of this field believe that we are at present moving along a road leading to the destruction of the strong position that the United States hitherto occupied in the world. It appears probable that it will take just a few years before this will become manifest.

Perhaps the greatest immediate danger which faces us is the probability that our "demonstration" of atomic bombs will precipitate a race in the production of these devices between the United States and Russia and that if we continue to pursue the present course, our initial advantage may be lost very quickly in such a race.

If a nation were to start now to develop atomic bombs, so to speak from scratch, it could do so without reproducing many of the expensive installations which were built by the War Department during the War. *For over a year now we have known that we could develop methods by means of which atomic bombs can be produced from the main component of uranium which is more than one hundred times as abundant than the rare component from which we are manufacturing atomic bombs at present.* We must expect that a cost of about \$500 million some nations may accumulate, within six years, a quantity of atomic bombs that will correspond to ten million tons of TNT. A single bomb of this type weighing about one ton and containing less than 200 pounds of active material may be expected to destroy an area of ten square miles. Under the conditions expected to prevail six years from now, most of our major cities might be completely destroyed in one single sudden attack and their populations might perish.

In the United States, thirty million people live in cities with a population of over 250,000 and a consideration of this and other factors involved indicates that the United States will be much more vulnerable than most other countries.

Thus the Government of the United States is at present faced with the

necessity of arriving at decisions which will control the course that is to be followed from here on. These decisions ought to be based not on the *present* evidence relating to atomic bombs, but rather on the situation which can be expected to confront us in this respect a few years from now. This situation can be evaluated only by men who have first-hand knowledge of the facts involved, that is, by the small group of scientists who are actively engaged in this work. This group includes a number of eminent scientists who are willing to present their views; there is, however, no mechanism through which direct contact could be maintained between them and those men who are, by virtue of their position, responsible for formulating the policy which the United States might pursue.

The points on which decisions appear to be most urgently needed are as follows:

1. Shall we aim at trying to avoid a race in the production of atomic bombs between the United States and certain other nations?

2. Can a system of controls relating to this field be devised which is sufficiently tight to be relied on by the United States and which has some chance of being accepted under otherwise favorable conditions by Russia and Great Britain?

3. Can we materially improve our chances to obtain the cooperation of Russia in setting up such a system of controls by developing in the next two years modern methods of production which would give us an overwhelming superiority in this field at the time when Russia might be approached?

4. What framework could immediately be set up within which the scientific development of such "modern" methods could vigorously be pursued both under present and postwar conditions? Should, for instance, this framework be set up under the Secretary of Commerce or under the Secretary of the Interior, or should the scientific development be under a Government-owned corporation jointly controlled by the Secretary of Commerce, the Secretary of the Interior, and the Secretary of War?

5. Should the scientific development work be based on the assumption that a race in the production of atomic bombs is unavoidable and accordingly be aimed at maximum potential of war, say in six years from now, or should the scientific development be rather aimed at putting us into a favorable position with respect to negotiations with our Allies two or three years from now?

6. Should, in the light of the decisions concerning the above points, our "demonstration" of atomic bombs and their use against Japan be delayed until a certain further stage in the political and technical development has been reached so that the United States shall be in a more favorable position in negotiations aimed at setting up a system of controls?

Other decisions, which are needed but which are perhaps less urgent, would come within the competence of the Department of the Interior.

## The Intellectual Migration

If there were in existence a small subcommittee of the Cabinet (having as its members, the Secretary of War, either the Secretary of Commerce or the Secretary of the Interior, a representative of the State Department, and a representative of the President, acting as the secretary of the Committee), the scientists could submit to such a committee their recommendations either by appearing from time to time before the committee or through the secretary of the committee.

The latter, if so authorized, by the President, could also act as a liaison to the scientists prior to the designation of such a subcommittee. At his disposal could then be placed a memorandum which has been prepared in an attempt to analyze the consequences of the scientific and technical development which we have to anticipate. The memorandum was prepared on the basis of consultations with ten scientists from six different institutions in the United States. These and other eminent scientists who were not consulted would undoubtedly avail themselves of the opportunity of presenting their views to a man authorized by the President, assuming that such a man would have the time at his disposal which a study of this kind would require.

## APPENDIX III

SZILARD TO GROUP LEADERS OF "METALLURGICAL LABORATORY,"

JULY 4, 1945

Dear —:

Inclosed is the text of a petition which will be submitted to the President of the United States. As you will see, this petition is based on purely moral considerations.

It may very well be that the decision of the President whether or not to use atomic bombs in the war against Japan will largely be based on considerations of expediency. On the basis of expediency, many arguments could be put forward both for and against our use of atomic bombs against Japan. Such arguments could be considered only within the framework of a thorough analysis of the situation which will face the United States after this war and it was felt that no useful purpose would be served by considering arguments of expediency in a short petition.

However small the chance might be that our petition may influence the course of events, I personally feel that it would be a matter of importance if a large number of scientists who have worked in this field went clearly and unmistakably on record as to their opposition on moral grounds to the use of these bombs in the present phase of the war.

Many of us are inclined to say that individual Germans share the guilt for the acts which Germany committed during this war because they did not raise their voices in protest against those acts. Their defense that their protest would have been of no avail hardly seems acceptable even though these Germans could not have protested without running risks to life and liberty. We are in a position to raise our voices without incurring any such risks even though we might incur the displeasure of some of those who are at present in charge of controlling the work on "atomic power."

The fact that the people of the United States are unaware of the choice which faces us increases our responsibility in this matter since those who have worked on "atomic power" represent a sample of the population and they alone are in a position to form an opinion and declare their stand.

Anyone who might wish to go on record by signing the petition ought to have an opportunity to do so and, therefore, it would be appreciated if you could give every member of your group an opportunity for signing.

ENCLOSURE TO MR. ALBERT EINSTEIN'S LETTER OF  
MARCH 25, 1945 TO THE PRESIDENT OF THE UNITED STATES

by

L. Sillard

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If a nation were to start now to develop atomic bombs, so to speak from scratch, it could do so without reproducing many of the expensive installations which were built by the War Department during the War.



For over a year now we have known that we could develop methods by means of which atomic bombs can be produced from the main component of uranium which is more than one hundred times as abundant than the rare component from which we are manufacturing atomic bombs at present. We must expect that a cost of about \$500 million some nations may accumulate, within six years, a quantity of atomic bombs that will correspond to ten million tons of TNT. A single bomb of this type weighing about one ton and containing less than 200 pounds of active material may be expected to destroy an area of ten square miles. Under the conditions expected to prevail six years from now, most of our major cities might be completely destroyed in one single sudden attack and their populations might perish.

In the United States, thirty million people live in cities with a population of over 250,000 and a consideration of this and other factors involved indicates that the United States will be much more vulnerable than most other countries.

Thus the Government of the United States is at present faced with the necessity of arriving at decisions which will control the course that is to be followed from here on. These decisions ought to be based not on the present evidence relating to atomic bombs, but rather on the situation which can be expected to confront us in this respect a few years from now. This situation can be evaluated only by men who have first-hand knowledge of the facts involved, that is, by the small group of scientists who are actively engaged in this work. This group includes a number of eminent

scientists who are willing to present their views; there is, however, no mechanism through which direct contact could be maintained between them and those men who are, by virtue of their position, responsible for formulating the policy which the United States might pursue.

The points on which decisions appear to be most urgently needed are as follows:

1. Shall we aim at trying to avoid a race in the production of atomic bombs between the United States and certain other nations?

2. Can a system of controls relating to this field be devised which is sufficiently tight to be relied on by the United States and which has some chance of being accepted under otherwise favorable conditions by Russia and Great Britain?

3. Can we materially improve our chances to obtain the cooperation of Russia in setting up such a system of controls by developing in the next two years modern methods of production which would give us an overwhelming superiority in this field at the time when Russia might be approached?

4. What framework could immediately be set up within which the scientific development of such "modern" methods could vigorously be pursued both under present and postwar conditions? Should, for instance, this framework be set up under the Secretary of Commerce or under the Secretary of the Interior, or should the scientific development be under a Government-owned corporation jointly controlled by the Secretary of Commerce, the Secretary of the Interior, and the Secretary of War?

5. Should the scientific development work be based on the assumption that a race in the production of atomic bombs is unavoidable and accordingly be aimed at maximum potential of war, say in six years from now, or should the scientific development be rather aimed at putting us into a favorable position with respect to negotiations with our Allies two or three years from now?

6. Should, in the light of the decisions concerning the above points, our "demonstration" of atomic bombs and their use against Japan be delayed until a certain further stage in the political and technical development has been reached so that the United States shall be in a more favorable position in negotiations aimed at setting up a system of controls?

Other decisions, which are needed but which are perhaps less urgent, would come within the competence of the Department of the Interior.

If there were in existence a small subcommittee of the Cabinet (having as its members, the Secretary of War, either the Secretary of Commerce or the Secretary of the Interior, a representative of the State Department, and a representative of the President, acting as the secretary of the Committee), the scientists could submit to such a committee their recommendations either by appearing from time to time before the committee or through the secretary of the committee.

The latter, if so authorized, by the President, could also act as a liaison to the scientists prior to the designation of such a subcommittee. At his disposal could then be placed a memorandum which has been prepared in an attempt to analyze the consequences of the scientific and

technical development which we have to anticipate. The memorandum was prepared on the basis of consultations with ten scientists from six different institutions in the United States. These and other eminent scientists who were not consulted would undoubtedly avail themselves of the opportunity of presenting their views to a man authorized by the President, assuming that such a man would have the time at his disposal which a study of this kind would require.

F-12

THE WHITE HOUSE  
WASHINGTON

April 3, 1945

My dear Mr. Lowen:

Mrs. Roosevelt will be glad to see Dr. Szilard but cannot do so until 4:30 p.m. on Tuesday, May 8, at her apartment in New York City, 29 Washington Square West. Will you ask Dr. Szilard to confirm this so that we will know whether it will be convenient for him?

Very sincerely yours,

*Marion S. Thompson*  
Secretary to  
Mrs. Roosevelt

Mr. Irving S. Lowen  
1 Jane Street  
New York 14, New York

THE WHITE HOUSE  
WASHINGTON

April 18, 1945

My dear Dr. Szilard:

I am writing to tell you that  
in view of the present situation Mrs. Roosevelt  
has had to cancel your appointment for May 8.

Very sincerely yours,

*Malvina C. Thompson*  
Secretary to  
Mrs. Roosevelt

Dr. Leo Szilard  
The Quadrangle Club  
University of Chicago  
Chicago, Illinois

THE QUADRANGLE CLUB  
CHICAGO

1155 East 57th St.

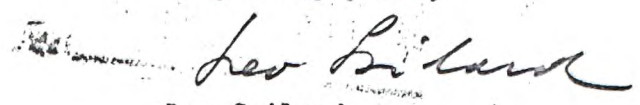
May 25, 1945

The Honorable Harry S. Truman  
The President of the United States  
The White House  
Washington, D. C.

Sir:

I have the honor to transmit to you a letter of introduction written by Professor Albert Einstein to the late President of the United States to whom--on account of his early death--I was unable to present it. The document to which Mr. Einstein's letter refers is attached as a second inclosure and is respectfully submitted for your consideration.

Very truly yours,



Leo Szilard

THE QUADRANGLE CLUB

CHICAGO

1155 East 57th St.

May 25, 1945

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The White House  
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Very truly yours,

*Leo Szilard*

Leo Szilard



# ATOMIC BOMBS AND THE POSTWAR POSITION OF THE UNITED STATES IN THE WORLD - 1945

4.0

*The following are excerpts from a memorandum prepared by Dr. Leo Szilard in March, 1945. This memorandum was to be placed before President Roosevelt, but owing to his sudden death, it did not reach him. Referred by the White House to James F. Byrnes it was placed before him by the author in a personal interview on May 28, 1945 (six weeks before the first bomb was tested in New Mexico). These excerpts contain none of the secret information which was embodied in the original document. It is believed that this was the first document which discussed the implications of the atomic bomb with respect to our future relations with Russia and the question of international control of atomic energy. It also contained the original suggestion of denaturing fissionable materials for the purpose of making more difficult their use for the manufacture of bombs.*

The development of the atomic bomb is mostly considered from the point of view of its possible use in the present war and such bombs are likely to be available in time to be used before the war ends. However, their role in the . . . years which will follow can be expected to be far more important and it seems that the position of the United States in the world may be adversely affected by their existence. The following might very well turn out to be the future course of events:

Before the end of the war we shall use atomic bombs against Japan. These bombs will be much less powerful than we know could be made and which in all likelihood will be made within . . . years yet the first bomb that is detonated over Japan will be spectacular enough to start a race in atomic armaments between us and other nations.

In a few months Russia's war with Germany may be over. The work on uranium will then undoubtedly be given a high priority there but it will perhaps still not be carried out on a large industrial scale until we detonate our first atomic bomb and thus demonstrate the success of this development. For a few years after that we shall almost certainly be ahead of Russia. But even if we assume that we could keep ahead of her

in this development all the time, this may neither offer us protection from attack nor necessarily give us substantial advantage in case of war . . . years from now.

. . . years from now Russia may have accumulated enough of some of the active elements which may be used for constructing atomic bombs to have an equivalent to . . .

Clearly, if such bombs are available, it is not necessary to bomb our cities from the air in order to destroy them. All that is necessary is to place a comparatively small number of such bombs in each of our major cities and to detonate them at some later time.

The United States has a very long coast-line which will make it possible to smuggle in such bombs in peacetime and to carry them by truck into our cities. The long coast-line, the structure of our society, and our very heterogeneous population may make an effective control of such "traffic" virtually impossible. One can easily visualize how a "friendly" power in time of peace may have such bombs placed in all of our major cities under the guidance of agents. This might be done free from aggressive intent. Such a power might know or suspect that we have accumulated a quantity of atomic bombs and fear our defenses are so strong that after the outbreak of hostilities it would be

difficult to reach our cities by air. In such circumstances it may be exceedingly difficult for its "government" to refuse to take "precautions" which its "army" considers necessary. . . .

So far it has not been possible to devise any methods which would enable us to detect hidden atomic bombs buried in the ground or otherwise efficiently protected against detection.

If there should be great progress in the development of rockets after this war, it is conceivable that it will become possible to drop atomic bombs on the cities of the United States from very great distances by means of rockets.

The weakness of the position of the United States will largely be due to the very high concentration of its manufacturing capacity and of its population in cities. Thirty million people live here in cities of over 250,000. This concentration is so pronounced that the destruction of the cities may easily mean the end of our ability to resist. Keeping constantly ahead of the Russians in our production of these heavy elements will not restore us to a strong position. No quantity of these "active" materials which we may accumulate will protect us from attack and so far as retaliation is concerned, we might not be able to do more than to destroy the large cities of Russia which are few in number and the economic importance of which is in no way comparable to the economic importance of our own cities. Thus it would appear that we would not gain an overwhelmingly strong position in a war with Russia merely by accumulating an enormous quantity of these elements or by increasing, as we might, the efficiency of our bombs from . . . to a much higher value.

The strong position of the United States in the world in the past thirty years was essentially due to the fact that the United States could out-produce every other country in heavy armaments. It takes a very large number of tanks, airplanes and guns to bring about a decision in a war and as long as tanks, airplanes and

guns are the major instruments of war the large production capacity of the United States gives it an advantage which may be considered decisive.

The existence of atomic bombs means the end of the strong position of the United States in this respect. From now on the destructive power which can be accumulated by other countries as well as the United States can easily reach the level at which all the cities of the "enemy" can be destroyed in one single sudden attack. The expenditure in money and material which is necessary to reach this level is so small that any of the major powers can easily afford it provided . . . For us to accumulate active materials in quantities beyond that necessary to destroy the cities of the "enemy" would probably give us some advantage in the war, but it is difficult to say whether the importance of such "excess" amounts of material would be really substantial. Out-producing the "enemy" might therefore not necessarily increase our strength very much.

The greatest danger arising out of a competition between the United States and Russia, which would lead to a rapid accumulation of vast quantities of atomic bombs in both countries, consists in the possibility of the outbreak of a preventive war. Such a war might be the outcome of the fear that the other country might strike first and no amount of good will on the part of both nations might be sufficient to prevent the outbreak of a war if such an explosive situation were allowed to develop.

One of the questions that has to be considered is whether it might be possible to set up some system of controls of the production of these active materials. Such controls would ultimately have to extend to every territory on the earth. Whether it is politically and technically feasible to set up effective controls and what we could do to improve our chances in this respect are questions that urgently require study and decisions. Some further remarks on these questions are made below, but other considerations might be put forward as soon as the question receives the attention of the Government.

A system of controls could be considered successful only if we could count on a period of grace in case the controls were denounced or obstructed by one of the major powers. This means that the system would have to be of such a nature that at least . . . would lapse between the time the

nations began to convert their installations for the purpose of manufacturing atomic bombs and the time such bombs became available in quantity. . . .

### SYSTEMS OF CONTROL OUGHT TO BE CONSIDERED

From a formal point of view all countries may be considered as potential enemies, but it is perhaps not too optimistic to assume that we may disregard the possibility of a war with Great Britain in the next fifteen years. It appears, however, rather unlikely that jointly with Great Britain we could police the world and thus prevent by force the manufacture of all of the "active materials" anywhere in the world, including Russia.

It might perhaps be possible to set up jointly with Great Britain and Russia some sort of joint control of the manufacture of the active materials everywhere in the world if we could get Russia to agree to such a control which of necessity would have to extend to her territory. The purpose of such a control would be to prevent the active elements from becoming available in a form in which they could be used for the manufacture of atomic bombs. This would not necessarily mean that the development of atomic power has to be suppressed but only that the elements involved must not be prepared in certain forms and degree of purity.

This point raises the following question: What forms of atomic power can we permit to be organized if we want to make sure that the available materials and facilities cannot easily be converted for the manufacture of atomic bombs? Some thought has already been given to this question with the following result.

There are two types of active materials. Materials of the first type can be diluted by the abundant isotope of uranium in such a way as to rule out the possibility of using them for atomic bombs while leaving unimpaired the usefulness of the materials for industrial purposes. A chemical separation from the diluting material would be impossible and a conversion into materials which can be used for atomic bombs would take . . . .

Material of the second type which can be used for atomic bombs can be "denatured" by . . . . Whether more elaborate methods can be worked out

which will permit the detonation of the denatured material is a question which would have to be carefully scrutinized. These lines merely serve to indicate that there might perhaps be a satisfactory solution to the problem of reconciling the requirements of safety of the United States with the desire not to hamper the development of atomic power for industrial purposes.

Unfortunately it is by no means sure that a satisfactory solution of this problem is in fact possible. It would be much easier, safer, and would require a much less tight control to arrest the development of atomic power by scrapping and outlawing the large and easily visible installations which characterize the first stage of this development.

### CONTROL OF RAW MATERIALS COULD BE CONSIDERED

If Russia, the United States and other countries were willing to forego the use of atomic power for peacetime purposes, one could have a system of control that would be fairly simple since it would be almost sufficient to control the movements of raw materials. Ores of uranium would have to be mined under control and transported to some "neutral" territory. Whether or not it would be permitted to have in a neutral territory installations belonging to . . . and atomic power plants is a question of minor importance. It appears likely that if the major powers were willing to forego the use of atomic power, a system of controls could be set up without encountering too great difficulties.

### AN ALTERNATIVE SYSTEM OF CONTROLS WOULD HAVE TO BE MUCH TIGHTER

On the other hand, if the United States, Russia, and other countries should have atomic power installations within their own territory, a very tight system of control would be needed in order to make sure that the nations would not have to face a sudden attack by atomic bombs. For a control of this sort to be effective, it would be necessary that our agents and the agents of Great Britain move

freely around in Russia, be permitted to keep contacts with Russian civilians, secretly employ Russian civilians for the purpose of obtaining information, and have entry into every factory or shop throughout the vast territory of Russia.

That there may be dangerous loopholes in control systems which might be set up is illustrated by events that took place in Germany after the first World War. At that time, there were many Germans who were willing to give information to the Inter-Allied Commission about violations of the control regulations, but those who actually did so were publicly tried under the German Espionage Law and were given heavy sentences. The Treaty of Versailles did not stipulate that the German Espionage Law must be revoked.

Clearly, it would be desirable to create a situation which would permit us to appeal in various ways to physicists and engineers everywhere for information that would uncover violations of the controls. This would give us additional assurance that such violations would be detected but it presupposes that we succeed in creating conditions in which we would guarantee the personal safety of those who volunteer such information and the safety of their families.

Since Russia cannot be expected to agree to such a control unless she obtains the same rights of control in the United States and Great Britain the question whether Congress and the people of the United States are willing to agree to such a control might become of paramount importance.

### HOW COULD RUSSIA BEST BE PERSUADED?

As to our chances of persuading the Russians to accept mutual control, much may depend on the proper timing of our approach to Russia. It would appear that such an approach would have to be made immediately after we demonstrated the potency of atomic bombs....

Events may be expected to move so fast that if it is intended to reach an agreement with Russia and other countries such an agreement would have to be complete before the next presidential elections....

### IF THE CONTROL IS INTERFERED WITH

While it may be a great step forward to establish a tight control on the atomic power development by a reciprocal agreement with Great Britain and Russia and extend it to all territories of the world, yet we cannot disregard the possibility that one of the major powers, for instance Russia, after a few years—during which the controls may have operated quite successfully—may begin to place difficulties in the way of an effective control of activities conducted on its own territory. It would be quite essential that the people of this country and the world be brought to understand from the start that any difficulties which any nation may place in the way of the established controls would have to be considered as tantamount to a "declaration of war".

Such a "declaration of war" would have the effect that the United States and other countries involved would at once begin to manufacture atomic bombs. If up to that time the control had been effective, it would take... to convert the materials and installations involved in the utilization of atomic power to the manufacture of bombs. In such an "armament race" in which all countries would have to start, so to speak, from scratch, the position of the United States might be quite favorable, provided the development of atomic power had been kept up at a high level.

Clearly if any major power deliberately wants to start a war, there will be a war and all that we can hope to achieve by the reciprocal control which we have discussed is that a war may not break out as a result of an armament race.

Still, it would seem that if the situation were generally understood there might be some hope that having succeeded in setting up a system of reciprocal control and having kept it in operation for a few years, neither the United States nor Great Britain nor Russia would attempt to interfere with this system of control in such a manner that its acts would be considered by the other partners as a menace. We would then perhaps have a chance of living through this century without having our cities destroyed.

An attempt to manufacture atomic bombs undertaken by any of the smaller countries would be of minor importance since it could be met by

immediate armed intervention using ordinary methods of warfare such as tanks and airplanes.

### IN THE ABSENCE OF A SYSTEM OF CONTROLS

In discussing our postwar situation the greatest attention was given in this memorandum to the role that Russia might play. This was not done because it was assumed that Russia may have aggressive intentions but rather because it was assumed that if an agreement can be reached with Russia, it will be possible to extend the system of controls to every country in the world....

### Dr. Szilard's Comment

*(Continued from Page 350)*

made a comprehensive offer for settlement of the post-war issues the Russian government would respond favorably. I cannot possibly have any basis for knowing how the Russian government would respond to any such approach. On the other hand, I can say how I believe the American people would respond to such a new approach on the part of the Russian government.

Moreover, while I would not wish to say that the conduct of our own foreign policy could in no way be improved upon under present circumstances, I do not believe that the problem which faces the world today can be solved at the level of foreign policy in the narrow sense of the term by the Administration; nor do I believe that it is within the power of the Administration to offer to the world a satisfactory solution of this problem without the full support of the American people for a bold and constructive solution. Since I have developed these thoughts in a previous article—"Calling for a Crusade" which appeared in the April-May issue of the BULLETIN—I need not again go into this point here. But I might perhaps add that today it no longer seems likely that popular support or popular pressure for a bold and constructive solution will be forthcoming unless the people would have reason to believe that they could expect the Russian government to be cooperative.

Leo Szilard

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ATOMIC BOMBS AND THE POSTWAR POSITION OF

THE UNITED STATES IN THE WORLD

Spring 1945

The development of the atomic bomb is mostly considered from the point of view of its possible use in the present war and such bombs are likely to be available in time to be used before the war ends. However, their role in the ten years which will follow can be expected to be far more important and it seems that the position of the United States in the world may be adversely affected by their existence. The following might very well turn out to be the future course of events:

Before the end of the war we shall use atomic bombs against Japan. These bombs will be much less powerful than we now know could be made and which in all likelihood will be made within two or three years; yet the first bomb that is detonated over Japan will be spectacular enough to start a race in atomic armaments between us and other nations.

In a few months Russia's war with Germany may be over. The work on uranium will then undoubtedly be given a high priority there but it will perhaps still not be carried out on a large industrial scale until we detonate our first atomic bomb and thus demonstrate the success of this development. For a few years after that we shall almost certainly be ahead of Russia. But even if we assume that we could keep ahead of her in this development all the time, this may neither offer us protection from attack nor necessarily give us substantial advantage in case of war six years from now.

Six years from now Russia may have accumulated enough of some of the active elements which may be used for constructing atomic bombs to make

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atomic bombs which are equivalent to 10 million tons of TNT. Two tons of such active elements, if detonated with an efficiency of 30%, or ten tons of such elements, if detonated with an efficiency of 6%, would correspond to 10 million tons of TNT and this quantity would be sufficient to destroy all of our major cities in a single sudden attack.

Quoting the total amount of TNT to which an average atomic bomb corresponds does not give an adequate picture of the scope of action of such a bomb. A small bomb of this type corresponding to 10,000 tons of TNT detonated for instance at a suitable height above a city can be expected to destroy an area within a radius of one kilometer. A number of such bombs properly distributed over a city will make streets within a city completely impassable, may leave few survivors within the affected area, and can lead to total destruction by fire of the city.

A bomb containing about 200 lbs. of active material and weighing slightly more than a ton would, if detonated with an efficiency of 6%, correspond to 100,000 tons of TNT and destroy an area of about 4 square miles. The same bomb would, if detonated with 30% efficiency, destroy an area of 10 square miles. Clearly, if such bombs are available, it is not necessary to bomb our cities from the air in order to destroy them. All that is necessary is to place a comparatively small number of such bombs in each of our major cities and to detonate them at some later time.

The United States has a very long coast-line which will make it possible to smuggle in such bombs in peacetime and to carry them by truck into our cities. The long coast-line, the structure of our society, and our very heterogeneous population may make an effective control of such "traffic" virtually impossible. One can easily visualize how a "friendly"

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power in time of peace may have such bombs placed in all of our major cities under the guidance of agents. This might be done free from aggressive intent. Such a power might know or suspect that we have accumulated a quantity of atomic bombs and that our defenses are so strong that after the outbreak of hostilities it would be difficult to reach our cities by air. In such circumstances it may be exceedingly difficult for its "government" to refuse to take "precautions" which its "army" considers necessary.

Such bombs may remain hidden in cellars of private houses in our cities for any number of years or they may remain hidden below the ground buried in gardens within our cities or buried in fields on the outskirts of our cities. Originally these bombs may have been planted merely as a routine precaution, but if later a serious international tension should develop there would be a strong temptation to exert pressure on the United States by virtue of the presence of these bombs. In case of war, all of our major cities might vanish within a few hours.

So far it has not been possible to devise any methods which would enable us to detect hidden atomic bombs buried in the ground or otherwise efficiently protected against detection.

If there should be great progress in the development of rockets after this war it is conceivable that it will become possible to drop atomic bombs on the cities of the United States from very great distances by means of rockets.

The weakness of the position of the United States will largely be due to the very high concentration of its manufacturing capacity and of its population in cities. This concentration is so pronounced that the

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destruction of the cities may easily mean the end of our ability to resist. Keeping constantly ahead of the Russians in our production of these heavy elements will not restore us to a strong position. No quantity of these "active" materials which we may accumulate will protect us from attack and as far as retaliation is concerned, we might not be able to do more than to destroy the large cities of Russia which are few in number and the economic importance of which is in no way comparable to the economic importance of our own cities. Thus it would appear that we would not gain an overwhelmingly strong position in a war with Russia merely by accumulating an enormous quantity of these elements or by increasing, as we might, the efficiency of our bombs from 6% to a much higher value.

The strong position of the United States in the world in the past thirty years was essentially due to the fact that the United States could out-produce every other country in heavy armaments. It takes a very large number of tanks, airplanes and guns to bring about a decision in a war and as long as tanks, airplanes and guns are the major instruments of war the large production capacity of the United States gives it an advantage which may be considered decisive.

The existence of atomic bombs means the end of the strong position of the United States in this respect. From now on the destructive power which can be accumulated by other countries as well as the United States can easily reach the level at which all the cities of the "enemy" can be destroyed in one single sudden attack. The expenditure in money and material which is necessary to reach this level is so small that any of the major powers can easily afford it provided they adopt "modern" production methods (see below). For us to accumulate active materials in quantities beyond

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that necessary to destroy the cities of the "enemy" would probably give some advantage in the war but it is difficult to say whether the importance of such "excess" amounts of material would be really substantial. Out-producing the "enemy" might therefore not necessarily increase our strength greatly.

The greatest danger arising out of a competition between the United States and Russia, which would lead to a rapid accumulation of vast quantities of atomic bombs in both countries, consists in the possibility of the outbreak of a preventive war. Such a war might be the outcome of the fear that the other country might strike first and no amount of good will on the part of both nations might be sufficient to prevent the outbreak of a war if such an explosive situation were allowed to develop.

One of the questions that has to be considered is whether it might be possible to set up some system of controls of the production of these active materials. Such controls would ultimately have to extend to every territory on the earth. Whether it is politically and technically feasible to set up effective controls and what we could do to improve our chances to bring this about are questions that urgently require study and decisions. Some further remarks on these questions are made below, but other considerations might be put forward as soon as the question receives the attention of the government.

The system of controls could be considered successful only if we could count on a period of grace in case the controls were denounced or obstructed by one of the major powers. This means that the system would have to be of such a nature that at least one or two years would lapse



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between the time the nations began to convert their installations for the purpose of manufacturing atomic bombs and the time such bombs became available in quantity.

#### THE FIRST STAGE

Before going further it is necessary to make a few technical remarks:

The present development of the atomic bombs is based on methods which were devised in 1939 and 1940 and which must be considered as the first stage of the atomic power development. These methods are expensive in money and materials and most of them may be considered as out-dated.

This first stage may be defined by saying that it utilizes directly or indirectly only the energy locked up in the rare isotope of uranium. Naturally found uranium contains less than one per cent of this rare isotope. It is doubtful whether the industrial installations based on this first stage will yield more than one ton of active material in the next couple of years which, taken with an efficiency of 6%, would correspond to about a million tons of TNT.

The first stage of this development is at present, so to speak, "in the bag,". While in 1939 and 1940 the possibility of putting this first stage into operation was merely evidenced by the assertions of the physicists, the development has now reached the stage where the successful operation of this stage can be demonstrated, if need be, to skeptical statesmen.

#### THE SECOND STAGE

The second stage is characterized by the utilization of the abundant isotope (rather than the rare isotope) of uranium and would yield at a low cost vast quantities of the active materials. With respect to this program

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we are today in a position similar to that which we occupied with respect to the first stage in 1940.

If conditions were created in which the physicists could work unhampered, it is estimated that it would take two years to have this second stage in the pilot plant phase. Thirty tons of these active materials could be in production by means of these "modern" methods five years from now and the expenditure involved would be a small fraction of the cost which has so far been expended on the development of the now out-dated methods of the first stage.

It would appear highly desirable to set up at once an organization that is capable of taking care of the development of the second stage. But unless this development is coordinated with political action on the part of the United States Government, it will not materially contribute to the safety of the country; in certain unfavorable circumstances it may even be detrimental to the safety of the country.

#### SYSTEMS OF CONTROL OUGHT TO BE CONSIDERED

From a formal point of view all countries may be considered as potential enemies, but it is perhaps not too optimistic to assume that we may disregard the possibility of a war with Great Britain in the next fifteen years. It appears, however, rather unlikely that jointly with Great Britain we could police the world and thus prevent by force the manufacture of all of the "active materials" anywhere in the world including Russia.

It might perhaps be possible to set up jointly with Great Britain and Russia some sort of joint control of the manufacture of the active materials everywhere in the world if we could get Russia to agree to such a control

which of necessity would have to extend to her territory. The purpose of such a control would be to prevent the active elements from becoming available in a form in which they could be used for the manufacture of atomic bombs. This does not necessarily mean that the development of atomic power is suppressed but only that the elements involved must not be prepared in certain forms and degree of purity.

This point raises the following question: What forms of atomic power can we permit to be organized if we want to make sure that the available materials and facilities cannot easily be converted for the manufacture of atomic bombs? Some thought has already been given to this question with the following result:

There are two types of active materials. Materials of the first type can be diluted by the abundant isotope of uranium in such a way as to rule out the possibility of using them for atomic bombs while leaving unimpaired the usefulness of the materials for industrial purposes. A chemical separation from the diluting material would be impossible and a conversion into materials which can be used for atomic bombs would take one or two years.

Material of the second type which can be used for atomic bombs can be "denatured" by adding a substance which cannot be separated chemically from it and which will make it impossible to detonate by straightforward methods bombs which one may attempt to make from such mixtures. Whether more elaborate methods can be worked out which will permit the detonation of the denatured material is a question which would have to carefully scrutinized. These lines merely serve to indicate that there might perhaps be a satisfactory solution to the problem of reconciling the requirements of safety of the United States with the desire not to hamper the development of atomic power for industrial purposes.

Unfortunately it is by no means sure that a satisfactory solution of this problem is in fact possible. It would be much easier, safer, and would require a much less tight control to arrest the development of atomic power by scrapping and outlawing the large and easily visible installations which characterize the first stage of this development.

CONTROL OF RAW MATERIALS COULD BE CONSIDERED

If Russia, the United States and other countries were willing to forego the use of atomic power for peacetime purposes one could have a system of control that would be fairly simple since it would be sufficient essentially to control the movements of raw materials. Ores of uranium would have to be mined under control and transported to some "neutral" territory. Whether or not it would be permitted to have in a neutral territory installations belonging to the first stage and atomic power plants would be a question of minor importance. It is likely that if the major powers were willing to forego the use of atomic power it would seem that a system of controls could be set up without encountering too great difficulties.

AN ALTERNATIVE SYSTEM OF  
CONTROLS WOULD HAVE TO BE MUCH TIGHTER

On the other hand, if the United States, Russia, and other countries should have atomic power installations within their own territory, a very tight system of control would be needed in order to make sure that the United States would not have to face a sudden attack by atomic bombs. For a control of this sort to be effective, it would be necessary that our agents and the agents of Great Britain move freely around in Russia, be permitted to keep contacts with Russian civilians, secretly employ Russian civilians for the purpose of obtaining information, and have entry into every factory or shop throughout the vast territory of Russia.

That there may be dangerous loopholes in control systems which might be set up is illustrated by events that took place in Germany after the first World War. At that time there were many Germans who were willing to give

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information to the Inter-Allied Commission about violations of the control regulations, but those who actually did so were publicly tried under the German Espionage Law and were given heavy sentences. The Treaty of Versailles did not stipulate that the German Espionage Law must be revoked.

Clearly, it would be desirable to create a situation which would permit us to appeal in various ways to physicists and engineers everywhere for information that would uncover violations of the controls. This would give us additional assurance that such violations would be detected but it presupposes that we succeed in creating conditions that would enable us to guarantee the personal safety of those who volunteer such information and the safety of their families.

Since Russia cannot be expected to agree to such a control unless she obtain the same rights of control in the United States and Great Britain the question whether Congress and the people of the United States are willing to agree to such a control might become of paramount importance.

#### HOW COULD RUSSIA BEST BE PERSUADED?

As to our chances of persuading the Russians to accept mutual control, much may depend on the proper timing of our approach to Russia. It would appear that such an approach would have to be made immediately after we demonstrate the potency of atomic bombs.

Such a demonstration may take place in the course of the war. However, the psychological advantages of avoiding the use of atomic bombs against Japan and, instead, of staging a demonstration of the atomic bomb at a time which appears most appropriate from the point of view of its effect on the governments concerned might be very great. Therefore this possibility

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seems to deserve serious consideration in deciding whether or not to use such a bomb against Japan. If at the time when we demonstrate the atomic bomb to the world we had the second stage of the atomic power development "in the bag", chances of obtaining the consent of Russia to some satisfactory system of controls might be considerably improved. At that time, Russian physicists would probably be quite uncertain as to whether or not they could catch up with us in this development. As far as the first stage is concerned, they may be expected to have a full appreciation of its scope and to be fairly confident that they can duplicate in a fairly short time what we have accomplished so far. Their knowledge of atomic constants, however, is in all probability too inaccurate to enable them to appraise whether or not they can utilize the abundant isotope of uranium or to estimate how long it would take them and how much it would cost. As long as the Russian physicists remain uncertain about this point there might be considerable willingness on the part of the Russian government to set up jointly with us and Great Britain a really effective control of this field. Whether or not we have by that time actually accumulated ten or twenty tons of the active substances appears to be of secondary importance as long as we can demonstrate that we have in manufacture quantities which cannot be derived from the first stage of development with which the Russians may be familiar.

Events may be expected to move so fast that if it is intended to reach an agreement with Russia and other countries such an agreement would have to be complete before the next presidential elections. Thus we have to conclude that if the second stage is to be developed for the purpose of

enabling the Administration to obtain Russian cooperation in the proposed joint control, we have no time to lose in attacking the problems connected with the second stage of the development.

IF THE CONTROL IS INTERFERED WITH

While it may be a great step forward to establish a tight control on the atomic power development by a reciprocal agreement with Great Britain and Russia and extend it to all territories of the world, yet we cannot disregard the possibility that one of the major powers, for instance Russia, after a few years--during which the controls may have operated quite successfully--may begin to place difficulties in the way of an effective control of activities conducted in its own territory. Clearly it would be quite essential that the people of this country and the world be brought to understand from the start that any difficulties which any nation may place in the way of the established controls would have to be considered as tantamount to a "declaration of war".

Such a "declaration of war" would have the effect that the United States and other countries involved would at once begin to manufacture atomic bombs. If up to that time the control had been effective, it would take about two years to convert the materials and installations involved in the utilization of atomic power to the manufacture of bombs. In such an "armament race" in which all countries would have to start, so to speak, from scratch, the position of the United States might be quite favorable, provided the development of atomic power had been kept up at high level.

Clearly if any major power deliberately wants to start a war, there will be a war and all that we can hope to achieve by the reciprocal control

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*Handwritten signature*

which we have discussed is that a war may not break out as a result of an armament race.

Still, it would seem that if the situation were generally understood there might be some hope that having succeeded in setting up a system of reciprocal control and having kept it in operation for a few years, neither the United States nor Great Britain nor Russia would attempt to interfere with this system of control in such a manner that its acts would be considered by the other partners as a menace to their security. We would then perhaps have a chance of living through this century without having our cities destroyed.

An attempt to manufacture atomic bombs undertaken by any of the smaller countries would, be of minor importance since it could be met by immediate armed intervention using ordinary methods of warfare such as tanks and airplanes.

#### IN THE ABSENCE OF A SYSTEM OF CONTROLS

In discussing our postwar situation the greatest attention was given in this memorandum to the role that Russia might play. This was not done because it was assumed that Russia may have aggressive intentions but rather because it was assumed that if an agreement can be reached with Russia it will be possible to extend the system of controls to every country in the world.

In the absence of a system of controls, however, a number of countries might, say, ten years from now, be in possession of large quantities of atomic bombs and represent a threat to the cities of the United States.

What policies could be adopted to safeguard the security of the United States in the absence of a reliable system of controls requires

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DR. [unclear]

serious consideration particularly since our chances of creating a satisfactory system of controls may be rather small. The situation will probably have some effect on city planning.

In discussing this question one will have to consider a number of possibilities which go far beyond the narrower question of whether or not the second stage of the atomic power development ought to be vigorously pursued, and the discussion of those possibilities goes beyond the scope of the present memorandum. As far as this narrower question is concerned the following remark might, however, be made.

One might consider the advisability of discontinuing now the work on detonating active substances and of immediately scrapping now all installations for the manufacture of active materials. In view of the fact that the Germans have not pushed this development, the scrapping of our own installations coupled with an agreement with Russia and Great Britain which would outlaw the building of such installations might perhaps enhance the security of the United States in the next 25 years. In order to understand this point of view one has to realize that it is necessary to develop the first stage of atomic power before the second stage can be entered upon and that the installations belonging to the first stage are of necessity large and conspicuous structures; consequently it does not require a tight control to detect any structures of this type which might be erected in violation of the law.

Conversely, it might be proposed that we should lose no time in developing the second stage of atomic power and that we should develop within a few years methods for manufacturing overwhelming quantities of the active materials.

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While it may be difficult to decide between these two points of view, the present trend to develop atomic bombs and to maintain our installations for the manufacture of active materials but to delay in developing the second stage would appear to lead to the worst possible course of action that we could take.

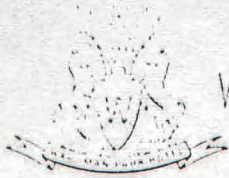
THE WHITE HOUSE  
WASHINGTON

*Spontaneous  
S. Cavallini*

*Phone  
794*

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*Aug 29, 1956.*  
*Warren C. Johnson*



WARDMAN PARK HOTEL

Washington 8, D.C.

CONNECTICUT AVENUE & WOODLEY ROAD  
1800 ROOMS

May 26<sup>th</sup> - 45

Dear Mrs. Byrnes,

The White House advises me that an interview has been arranged with you at Spartenburg for May 28 at 11 a.m. —

Included in this interview will be Dr. W. Bartky, acting Dean at the Physical Sciences Division of the University of Chicago and Dr. H. C. Urey of Columbia University of whom probably know. —

I am directed by the White House to ~~submit~~ <sup>propose</sup> to you the enclosed letter of Mr. Albert Einstein. This letter, which did not reach Mr. Roosevelt, was returned to me yesterday by the White House so that I may present it to you. —

Yours very truly Leo Pastorek

Material for 5/22/56 Recording (preliminary transcription)

Memorandum, "What is Wrong with Us?" by L.S. (11 pp.) Sept. 21, 1942

"Proposed Conversation with Bush. Part I." by L.S. (9 pp.) Feb. 28, 1944  
Marked by L.S. "First rough draft"

The story as told by Szilard in these two memoranda, as regards organization problems at the Metallurgical Laboratory, and the cooling system in particular, corresponds in general to the description in THE NEW WORLD, 1939/1946.

**SECRET**

"The designation "LIMITED" indicates a report dealing with information which is more restricted than the information in the usual C reports. Persons receiving these reports are not to show them to other members of the project, even of the same laboratory, without specific authorization."

WHAT IS WRONG WITH THIS?  
L. Szilard

September 21, 1942

**LIMITED**

No 27

Introduction

These lines are primarily addressed to those with whom I have shared for years the knowledge that it is within our power to construct atomic bombs. What the existence of these bombs will mean we all know. It will bring disaster upon the world if the Germans are ready before we are. It may bring disaster upon the world even if we anticipate them and win the war, but lose the peace that will follow.

CLASSIFICATION CANCELLED  
Date 9/21/52  
For The Atomic Energy Commission  
C. T. Meredith, Jr.  
Director, Division of Classification

We cannot have peace in a world in which various sovereign nations have atomic bombs in the possession of their armies and any of these armies could win a war within twenty-four hours after it starts one. One has to visualize a world in which a lone airplane could appear over a big city like Chicago, drop his bomb, and thereby destroy the city in a single flash. Not one house may be left standing and the radioactive substances scattered by the bomb may make the area uninhabitable for some time to come.

It will be for those whom the constitution has entrusted with determining the policy of this country to take determined action near the end of the war in order to safeguard us from such a "peace". They will have to be prepared for this task in order to be able to fulfill it and some way will have to be found to do this.

Perhaps it would be well if we devoted more thought to the ultimate political necessities which will arise out of our present work. You may feel, however, that it is of more immediate concern to us that the work which is pursued at Chicago is not progressing as rapidly as it should.

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at the Washington End?

Roughly speaking, there are two kinds of troubles which frustrate our work. Troubles which originate at Washington end of our organization, and troubles which originate at the Chicago end of our organization.

The unsatisfactory state of our metal supply, nine months after the reorganization which led to a merger of the Chicago and the Columbia projects, is illustrative of the effect of the trouble which originates in Washington. But although this trouble originates outside of Chicago, I do not think that we ought to blame anybody but ourselves for this calamity. We knew from the outset that the division of authority between Murphree and Compton, with respect to processing our materials, would lead precisely to this sort of catastrophe. This was not only known privately to many members of our group, but it was openly stated by a number of us at an almost public joint meeting of Columbia and Chicago groups at Columbia in January. Even "outsiders" like D. P. Mitchell and Smyth saw the point and joined in the chorus of those who condemned the proposed arrangement as unworkable. There was not a single voice raised in favor of the proposal of dividing the authority for processing our materials between Compton and Murphree.

We may have to answer before history the question why we tolerated an arrangement which we knew could not work. It is not possible for us to shift the blame to Dr. Bush or Dr. Conant, who originally decided in favor of that arrangement without consulting us. They cannot devote their full time and attention to our problems, and this matter is of such complexity that nothing less than that will do. However intelligent a man may be, if he is not in direct contact with our problems, he is not able to foresee the consequences of decisions which affect the outcome of our work.

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Under the circumstances, it would have been our duty to tell Dr. Bush, in January, of the arrangements which I devised would not work. We might have been responsible for the fact that the arrangement was, objectively speaking, unworkable, but since we did not know that no arrangement could be successful if the men who are to carry it out work lack the faith that they can make it work.

It may be tempting, of course, to shift the blame to Compton and say that it would have been for him to tell Dr. Bush that the scheme was unworkable. This, I believe, would be unfair to Compton. On this point I have to elaborate because it has an important bearing on the future, as well as on the past.

Our project is exceptionally rich in men who belong to the creative type and represent what may be called the artistic temperament. Compton is one of them, and there are quite a few others. To be sure, none of these men has his shortcomings and limitations. However, it would be a grave mistake to believe that because each of us has his own obvious weaknesses the group as a whole is not fit to carry the full responsibility for its task. If we were properly organized, those shortcomings and weaknesses would not add up, but rather cancel out, within the group. If we were properly organized, there would be no task in physics, engineering or production, which we could not tackle and master, as long as each of us realizes the limitations of the others and sincerely tries to find out something about his own limitations.

Compton was put in charge of our project last fall by Dr. Bush, but the question of leadership had been put up to the group; he would have been elected by unanimous vote. We may complain about his not taking a strong stand in Washington, but let us be clear on this point above



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all: We cannot eat our cake and have it; if we want a man who can run our project at Chicago and operate here in an atmosphere of friendship and loyalty, we cannot expect that man to be Mr. Bush and threaten to resign unless he is given all the authority required for the success of our project, or to go over the head of Mr. Bush to the President, and ask the President for this authority.

This is not born out by past experience. Only rarely is it possible to proceed at least with a high degree of assurance and clear case as to how a difficulty with respect to the division of responsibility between Compton and Murphree may not occur again. If Compton did not take action then, we cannot be expected to take action in any other case which may arise so long as he has to ask for things for himself.

The situation might be different if Compton considered himself as our representative in Washington and asked in our name for whatever was necessary to make our project successful. He could then be asked to make a decision on any of the issues which affect our work until he had an opportunity fully to discuss the matter with us.

Viewed in this light, it ought to be clear to us that we, and we alone, are to be blamed for the frustration of our work which originates from the Washington end of our organization. We should have asked Compton to make our views clear, or if he should have preferred that we should have made our stand clear in Washington ourselves. It is my personal conviction, however, that we shall not be able to make progress in this direction until we have put our own house in order.

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What is Wrong at Chicago?

While the report of the Commission illustrates the origin of the Chicago organization, it also illustrates that the organization originates in Chicago. It is true that we have not developed a satisfactory cooling system and we are not prepared to do so. However, the report illustrates the origin of the Chicago organization.

At least, the troubles which are being experienced at Chicago are very serious since it is entirely within the authority of Compton to remedy the situation.

In abstract form, the trouble at Chicago is the result of the fact that the work is organized along somewhat arbitrary lines rather than democratic lines. There is a scattering of democratic elements there, but they do not form a coherent network which could be trusted. This is partly due to a compartmentalization of information which has originated at Compton from Washington. Since this is again wrong, that goes and originates at Chicago, we may pass it over here until we have solved the "local" Chicago problems.

In order that we should be able to do so, it is necessary to realize that there are certain inherent difficulties which cannot be removed and must be met by skillful adjustment of our organization.

I believe that we ought to say at the outset that the breakdown of the Chicago organization is of our own making. Though certain trends followed by Compton which will have to be mentioned as obstacles standing in the way of a well functioning organization, it is entirely our fault that we have not been able to compensate for these trends by the use of the existing machinery. This we did not do and therefore we may say that the blame is ours, and ours only. At the most we can say that there were mitigating circumstances.

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... would that ...  
...  
... reinforced, ...  
... and it did ...  
... I am, as a ...  
... I find it ...  
... be that in talking to ...  
... This is, by the way, an ...  
... group for ...  
... the inevitable hardship ...  
... the question of ...  
... the question of the choice of a cooling ...  
... illustrates the difficulties at the Chicago end.

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We knew for a long time that there are three possible ways in which the power plant could be cooled: by helium, by water and by bismuth. The question whether these three systems should be designed simultaneously and the design be carried out possibly up to the blueprint stage on all three of them, or whether one of these systems should be worked out in preference to others, and which should be given preference, was never put up for decision to any of our committees. Even so these committees should have considered as one of their most important tasks to decide this question at an early date. No such decision was taken.

By May, it became apparent to everybody that it will go over 1. An engineering group turned up somehow in our project and started work, under the direction of Mr. Moore, on plans for the helium cooled system. Nobody knew why the helium cooled system was given preference by this group, but it was the general impression that somehow, somewhere, somebody decided that we shall build a helium cooled system first and place orders for the heavy accessory equipment which the system required at an early date.

In the meantime, Wigner and his division became more and more convinced that a water cooled system could be built in a much shorter time, although they were not willing to say that they could foresee with certainty all questions of operational safety. The question whether Wigner would be willing to assume the responsibility for developing this system, if necessary, into the blueprint stage, was never put to him, and remains undecided up until the present day. Clearly, if Wigner were willing to assume this responsibility, an engineering staff would have to be added to his division in order to help them to produce usable plans for a water cooled unit. A proper balance between physicists and engineers in Wigner's division

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...of the nature of the problem in this situation.  
It has been my personal opinion that it is not possible to

...until they are known in detail, although it may not be necessary to  
...at that stage. I further held the view that,  
particular of the design of the water and bismuth cooled power units, certain  
simple preliminary work will have to be made before the detailed designing  
of the power unit is carried through with faith in its ultimate success.  
When the designing is successfully accomplished in the absence of such  
faith, I have therefore pressed for the establishment of a technological  
division which after a while came into existence.

I was put in charge of this division which was to be  
responsible for the technological problems involved in the design of the  
power units. For a time, it looked as if we might have three or four  
different groups, each comprising physicists and engineers to work  
independently on designs for these different cooling systems. It is my  
opinion that that would have been the right course of action. I  
personally felt that I can contribute most towards development of the  
cooled system because I have more faith in this system than in the others.  
I was quite aware of the fact that this may be a purely personal matter,  
and I do not have any well founded opinion as to which of the systems  
shall prove to be the most successful, or can be made to work.

I, myself, was quite prepared to assume the responsibility  
for developing a design for the bismuth cooled plant. I felt, however,  
that this work could not be pursued with confidence unless the technological  
problems which are involved were settled. As far as I could tell, Gordon  
was in full agreement with this approach, and thanks to his help we

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Simultaneously, I contacted various organizations with a view of having a  
... of ... .. that some of ... .. were ordered at a  
cost of \$70,000.

As I ... .. to ... .. looking  
after the ... .. division and the designing of a bismuth cooled power  
unit. These two tasks are almost too much for one man and the only reason  
why I should ... .. I would be able to manage them was the fact that ... ..  
... .. I can very well carry most of the burden of the technological  
division. Foote was supposed to look after the bismuth, ... .. after the  
recasting of uranium metal, and Creutz after the problems of the water cooled  
plant, and many other things as well. What became of all those ... ..

About six weeks ago I was informed that ... ..  
... .. Creutz to ... .. to fuse Alexander's metal at ... ..  
Creutz had left, the whole technological division would have collapsed ... .. the  
work of the theoretical division working on the water cooled ... .. could  
have been frustrated, since Creutz was looking after the technological  
water cooled unit. I succeeded in substituting Foote for Creutz. I ... ..  
to his departure because I assumed that it would be for two weeks at the  
most and besides I had reached the conclusion that it is not ... ..  
... .. to fight about individual issues.

It was not possible to have a date set for Marshall's  
Foote's return in six weeks. All work on the bismuth cooled plant ... ..  
... .. I may be wrong in laying such emphasis on the bismuth cooled plant, it is  
a fact that nobody else has looked into this matter, with the possible exception  
of the theoretical division, and consequently there is nobody ... ..  
to express an opinion whether the damage brought about by ... .. Marshall's  
continued absence is counterbalanced by the good things ... .. So

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... made an effort to find neutral could ...

... describing, Dr. ... detail. We were all under the impression that ... to build a ... For this reason, while ... this type of cooling at the earlier stages of our project ... not continue to pay any attention to the ... connected with ... cooling.

Suddenly, about a week ago, a few of us were ... that ... to express an opinion whether a helium cooling plant should or should not be built. I possibly could have ... such an opinion if I had ... of the development of the helium cooling plant for the past two or three months and I should certainly have ... to do so. In the circumstances, I do not believe that any opinion ... I personally might ... on the subject would ... anything, and ... way ... I could form a valid opinion within a short time.

Diagnosis

If I have to give a diagnosis in an abstract and therefore necessarily misleading form, I should say this: In the past, ... the ... on the technical committee and the planning board ... were ... reality that they were responsible for the success of the project, there was no mechanism for reaching decisions and consequently decisions were reached in a haphazard way. Essential decisions were being omitted or were taken many months after they were due. As time went on, more and more of us began to emphasize that we do not want to be held responsible for what was or was not happening. There was more and more shuffling of shoulders among the group leaders and an increasing tendency of narrowing down their responsibility to this or that detail of the work ... which they have been

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explicitly authorized.

To a... information... by the... organization... and... the... Presently, a major... Executive Committee... once a... This... will vitally... It was... a year which was... consisting of... planning board, or our technological... Finally, ... where it becomes clear that... choose...

... into the... the responsibility for... of this work has been delegated by the President to Dr. Suss... by Dr. Suss to Dr. Conant. Dr. Conant delegates this... (accompanied by duly part of the necessary authority) to Computer... delegates to each of us some particular task and we can lead... life while we do our duty. We live in a pleasant part of a... in the pleasant company of each other, and have in Dr. Computer the pleasant "boss" we could wish to have. There is every reason why we should be happy and since there is a war on, we are even willing to work overtime.

Alternatively, we may take the stand that those who have originated the work on this terrible weapon and those who have materially contributed to its development, have, before God and the World, the duty to see to it that it should be ready to be used at the proper time and in the proper way.

I... that his responsibility lies.



First rough draft

PROPOSED CONVERSATION WITH BUSH

February 28, 1944  
L. Szilard

PART I

The Government sponsorship of the uranium work started over four years ago in October 1939 by the appointment of Dr. Briggs' committee by the President. At that time we were far ahead of other countries in knowledge, but this initial advantage we have presumably lost since that time. The work of the scientists was crippled from the start by a mistaken attitude on the part of the administrators toward the scientists upon whose discoveries and inventions all this work rests. Subsequently the same attitude was manifested toward most of the other competent scientists who joined this work later. A number of reorganizations took place and there were changes both in the agency and in the persons who were entrusted with the responsibility of administering this work but the attitude toward the scientists remained the same. There can be no substantial improvement unless there is a complete change of heart in this respect.

1. The worst consequence of this attitude and one from which many evils have derived is the fact that it is made impossible for the scientists (who are giving their full time and attention to various aspects of the uranium work) to have an adequate discussion with each other of the pertinent issues. It is therefore difficult for them to form a well-founded opinion and even if they individually arrive at definite opinions they are not able to put collective recommendations on record.

A direct consequence of this is that there can be no judgment on which the administration can base sound decisions on issues which often

involve the expenditure of hundreds of millions of dollars. Most of the decisions made are based on false premises. Decisions are often clearly recognized as mistakes by the competent scientists at the time when the decision was taken but they are not officially recognized as mistakes until four or eight months later, at which time the situation is in some cases beyond remedy. This point will be illustrated by representative examples taken from the past record.

Other unsatisfactory conditions which arise out of the same general attitude towards the scientists which can be stated in general terms here are as follows:

2. From October 1939 to December 1941 inadequate financial support and complete frustration of the scientists in their attempts to make arrangements with industrial firms for the technological development which was considered by them a prerequisite of the industrial stage of the development. This affected the work of Dr. Urey on the separation of isotopes as well as the work of Dr. Fermi and myself on the chain reaction in unseparated uranium.

3. From January 1942 on there was adequate financial support for this work but as far as the Chicago Laboratory is concerned, the Laboratory was not given the authority to make arrangements for obtaining materials which the scientists considered necessary for their work. This nearly wrecked the Chicago project. We got the required materials in 1942 only through a series of exceedingly lucky circumstances which we encountered when we finally tried to make arrangements for these materials ourselves.

4. The free interchange of views between different groups working on uranium along related lines was prohibited beginning the fall of 1940 and as a consequence of this interference with the work the contact between Fermi and myself on the one hand, working on the fission aspects at Columbia, and Dr. Urey on the other hand, working on the separation aspect at Columbia, became inadequate. Consequently it was not realized by us, though we had performed the pertinent nuclear measurements, that atomic bombs of small weight could be constructed from the separated isotope. This fact might not have come to the knowledge of the United States Government at all if it had not been brought to its attention in the middle of 1941 by the British Government. Fortunately a handful of British physicists who were not subject to compartmentalization of information ~~and~~ were free to discuss with each other the interrelationship of the isotope separation and the nuclear physics program and consequently saw that small size atomic bombs could be constructed from the separated isotope.

At present there are two methods for separating the uranium isotope in the industrial stage. One of these (K-25) is using the diffusion of uranium hexafluoride; the other (Y-12) is using a magnetic separation. Both of these methods are clumsy methods. The first one may not even succeed. The second may have a good chance of success, but it is very costly in time, materials, and skilled labor. It is more likely than not that if the competent men who are at present working for the Government on various aspects of the uranium problem had been given enough information to encourage them to think up better methods for separating the uranium isotope we would by now have much faster, simpler, and cheaper methods. This must not be interpreted as saying that the men who originated the

present methods lack originality or ingenuity, but simply to say that there is no way of telling beforehand what man is likely to discover and invent a new method which will make the old methods obsolete. The only thing we can do in order to play safe is to encourage sufficiently large groups of scientists to think along those lines and to give them all the basic facts which they need to be encouraged to such activity. This was not done in the past and it is not being done at present.

It is of course not possible to indicate what methods would have been discovered or invented if compartmentalization of information had not interfered with this work. Only when compartmentalization will be lifted will it be seen what rapid succession of new inventions and improvements will emerge or, alternatively, we shall see what we have missed should it turn out that the German physicists, though they are few in number and not superior in inventive ability, have produced large quantities of the uranium isotope by some method vastly superior to the present forms of K-25 or Y-12. It is, however, possible to give, on the basis of the past record, representative examples to show the loss of time.

5. Another consequence of this situation is that certain large firms, particularly du Pont, are acting in a double capacity, both as contractors and as advisors of the War Department.

So far the work intimately connected with the chain reaction in unseparated uranium has been exclusively concentrated in the hands of du Pont. The engineering staff of du Pont is of course limited both in number and in men with sufficient theoretical background. Consequently they are not adequate to handle every problem that the scientists consider necessary to follow up. In two important instances of this type the

scientists have attempted to obtain permission to cooperate with some other firm in order to push the development of certain alternative methods at least into the process design stage. In both cases this permission was refused.

There was an increasing tendency of regulating the work of scientists by means of directives, some of which are clearly based on false premises. While clearly a large fraction of the effort of the scientists has to be regulated by some sort of directives the success of the work is at stake if sweeping directives make it impossible to have 10 to 20% of the scientific staff pursue lines of development which the scientists themselves consider essential.

For instance, we were directed in September 1942 to refrain from developing such cooling systems which could not be put in the industrial stage at such an early date as to give usable quantities of the product by the spring of 1944. If this directive and the accompanying "executive order" had not been disobeyed, the water cooled system which is now being used would not have been available to du Pont. The same directive, however, succeeded in suppressing the development of the bismuth cooled system.

The situation is getting increasingly worse in this respect and there can be no improvement until the charter is adopted freeing a certain percentage of the effort from the effect of constantly shifting directives.

As a result of all this the present state of the uranium work may be described as follows:

A. The Field of Unseparated Uranium.--A water cooled production plant is being built at a cost of about \$300 million by the du Pont Company.

This plant is supposed to go into production on June 1, 1944. The decision to build a water cooled production plant was made by the du Pont Company in January 1943 on the basis of a process design which was developed in the Chicago Laboratory under Dr. Wigner during the year 1942. This line of development was suppressed during the year 1942 in favor of the development of a helium cooled power unit (Dr. Wigner had the support of only one engineer for his work) and consequently there were many uncertain points that had not been previously investigated, Mr. Wigner and all competent scientists in the Chicago Laboratory were therefore of the opinion that a water-cooled pilot plant of 10,000 or 20,000 kw should be built immediately. This was not done and three production units scheduled to work at 250,000 kw are thus being built with no other basis than experience based on a 1,000 kw air cooled plant. As it is there is hardly more than a fifty-fifty chance that the 250,000 kw production units will stand up to operation for a reasonable period of time.

Even if they had been designed under more favorable conditions the water cooled system would have its hazards and could not have been made safe from the operational point of view. The choice of the water cooled system was nevertheless welcomed by the scientists because they believed that this system could be constructed and put in operation at an early date and at comparatively low cost and it seemed worth while to sacrifice operational safety for speed. After all, safety first did not seem a very sound principle in January 1943 with the outcome of the war hanging in the balance. However, what followed was a vain attempt at attaining operational safety (which is not attainable under this system) and

the adoption for the sake of that illusory safety, of a scheme which is exceedingly costly in men and materials. Since money can be spent only at a certain rate, this meant slow pace of development. The result is a combination of great loss of time and no appreciable gain in safety.

The situation would have been more satisfactory if at least a fraction of our efforts could have gone into developing an alternative scheme at least into the stage of process design. Two such schemes had been proposed: one was a graphite-uranium power unit, cooled by a liquid bismuth-lead alloy; the other was a design of a heavy water power unit. It was not possible to obtain authorization for following up either of these alternative lines.

B. Separation of Isotopes.--

(a) K-25, based on the diffusion of uranium hexafluoride, was transferred into the industrial<sup>stage</sup> and taken out from under Urey's supervision in 1942. This was done at a time when no pilot plant was in existence and it is said that at the time when the development was taken out of Urey's hands and placed in the hands of the Kellogg Company, there was not even an experimental unit in existence in which the diffusion method had actually been tested on the gas (uranium hexafluoride) to which it was to be applied. It is doubted that this system in its present industrial form has more than a fifty-fifty chance for success.

(b) In the fall of 1942 of the various methods for producing heavy water which were developed under Urey's supervision, one was chosen by du Pont and put into industrial production. The scientists in Urey's laboratory were of the opinion that the process chosen by du Pont was much

more costly and inefficient from the point of view of coal consumption than another method. Since it is, of course, the privilege of du Pont to decide for themselves which method they believe they could successfully put in the industrial stage, there could have been no objection on the part of the scientists to the placing of the contract with du Pont, but it was the desire of the scientists to develop the alternative method, which they estimated required three to four times smaller quantity of coal, at least into the process design stage. It was impossible, however, to obtain permission to collaborate with any firm other than du Pont in the development of this alternative method.

As a result of this our heavy water production does not exceed three tons a month and consumes 30,000 tons of coal per ton, ~~per month~~. The quantity of heavy water produced is not sufficient as a basis of adequate production of  $U^{233}$  or as a second line of defense for the production of plutonium. The production is expensive and we have no alternative method ready on which to fall back if larger quantity of heavy water is needed or if economic conditions should compel us to discontinue the inefficient process used by du Pont.

(c) The electromegnetic method in its present form may very well be successful but it will require enormous expenditures of materials and skilled labor in order to supply the required quantities of the separated isotope. It is believed that on the present industrial scale the method will supply only a fraction of what is needed to win the war by this weapon. Even at this late stage, new inventions in the field of the electromagnetic method might bring about favorable changes in the situation but



the competent physicists working on uranium in branches other than the special project of Lawrence are not supplied with information which is required in order to be encouraged to think up something new in this field.

2nd set  
May, 1969 ✓

Additional Material for page 131

(Section 9)

SZILARD'S PETITION AGAINST USING THE BOMB, JULY 1945

- Letter, L.S. to Group Leaders of "Metallurgical Laboratory" July 4, 1945
- "A Petition to the President of the United States" July 3, 1945
- Memorandum, signed by 18 scientists July 13, 1945  
re: final paragraph of the above petition.

Petition, July 3rd version, original typewritten copy.

"A Petition to the President of the United States" July 17, 1945

This is the version actually sent to the War Department. It was returned to Szilard in 1957 on his request, after considerable correspondence with the A.E.C. The original copies of the petition, with ~~70~~ signatures affixed, are in the Szilard files.

68

## The Intellectual Migration

If there were in existence a small subcommittee of the Cabinet (having as its members, the Secretary of War, either the Secretary of Commerce or the Secretary of the Interior, a representative of the State Department, and a representative of the President, acting as the secretary of the Committee), the scientists could submit to such a committee their recommendations either by appearing from time to time before the committee or through the secretary of the committee.

The latter, if so authorized, by the President, could also act as a liaison to the scientists prior to the designation of such a subcommittee. At his disposal could then be placed a memorandum which has been prepared in an attempt to analyze the consequences of the scientific and technical development which we have to anticipate. The memorandum was prepared on the basis of consultations with ten scientists from six different institutions in the United States. These and other eminent scientists who were not consulted would undoubtedly avail themselves of the opportunity of presenting their views to a man authorized by the President, assuming that such a man would have the time at his disposal which a study of this kind would require.

## APPENDIX III

SZILARD TO GROUP LEADERS OF "METALLURGICAL LABORATORY,"

JULY 4, 1945

Dear —:

Inclosed is the text of a petition which will be submitted to the President of the United States. As you will see, this petition is based on purely moral considerations.

It may very well be that the decision of the President whether or not to use atomic bombs in the war against Japan will largely be based on considerations of expediency. On the basis of expediency, many arguments could be put forward both for and against our use of atomic bombs against Japan. Such arguments could be considered only within the framework of a thorough analysis of the situation which will face the United States after this war and it was felt that no useful purpose would be served by considering arguments of expediency in a short petition.

However small the chance might be that our petition may influence the course of events, I personally feel that it would be a matter of importance if a large number of scientists who have worked in this field went clearly and unmistakably on record as to their opposition on moral grounds to the use of these bombs in the present phase of the war.

Many of us are inclined to say that individual Germans share the guilt for the acts which Germany committed during this war because they did not raise their voices in protest against those acts. Their defense that their protest would have been of no avail hardly seems acceptable even though these Germans could not have protested without running risks to life and liberty. We are in a position to raise our voices without incurring any such risks even though we might incur the displeasure of some of those who are at present in charge of controlling the work on "atomic power."

The fact that the people of the United States are unaware of the choice which faces us increases our responsibility in this matter since those who have worked on "atomic power" represent a sample of the population and they alone are in a position to form an opinion and declare their stand.

Anyone who might wish to go on record by signing the petition ought to have an opportunity to do so and, therefore, it would be appreciated if you could give every member of your group an opportunity for signing.

## APPENDIX IV

A PETITION TO THE PRESIDENT OF THE UNITED STATES,

JULY 3, 1945

Discoveries of which the people of the United States are not aware may affect the welfare of this nation in the near future. The liberation of atomic power which has been achieved places atomic bombs in the hands of the Army. It places in your hands, as Commander-in-Chief, the fateful decision whether or not to sanction the use of such bombs in the present phase of the war against Japan.

We, the undersigned scientists, have been working in the field of atomic power for a number of years. Until recently we have had to reckon with the possibility that the United States might be attacked by atomic bombs during this war and that her only defense might lie in a counterattack by the same means. Today with this danger averted we feel impelled to say what follows:

The war has to be brought speedily to a successful conclusion and the destruction of Japanese cities by means of atomic bombs may very well be an effective method of warfare. We feel, however, that such an attack on Japan could not be justified in the present circumstances. We believe that the United States ought not to resort to the use of atomic bombs in the present phase of the war, at least not unless the terms which will be imposed upon Japan after the war are publicly announced and subsequently Japan is given an opportunity to surrender.

If such public announcement gave assurance to the Japanese that they could look forward to a life devoted to peaceful pursuits in their homeland and if Japan still refused to surrender, our nation would then be faced with a situation which might require a re-examination of her position with respect to the use of atomic bombs in the war.

Atomic bombs are primarily a means for the ruthless annihilation of cities. Once they were introduced as an instrument of war it would be difficult to resist for long the temptation of putting them to such use.

The last few years show a marked tendency toward increasing ruthlessness. At present our Air Forces, striking at the Japanese cities, are using the same methods of warfare which were condemned by American public opinion only a few years ago when applied by the Germans to the cities of England. Our use of atomic bombs in this war would carry the world a long way further on this path of ruthlessness.

Atomic power will provide the nations with new means of destruction. The atomic bombs at our disposal represent only the first step in this direction and there is almost no limit to the destructive power which will become available

in the course of this development. Thus a nation which sets the precedent of using these newly liberated forces of nature for purposes of destruction may have to bear the responsibility of opening the door to an era of devastation on an unimaginable scale.

In view of the foregoing, we, the undersigned, respectfully petition that you exercise your power as Commander-in-Chief to rule that the United States shall not, in the present phase of the war, resort to the use of atomic bombs.

~~SECRET~~

CJW  
5/17/60

July 13, 1945.

NDN-55433

We, the undersigned, agree in essence with the attached petition, but feel that our attitude is more clearly expressed if its last paragraph is replaced by the following:

We respectfully petition that the use of atomic bombs, particularly against cities, be sanctioned by you as Chief Executive only under the following conditions:

1. Opportunity has been given to the Japanese to surrender on terms assuring them the possibility of peaceful development in their homeland.
2. Convincing warnings have been given that a refusal to surrender will be followed by the use of a new weapon.
3. Responsibility for use of atomic bombs is shared with our allies.

NIDN-55436

Hiss--9

July 3, 1945

~~SECRET~~

2

5/13/60

A PETITION TO THE PRESIDENT OF THE UNITED STATES

Discoveries of which the people of the United States are not aware may affect the welfare of this nation in the near future. The liberation of atomic power which has been achieved places atomic bombs in the hands of the Army. It places in your hands, as Commander-in-Chief, the fateful decision whether or not to sanction the use of such bombs in the present phase of the war against Japan.

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In view of the foregoing, we, the undersigned, respectfully petition that you exercise your power as Commander-in-Chief to rule that the United States shall not, in the present phase of the war, resort to the use of atomic bombs.

This document contains information affecting the national defense of the United States within the meaning of the Espionage Act, U. S. C. 50, 61 and 32. Its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law.

7



July 17, 1945

compared to July 2

A PETITION TO THE PRESIDENT OF THE UNITED STATES

Discoveries of which the people of the United States are not aware may affect the welfare of this nation in the near future. The liberation of atomic power which has been achieved places atomic bombs in the hands of the Army. It places in your hands, as Commander-in-Chief, the fateful decision whether or not to sanction the use of such bombs in the present phase of the war against Japan.

We, the undersigned scientists, have been working in the field of atomic power. Until recently we have had to fear that the United States might be attacked by atomic bombs during this war and that her only defense might lie in a counterattack by the same means. Today, with the defeat of Germany, this danger is averted and we feel impelled to say what follows:

The war has to be brought speedily to a successful conclusion and attacks by atomic bombs may very well be an effective method of warfare. We feel, however, that such attacks on Japan could not be justified, at least not unless the terms which will be imposed after the war on Japan were made public in detail and Japan were given an opportunity to surrender.

If such public announcement gave assurance to the Japanese that they could look forward to a life devoted to peaceful pursuits in their homeland and if Japan still refused to surrender our nation might then, in certain circumstances, find itself forced to resort to the use of atomic bombs. Such a step, however, ought not to be made at any time without seriously considering the moral responsibilities which are involved.

The development of atomic power will provide the nations with new means of destruction. The atomic bombs at our disposal represent only the first step in this direction, and there is almost no limit to the destructive power which will become available in the course of their future development. Thus a nation which sets the precedent of using these newly liberated forces of nature for purposes of destruction may have to bear the responsibility of opening the door to an era of devastation on an unimaginable scale.

If after this war a situation is allowed to develop in the world which permits rival powers to be in uncontrolled possession of these new means of destruction, the cities of the United States as well as the cities of other nations will be in continuous danger of sudden annihilation. All the resources of the United States, moral and material, may have to be mobilized to prevent the advent of such a world situation. Its prevention is at present the solemn responsibility of the United States--singled out by virtue of her lead in the field of atomic power.

The added material strength which this lead gives to the United States brings with it the obligation of restraint and if we were to violate this obligation our moral position would be weakened in the eyes of the world and in our own eyes. It would then be more difficult for us to live up to our responsibility of bringing the unloosed forces of destruction under control.

In view of the foregoing, we, the undersigned, respectfully petition: first, that you exercise your power as Commander-in-Chief, to rule that the United States shall not resort to the use of atomic bombs in this war unless the terms which will be imposed upon Japan have been made public in detail and Japan knowing these terms has refused to surrender; second, that in such an event the question whether or not to use atomic bombs be decided by you in the light of the consideration presented in this petition as well as all the other moral responsibilities which are involved.

CLASSIFICATION CANCELLED  
Date JUL 23 1957  
For The Atomic Energy Commission  
C. L. Murchey, Jr. Lighter  
Director, Division of Classification

68 signature on original in safe dep. box

same

[for a number of us]

[the destruction of Jap. cities by means of]

on attacks

what is rewarded

rewarded

new - replace "destruction" with "annihilation"

diff

Additional Material for page 133 (Section 9)re: STRUGGLE OVER DECLASSIFICATION OF THE PETITION, AFTER HIROSHIMA

- Letter, L.S. to Matthew J. Connelly Aug. 17, 1945  
See the third paragraph, on release of the petition.
- Letter, L.S. to the Editor of Science Aug. 18, 1945  
attached to:
- Letter-to-the-Editor, by L.S. dated Aug. 24, 1945  
This letter was never published.
- Telegram, Matthew J. Connelly, Secretary to the Aug. 25, 1945  
President, to L.S.
- Telegram, L.S. to Editors of Science Aug. 25, 1945
- Letter, Capt. James S. Murray to L.S. (3 pp.) Aug. 27, 1945  
See especially the second paragraph on page 3, recounted  
in detail by Szilard in the text.
- Letter, L.S. to Hutchins, Chancellor, Univ. of Chicago Aug. 28, 1945  
By the time of this letter, Szilard had already "obliged  
the White House" (last paragraph), by the telegram to Science  
of Aug. 25th.
- Letter, Capt. James S. Murray to L.S. Aug. 28, 1945
- Letter, L.S. to R.M. Hutchins (3 pp.) Aug. 29, 1945  
See especially the third paragraph of page 1.

*Copy*

**Metallurgical Laboratory**

P.O. BOX 5207  
CHICAGO 80, ILLINOIS

BUTTERFIELD 4300

August 17, 1945

Mr. Matthew J. Connelly  
The White House  
Washington, D. C.

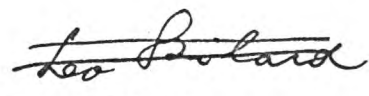
Dear Mr. Connelly:

When Mr. Bartky and I called on you on May 25, you were kind enough to arrange ~~an~~ interview with Mr. Byrnes. H. C. Urey of Columbia University, Walter Bartky of the University of Chicago, and I saw Byrnes on May 28 and submitted to him a memorandum dated Spring, 1945 which was originally prepared for Mr. Roosevelt and which you have read. We are very grateful to you for the opportunity to present our views to Mr. Byrnes.

The enclosed envelope contains Mr. Einstein's letter, returned by Mr. Byrnes for transmittal to your office, and a copy of the memorandum which we left with Mr. Byrnes. You had previously seen both of these documents and they are merely transmitted for your files.

Enclosed also is the text of a petition which was signed by 67 scientists working in this Laboratory. It may not have crossed your desk since it had been transmitted in July via the War Department. Some of those who signed this petition have asked me that its text be now made public; and I wondered whether you would be good enough to let me know by August 24 if you considered its publication undesirable.

Very sincerely yours,



Leo Szilard

August 18, 1945

The Editor of Science

Leo Szilard

Quadrangle Club  
1155 East 57 Street  
Chicago, Illinois

Dear Sir:

Enclosed is a letter to the Editor which you might be willing to publish in Science. This document is not yet free for publication, but it might be released on or about August 25, and I would advise you by sending you a wire on that date if there is no objection on the part of the White House which has been advised of the intended publication.

In the meantime, I would appreciate it if you would wire me advising me whether or not you intend to accept the enclosed "letter" for publication. Would you also be good enough to advise at the same time if it is possible for you to let us have reprints of the letter if it is published?

Very truly yours,

Leo Szilard

Enc.

The Editors of Science  
Science Magazine  
1215 Fifth Avenue  
New York 29, New York

The Quadrangle Club  
1155 East 57 Street  
Chicago, Illinois  
August 24, 1945

The Editor of Science

Dear Sir:

One day after the first atomic bomb was detonated in New Mexico, the following petition was circulated among scientists working in this field at the University of Chicago:

"July 17, 1945. A Petition to the President of the United States. // Discoveries of which the people of the United States are not aware may affect the welfare of this nation in the near future. The liberation of atomic power which has been achieved places atomic bombs in the hands of the Army. It places in your hands, as Commander-in-Chief, the fateful decision whether or not to sanction the use of such bombs in the present phase of the war against Japan. //

"We, the undersigned scientists, have been working in the field of atomic power. Until recently we have had to fear that the United States might be attacked by atomic bombs during this war and that her only defense might lie in a counterattack by the same means. Today, with the defeat of Germany, this danger is averted and we feel impelled to say what follows:

"The war has to be brought speedily to a successful conclusion and attacks by atomic bombs may very well be an effective method of warfare. We feel, however, that such attacks on Japan could not be justified, at least not unless the terms which will be imposed after the war on Japan were made public in detail and Japan were given an opportunity to surrender.

"If such public announcement gave assurance to the Japanese that they could look forward to a life devoted to peaceful pursuits in their homeland and if Japan still refused to surrender our nation might then, in certain circumstances, find itself forced to resort to the use of atomic bombs. Such a step, however, ought not to be made at any time without seriously considering the moral responsibilities which are involved.

"The development of atomic power will provide the nations with new means of destruction. The atomic bombs at our disposal represent only the first step in this direction and there is almost no limit to the destructive power which will become available in the course of their future development. Thus a nation which sets the precedent of using these newly liberated forces of nature for purposes of destruction may have to bear the responsibility of opening the door to an era of devastation on an unimaginable scale.

"If after this war a situation is allowed to develop in the world which permits rival powers to be in uncontrolled possession of these new means of destruction, the cities of the United States as well as the cities of other nations will be in continuous danger of sudden annihilation. All the resources of the United States, moral and material, may have to be mobilized to prevent the advent of such a world situation. Its prevention is at present the solemn responsibility of the United States — singled out by virtue of her lead in the field of atomic power.

"The added material strength which this lead gives to the United States brings with it the obligation of restraint and if we were to violate this obligation our moral position would be weakened in the eyes of the world and in our own eyes. It would then be more difficult for us to live up to our responsibility of bringing the unloosened forces of destruction under control.

"In view of the foregoing, we, the undersigned, respectfully petition; first, that you exercise your power as Commander-in-Chief, to rule that the United States shall not resort to the use of atomic bombs in this war unless the terms which will be imposed upon Japan have been made public in detail and Japan, knowing these terms, has refused to surrender; second, that in such an event the question whether or not to use atomic bombs be decided by you in the light of the considerations presented in this petition as well as all the other moral responsibilities which are involved."

This petition was signed by sixty-seven scientists and sent to the President via the War Department on July 24, 1945. Security regulations do not permit disclosing the names of those who signed it. Some of them are permanently associated with the University of Chicago while others, coming from all parts of the United States, are at Chicago on a temporary basis only. It was felt that your readers might be interested in knowing something about the attitude of at least a substantial minority of scientists engaged at present in this work at one of the atomic power projects.

Very truly yours,

Leo Szilard

(F-12)

**CLASS OF SERVICE**

This is a full-rate Telegram or Cablegram unless its deferred character is indicated by a suitable symbol above or preceding the address.

# WESTERN UNION

1201

A. N. WILLIAMS  
PRESIDENT

(78)

SYMBOLS
DL = Day Letter
NL = Night Letter
LC = Deferred Cable
NLT = Cable Night Letter
Ship Radiogram

The time shown in the data line on telegrams and day letters is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination

CAG20 22 GOVT=THE WHITE HOUSE WASHINGTON DC 25 1100A  
 1945 AUG 25 AM 10 25  
 DR LEO SZILLARD=  
 UNIVERSITY OF CHICAGO=

REFERENCE YOUR TELEPHONE CALL THE PRESIDENT HAS YOUR LETTER UNDER ADVISEMENT. I WILL BE GLAD LET YOU KNOW HIS DECISION LATER.

REGARDS=

MATTHEW J CONNELLY SECRETARY TO THE PRESIDENT.

SZILLARD.

August 25, 1945

Editors of Science  
1215 Fifth Avenue  
New York 29, New York

RE MY LETTER OF AUGUST 18. SORRY UNABLE TO RELEASE FOR PUBLICATION  
TEXT OF PETITION TO PRESIDENT. KINDLY ADVISE WHETHER YOU WOULD CARE  
TO PUBLISH IF AND WHEN RELEASE BECOMES POSSIBLE.

LEO SZILARD  
1155 East 57th Street  
Chicago 37, Illinois



~~SECRET~~

Classification: ~~Secret~~ <sup>3</sup>  
No. 7-126 copies, series: ~~A~~

Hist C

ARMY SERVICE FORCES  
MANHATTAN ENGINEER DISTRICT  
INTELLIGENCE AND SECURITY DIVISION  
CHICAGO BRANCH OFFICE  
P. O. Box 6770-A  
CHICAGO 60, ILLINOIS

IN REPLY  
REFER TO

REGISTERED MAIL

EDM: CIO

/js  
27 August 1945

Dear Dr. Szilard:

Pursuant to our telephone conversation on 25 August 1945, I am submitting this letter to you to set forth, in writing, the reasons for my oral request that you reclassify the petition to the President of the United States dated 17 July 1945, of which you are the author.

Primarily, for purposes of review, I want to outline briefly certain discussions which have occurred between the Military Intelligence Division and yourself in connection with the petition and its military classification:

a. It is understood that when this petition was originally drawn you did not assign a military classification to it.

b. Sometime subsequent to the date of your petition you were informed by Major C. C. Pierce of the Washington Liaison Office of the Manhattan District that the petition should bear a military classification of "Secret". You agreed as to the justification for such a classification and it was so classified.

c. On 11 August 1945, you directed a letter to Captain J. H. McKinley stating that the petition "will no longer be treated as a classified document." You informed me on 16 August 1945 of this letter to Captain McKinley and I told you that the petition could now be declassified. My authority to so advise you was based on permission which I had received from my superiors in this division.

d. Subsequently, on 25 August, I was telephonically advised by my superiors that the question of a military classification for your petition had been reviewed by Major General L. R. Groves and that he, in the light of certain statements in the petition, as well as the very nature of the petition itself when coupled with certain world developments having military significance, had determined in the exercise of his best judgment to request that the petition be again classified secret by you with its attendant limitations. You were given this information telephonically on 25 August. You then requested a written statement officially placing our request for reclassification before you.

definition, the military classification of "Secret" includes:

"Information, or features contained therein, the disclosure of which might endanger national security, cause serious injury to the interest or prestige of the nation or any governmental activity, or would be of great advantage to a foreign nation...." Army Regulations 380-5, dated 15 May 1944; see also, Intelligence

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This material contains information affecting the national defense of the United States within the meaning of the espionage laws, Title 18, U.S.C., Secs. 793 and 794, the transmission or revelation of which in any manner to an unauthorized person is prohibited by law.

CLASSIFICATION CANCELLED  
Date 5/13/60  
For The Atomic Energy Commission  
Director, Division of Classification

~~SECRET~~

Bulletin Number Five, Manhattan Engineer District, revised  
1 Sept. 1944.

The authority to place a military classification of secret on documents is rather severely limited by the War Department. Civilians, normally, do not possess this authority. However, in the Manhattan District, such authority has upon occasion been delegated by the military authorities to the heads of organizations working for the Manhattan District and to certain other civilians designated by these heads. It is assumed that you have been one of those designated by Dr. Compton.

The authority to classify implies the authority to refrain from classifying, that is, to decide whether or not a certain document should bear any classification. Granted that you have the authority to classify or not to classify certain documents, any such authority which you possess is a delegated authority stemming from General Groves himself, through Dr. A. H. Compton, to you. It is, like all delegated authority in our government, subject to review by the delegator. General Groves has so reviewed your petition and your decision to declassify it and has determined, in the light of what must be conceded is a wider knowledge of the scope and present ramifications of the atomic bomb program, that the petition should be classified secret and hence its dissemination must be appropriately limited.

The knowledge which you have acquired by virtue of your position as an employee of the Metallurgical Project of the University of Chicago which, in turn, is supervised by the Manhattan District, has been, it must be assumed, the basis upon which you wrote your petition. The petition predicates a knowledge of the scope, objectives and potentialities of the Manhattan District Project, information concerning which you acquired by virtue of your official position with the Project.

You will recall that on 25 February 1942 you solemnly swore to "not by any means divulge or disclose any secret or confidential information" that you might obtain or acquire by reason of your connection with the N.D.R.C. unless authorized to do so. Since that N.D.R.C. work meshed into the O.S.R.D. and it, in turn, into the Manhattan District, I believe that any lawyer would advise you that secret and confidential information you acquired from your connection with the Manhattan District would come within the purview of this promise by you.

You have, from time to time, signed certain other secrecy agreements, Espionage Act declarations, and patent agreements with the United States as well as commitments in your present contract of employment and its supplement, all of which preclude the disclosure by you of any information considered secret by the head of the Manhattan District, Major General L. R. Groves.

It appears unnecessary to point out to you that any information considered "secret" by the highest authority which you divulge to persons unauthorized to receive it will be in violation of the above agreements and of the Espionage Act (Title I, Sec. 1, 40 Stat. 217 as amended by Pub. Act No. 443, Laws of 1940) and for which you may be held strictly accountable.

~~SECRET~~

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Every effort is being made by General Groves and those above him to authorize the release of all information concerning the project which can be released without jeopardizing the safety or welfare of the people of the United States. It was the considered opinion of General Groves and those above him that your petition did not fall within the purview of such information which could be released without jeopardy.

You asked me to point out certain passages in your petition which might be considered as justification for General Groves belief that it should be classified secret. The opinions which I give you are my own and the ones I would use in determining whether or not the petition should be classified. In my opinion, then, every paragraph of the petition either contains some information or implies "inside" information, i.e.--information gained through employment, which, when linked with the purpose of the petition, implies that internal dissention and fundamental differences in point of view disrupted the development and fruition of the District's work--an implication which you as well as I know is not founded on sober fact and which, if released at this time, might well cause "injury to the interest or prestige of the nation or governmental activity." Therefore, it follows that, in my opinion, the entire petition should be classified secret with no exception for any one paragraph.

As you already know, the War Department has set up a proper channel through which information can be released to the press or classified information can be brought to the attention of those government officials charged with determining the future of the Project. The first channel is through Lt. Col. W. A. Consodine, P. O. Box 2610, Washington, 25, D. C., and the second, in your case, is through Dr. A. H. Compton.

Sincerely,

*James S. Murray*  
JAMES S. MURRAY  
Captain, Corps of Engineers  
Intelligence Officer

cc: Lt. Col. W. B. Parsons, P. O. Box "E", Oak Ridge, Tenn.  
Major Claude C. Pierce, Jr. P. O. Box 2610, Washington, D. C.  
Capt. J. H. McKinley, P. O. Box 6140-A, Chicago 80, Ill.

[Redacted box containing illegible text]

~~SECRET~~

Hist-D

August 28, 1945

Robert M. Hutchins  
University of Chicago  
Chicago, Illinois

Dear Mr. Hutchins:

I sent Connelly a text of the petition on August 17, 1945 asking him to let me know by August 24 if he considered its publication undesirable. Since I did not hear from him on that date, I telephoned the White House and received in response to my inquiry the following telegram:

REFERENCE YOUR TELEPHONE CALL THE PRESIDENT HAS YOUR LETTER UNDER ADVISEMENT. I WILL BE GLAD LET YOU KNOW HIS DECISION LATER. REGARDS.

MATTHEW J. CONNELLY, SECRETARY TO THE PRESIDENT.

Shortly afterwards, Captain Murray of the Manhattan District Military Intelligence called me to say that General Groves wants the petition classified secret.

Captain Murray confirmed that he authorized me last Monday to "declassify" the petition in a long letter which I received today and in which I am ordered to reclassify the petition secret.

My inclination is to oblige the White House, but I do not think I can reclassify the petition secret at the request of the Manhattan District.

Very sincerely yours,

Leo Szilard

*I enclosed Capt Murray's letter.*

~~SECRET~~

This document consists of 1 page  
No. 1 of 6 copies, series A

Hist C

ARMY SERVICE FORCES  
MANHATTAN ENGINEER DISTRICT  
INTELLIGENCE AND SECURITY DIVISION  
CHICAGO BRANCH OFFICE  
P. O. Box 6770-A  
CHICAGO 80, ILLINOIS

IN REPLY  
REFER TO

EIDM CIC

/js  
28 August 1945

REGISTERED MAIL

Dear Dr. Szilard:

Since writing to you yesterday my attention has been called to the contract of employment between the Metallurgical Laboratory, The University of Chicago, and yourself. It is my understanding that you signed this contract on 28 June 1944 and that since that time it has been twice extended, the first extension covering the period 1 July 1944 to 30 June 1945, and the second extension covering the period 1 July 1945 to 30 June 1946.

Your attention is directed to Paragraph 7 of this contract which reads as follows:

"7. It is further understood that you will be bound by and observe all laws, rules and regulations of the United States Government applicable to contracts with respect to the work being carried on and to the disclosure of information with respect thereto. It is also understood that the Laboratory reserves the right and privilege to terminate this contract of employment immediately, for good and sufficient cause, including but not limited to incompetency, neglect of duty, violation of the applicable rules and regulations of the Laboratory or of the United States Government, or conduct inimical to the interests of the United States Government."

In my opinion the portion of the contract quoted above not only outlines certain contractual relations between you and the University, but specifically puts you on knowledge of the necessity for compliance with the regulations of the United States Government concerning disclosures of classified military information. May I repeat what I wrote you in my letter of 27 August, that such commitments as the above preclude the disclosure by you of any information considered secret by the head of the Manhattan District, Major General L. R. Groves.

~~This document contains information affecting the National Defense of the United States within the meaning of the Espionage Act, 50 U.S.C., 81 and 32. Its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law.~~

Sincerely,

*James S. Murray*  
JAMES S. MURRAY  
Captain, Corps of Engineers  
Intelligence Officer

cc: Lt. Col. W. B. Parsons  
Major Claude C. Pierce, Jr.  
Capt. J. H. McKinley

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*5/13/60*

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And not for re-use or release.  
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(also F-12)

File L. Szilard <sup>bbs 47</sup>  
Danwels x

August 29, 1945

METALLURGICAL LABORATORY  
P. O. Box 5207, Chicago 80, Ill.  
OFFICE OF THE DIRECTOR

AUG 30 1945

A.M. P.M.  
7|8|9|10|11|12|1|2|3|4|5|6

Dr. R. M. Hutchins,  
Chancellor,  
University of Chicago.

Dear Dr. Hutchins:

In July of this year, a petition was sent to the President which was signed by 67 scientists employed by the University of Chicago. After the use of the atomic bomb, I advised the Manhattan District that the petition would no longer be treated as "Secret" and obtained the approval of the Manhattan District for this decision. I am now asked by the Manhattan District to reclassify the text of this petition as "Secret."

In a letter dated August 28, 1945, of which I enclose a copy, the Manhattan District asserts that I would be violating my employment agreement with the University of Chicago if I disclosed the text of the petition.

The Manhattan District's definition of "Secret" includes "information that might be injurious to the prestige of any governmental activity," which is, of course, very different from the definition adopted by Congress in passing the Espionage Act.

A separate telephone call received last Saturday from the Manhattan District advised me that I might be violating my employment contract with the University if I were to publish any article or release anything to the press relating to the problems arising out of the development of the atomic bomb, without first obtaining the approval of the Manhattan District.

The unauthorized disclosure of any scientific or technical information which is in fact secret is, of course, covered by the Espionage Act.

It so happens that I personally have been persistently opposed to the authorized release of such information at the present time and warned against the publication of the Smyth Report as inconsistent with the attitude taken on other related issues by the Government.

It so happens that I personally believe that we should all fully cooperate with the Government at present since it is presumably striving to negotiate some international arrangement aimed at the control of the manufacture of atomic bombs. This cooperation on our part might require restraint in the public utterances of the scientists who have been connected with this development. Such restraint, however, must be voluntary and cannot be successfully achieved by coercion.

Coercion in this respect ought, in my opinion, to be resisted by the scientists and I, for one, am not willing to submit to it.

There was no intention of releasing for publication the text of the petition without checking first with the White House, and I have in fact been in communication with the White House on this subject. Apart from a possible release of the text of the petition, I have not contemplated sending any articles to magazines or making any releases to the press.

When I signed my employment contract with the University I was not aware of the possibility that this contract might be interpreted along the lines now indicated to me by the Manhattan District. The purpose of this letter is to raise the question whether the University intends to take the position that my contract implies the restriction of my freedom of action which the Manhattan District thinks it does.

Does the University intend to take the position that I <sup>would</sup> ~~violated~~ the contract with the University if I made the text of the petition public, assuming that the text contains no disclosure of secret scientific or technical information or anything which, according to the definition of our laws, is in fact a military secret, and taking into consideration that the Manhattan District now chooses to consider the text of the petition as "secret"?

If I wrote articles or made press releases without previous approval of the Manhattan District, would the University wish to take the position that my action would violate my employment contract, assuming that those articles did not contain any technical, scientific or military information which is in fact secret but were considered, on other grounds, undesirable or "secret" by the Manhattan District?

I regret to have to raise this issue and take your time and attention, but I hope that you will consider this special case as part of the broader issue which is involved.

Very sincerely yours,

*signed*  
*Lee Hiland*