

# Remembering Hiroshima

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Hiroshima Day, August 6, 2015

# References

1. <http://www.dannen.com/decision/> - Atomic Bomb: Decision - contains the original, now declassified, documents on the decision to use atomic bombs on the cities of Hiroshima and Nagasaki.
2. <http://www.dannen.com/szilard.html/> - The Leo Szilard page, which not only contains various reports of the time, but also has details on the role played by Leo Szilard and other scientists.
3. <http://www.peak.org/~danneng/decision/usnews.html> - Authorised web-reprint of the full text of the Leo Szilard interview, "President Truman did not understand".
4. <http://www.doug-long.com> - Hiroshima: Was it necessary? A personal exploration of morality and WW-II military history. An excellent analysis of the events in 1945.

# The Book

## THE TRAGEDY OF HIROSHIMA AND NAGASAKI

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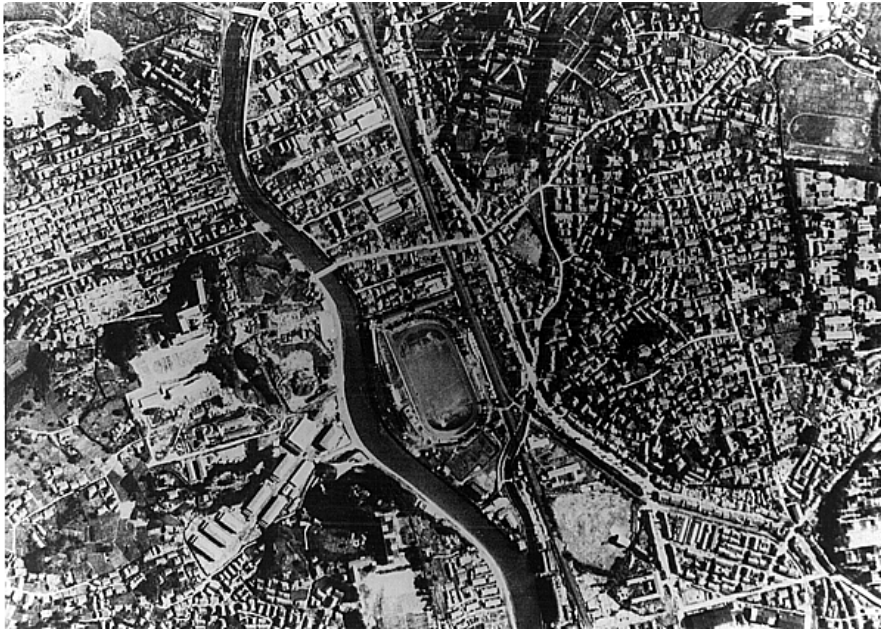
# Hiroshima -1945



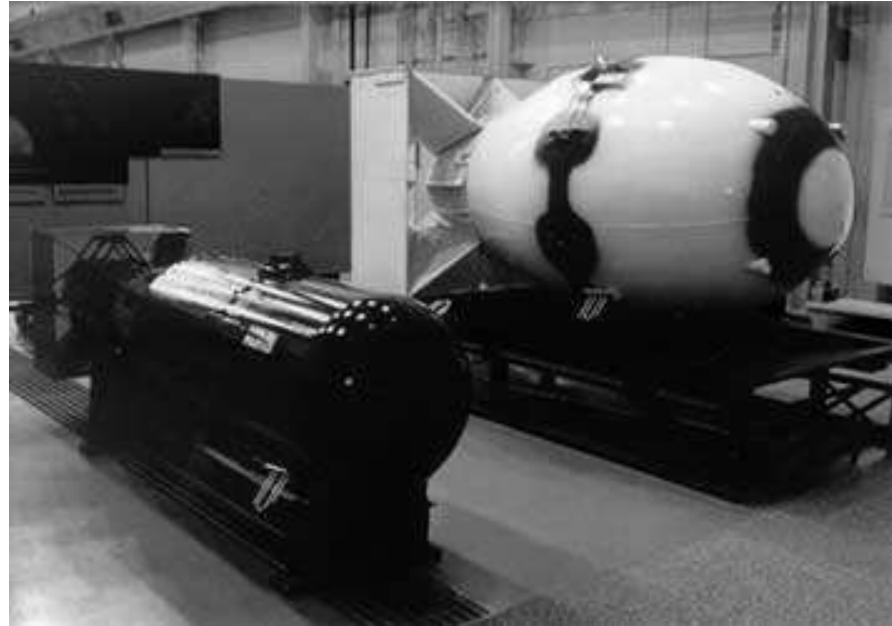
August 6, 1945: 1,40,000 DEAD



# Nagasaki -1945



August 9, 1945: 90,000 DEAD



“A bright light filled the plane,” wrote Lt. Col.<sup>a</sup> Paul Tibbets, the pilot of the Enola Gay, the B-29 that dropped the first atomic bomb. “We turned back to look at Hiroshima. The city was hidden by that awful cloud...boiling up, mushrooming.” For a moment, no one spoke. Then everyone was talking. “Look at that! Look at that! Look at that!” exclaimed the co-pilot, Robert Lewis, pounding on Tibbets’s shoulder. Lewis said he could taste atomic fission; it tasted like lead. Then Lewis turned away to write in his journal. **“My God,” he asked himself, “what have we done?”**

# Outline

Nature of war changed with the birth of Weapons of Mass Destruction (WMD), unleashing the most destructive power of science and technology.

After the Manhattan Project which gave birth to WMD, **the relationship between Physics, Physicists (in particular and scientists in general), Military and Politics changed for ever(\*)**.

This talk traces the events that lead to the development of WMD, selection of the targets, how the decision was made and the actual bombing.

*(\*) “After the war, the physicists were often asked to ... give advice to various sections of the government especially the military... the military felt we were useful for something”—Feynman*

# In a nutshell

In the words of Mr. Kosuke Shishido, one of the “Hibakusha” or survivors of the bomb attack on Hiroshima,

*“I personally do not blame the USA. It was a war. Japan might have done a similar thing in a different situation. However, I believe it was a sin to kill so many people instantly. On the basis of my research, I have concluded ... There was a group of people (military people and scientists) who wanted to experiment with the bomb that they had developed. Some high level people in the government wanted to show the world the military power of the country (in the sense of using A-bomb politically). Some people who played a significant role in the development of the first A-bomb in history wanted to kill as many people as possible to get even with Japan for Pearl Harbour and the Phillipines war. The project that developed the first two A-bombs had spent a significant amount of money and they needed a justification ...”*



# A Time line

- 1938 Fission of Uranium- unleashing the power of nucleus (Hahn, Meitner, Strassmann)
- 1939 August 2nd, Letter to President Roosevelt (Einstein)
- 1942 September, Manhattan project begins with Oppenheimer as its scientific director.
- 1942 December, The first controlled nuclear reactor is built at the University of Chicago by Fermi and collaborators.
- 1945 May 8, Germany surrenders, end of war in Europe.
- 1945 July 16, The Trinity Test in New Mexico desert.
- 1945 August 6 and 9, bombing of Hiroshima and Nagasaki

# The beginning

In the summer of 1939, six months after the discovery of uranium fission by German scientists, its military use was a possibility. Leo Szilard was profoundly disturbed by the possibility that Nazi Germany might make atomic bombs, leading to disastrous consequences for the rest of the world. Szilard turned to Albert Einstein for help.

Einstein agreed to write the letter to the President on 2nd August 1939. He urged the President to start work by a group of physicists on chain reactions which may be used to construct extremely powerful bombs of a new type.

Einstein was a life-long pacifist, nevertheless the sole possession of the atomic bomb by the Nazis with its destructive power allowed him to support efforts by Szilard and share his fears.(\*)

(\*)*Later he regretted his decision and says “ had I known the fear was not justified I would not have participated in the opening of this Pandora’s box.”*

# Einstein's letter- excerpts

August 2, 1939: Some recent work by E. Fermi and L. Szilard, which has been communicated to me in manuscript, leads me to expect that the element uranium may be turned into a new and important source of energy in the immediate future. Certain aspects of the situation which has arisen seem to call for watchfulness and, if necessary, quick action on the part of the Administration. I believe therefore that it is my duty to bring to your attention the following facts and recommendations:

...This new phenomenon would also lead to the construction of bombs, and it is conceivable- though much less certain- that extremely powerful bombs of a new type may thus be constructed. A single bomb of this type, carried by boat and exploded in a port, might very well destroy the whole port together with some of the surrounding territory. However, such bombs might very well prove to be too heavy for transportation by air.

... I understand that Germany has actually stopped the sale of uranium from the Czechoslovakian mines which she has taken over. ...

# Manhattan Project

- Official skepticism stalled the proposal until after the bombing of Pearl Harbour in December 1941.
- The Manhattan project, name given to the atomic bomb project, officially began in August 1942.
- By the beginning of 1945, the atomic bomb was a reality and the work was in full swing for actual testing of the bomb. The details of this effort is well documented — *Richard Rhodes, The making of the atomic bomb*.
- Germany surrendered in May 1945 ending the war in Europe. The original motivation, the fear of Nazis getting hold of the bomb, evaporated.
- The focus shifted to Pacific where Japan was still at war with the allies, while seeking an honourable way out for surrender
- In early May 1945 a target selection committee was formed.



# Project Leaders



Scientific and Military leaders of the project: Dr Robert Oppenheimer and General Leslie Groves.

# Target Committee Report

Excerpts from the meeting held on 10-11 May 1945: Summary of Target, Memorandum for General Groves.

1. The second meeting of the Target Committee convened at 9:00 AM 10 May in Dr. Oppenheimer's office at Site Y with the following present:

General Farrell, Dr. C. Lauritsen, Colonel Seeman, Dr. Ramsey, Captain Parson, Dr. Dennison, Major Derry, Dr. von Neumann, Dr. Stearns, Dr. Wilson, Dr. Tolman, Dr. Penne, Dr. Oppenheimer.

Dr. Bethe and Dr. Brode were brought into the meeting for discussion of Item A of the agenda. ...The concluding meeting was held at 10:00 AM 11 May in Dr. Oppenheimer's office with the following present:

Colonel Seeman, Dr. Stearns, Captain Parsons, Dr. Von Neumann, Major Derry, Dr. Dennison, Dr. Tolman, Dr. Penney, Dr. Oppenheimer, Dr. Ramsey, Dr. Wilson. *The agenda presented by Dr. Oppenheimer consisted of the following... height of detonation, weather..., psychological factors,...use against military objectives,... etc.*

# Selection criterion

Status of Targets (Excerpted from the document produced by the target committee):

Dr. Stearns described the work he had done on target selection. He has surveyed possible targets possessing the following qualification:

- they be important targets in a large urban area of more than three miles in diameter,
- they be capable of being damaged effectively by a blast, and
- they are unlikely to be attacked by next August.

Dr. Stearns had a list of five targets which the **Air Force would be willing to reserve for our use** unless unforeseen circumstances arise.

# Recommended Targets- excerpts

- Kyoto - This target is an urban industrial area with a population of 1,000,000... From the psychological point of view there is the advantage that **Kyoto is an intellectual center for Japan and the people there are more apt to appreciate the significance ...weapon .**
- Hiroshima - This is an important army depot and port of embarkation in the middle of an urban industrial area...and it is such a size that a large part of the city could be extensively damaged. There are **adjacent hills which are likely to produce a focussing effect which would considerably increase the blast damage...**
- Yokohama (Urban Industrial)...- Kokura Arsenal... - Niigata (Port) ...- Emperor's palace!... were also discussed.

**...recommendation of those present ...that the first four choices of targets...:a. Kyoto b. Hiroshima c. Yokohama d. Kokura Arsenal (*No mention of Nagasaki!*)**

Dr Stearns ... to request reservation of these targets (*from the military*).



# Objectives - excerpts

A. It was agreed that psychological factors in the target selection were of great importance. Two aspects of this are (1) obtaining the greatest psychological effect against Japan and (2) making the initial use sufficiently spectacular for the importance of the weapon to be internationally recognised when publicity on it is released.

B. In this respect Kyoto has the advantage of the people being more highly intelligent and hence better able to appreciate the significance of the weapon. Hiroshima has the advantage of being such a size and with possible focussing from nearby mountains that a large fraction of the city may be destroyed. The Emperor's palace in Tokyo has a greater fame than any other target but is of least strategic value.

A. Use against "Military objective": It was agreed that for the initial use of the weapon any small and strictly military objective should be located in a much larger area subject to blast damage in order to avoid undue risks of the weapon being lost due to bad placing of the bomb.

# The Franck Report

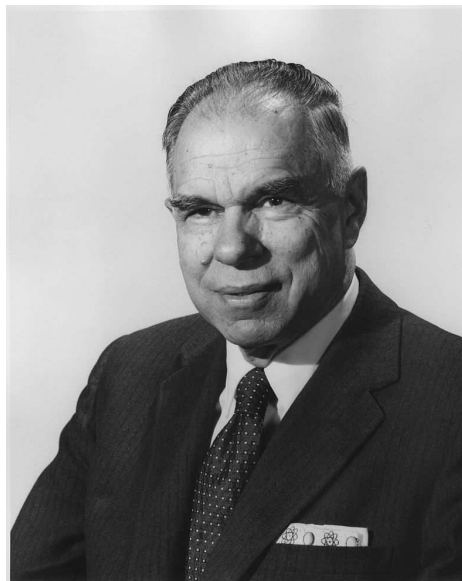
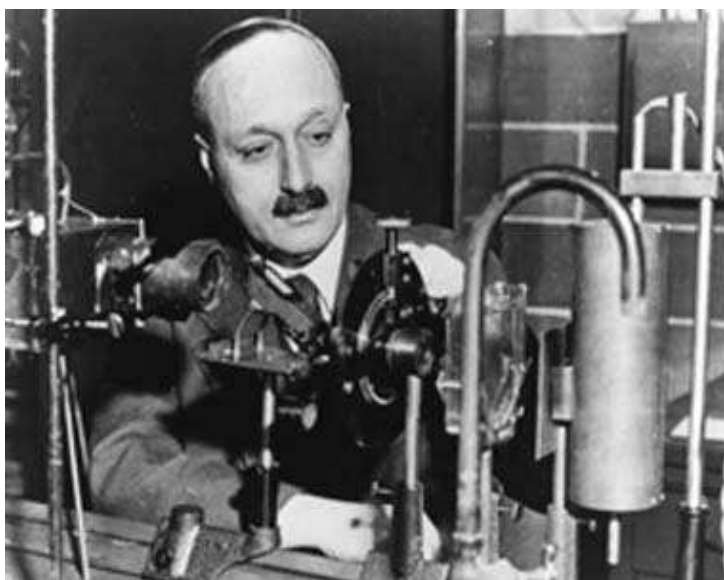
Scientists, in other labs, were beginning to worry about the consequences of its use.

The Franck Report, written by a seven-man (\*) panel of scientists at the University of Chicago, urged that the bomb be demonstrated *before the eyes of representatives of all United Nations, on a desert or a barren island.*

The report is long, detailed and addresses extremely complex and important questions. In many ways the pronouncement of the members was prophetic if one looks back at the last fifty years of the atomic age—  
*(cannot remain secret, ...long term policy must over-ride military expediency, ...towards agreement for effective international control...)*

*(\*) James Franck (Chair), Donald J Hughes, JJ Nickson, Eugene Rabinowitch, Glen T Seaborg, J C Stearns, Leo Szilard. Rabinowitch drafted the report*

# Accident of History



James Franck and Glenn Seaborg.

The committee was appointed by Compton met in secret in all night sessions in secret locations. Manhattan Project authorities were so outraged by this report that some sentences in all copies, including the original in the National Archives, were permanently censored with ink. .

*“By an accident of history, we were among a very few who were aware of a new, world-threatening peril, and we felt obligated to express our views.”— Glenn T. Seaborg*

# No acceptable alternative?

Despite the Franck report and arguments made against the bomb, a scientific panel found *no acceptable alternative*:

Recommendations on the Immediate Use of Nuclear Weapons, by the Scientific Panel of the Interim Committee on Nuclear Power

A. H. Compton, E. O. Lawrence, J. R. Oppenheimer, E. Fermi  
(signature) J. R. Oppenheimer, For the Panel

June 16, 1945

You have asked us to comment on the initial use of the new weapon. This use, in our opinion, should be such as to promote a satisfactory adjustment of our international relations. At the same time, we recognise our obligation to our nation to use the weapons to help save American lives in the Japanese war (\*).

(\*) *Initial military estimates of the American casualties was around 40,000-60,000 in a full scale invasion. After the war exaggerated figures like 300,000 to 500,000 appeared in post-facto justification of the bombing.*



# No acceptable alternative?- excerpts

- To accomplish these ends we recommend that before the weapons are used not only Britain, but also Russia, France, and China be advised... ...these(bombs) may be ready to use during the present war...
- The opinions of our scientific colleagues on the initial use of these weapons are not unanimous... purely technical demonstration to that of the military application best designed to induce surrender...find ourselves closer to these latter views. ...we see no acceptable alternative to direct military use.
- With regard to these general aspects of the use of atomic energy, it is clear that we, as scientific men, have no proprietary rights.... ...no claim to special competence in solving the political, social, and military problems which are presented by the advent of atomic power.

# But there was more opposition!

- Ralph A Bard- Undersecretary of the Navy: says that given the position of US as a humanitarian nation and fair play attitude, Japan should be given a warning before actual use.

However, he feels that Japan may be searching for opportunity for surrender with an assurance on the status of the Emperor of Japan (June 1945)

- Szilard petition signed by 58 other scientists to the President makes the point that the danger has been averted...(July 1945) (the danger of an atomic bomb attack by Germany having lost the war.)
- The Oak Ridge petition signed by 67 members realise the special moral obligation on them, urges demonstration. (mid July 1945).

# “I have become death ...”

## The Trinity Test:

The successful test of the bomb took place on July 16 1945. In a dairy entry President Truman says: *This weapon is to be used against Japan between now and August 10th. ...use it so that military objectives and soldiers and sailors are the target and not women and children. Even if the Japs are savages, ruthless, merciless and fanatic, we as the leader of the world for the common welfare cannot drop the bomb that terrible on the old capital or new. ...*



“I have become death, the shatterer of the worlds” Robert Oppenheimer

# Surrender aborted?

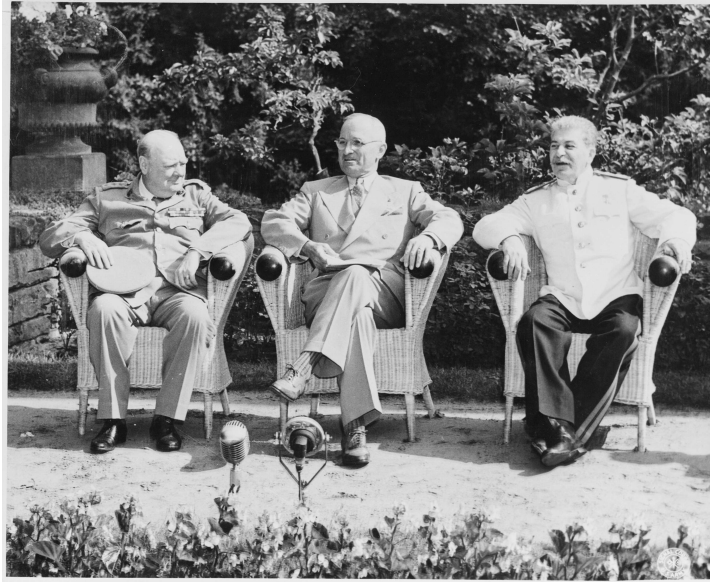
Intercepted cables around July 12-13 showed Japan's Emperor had intervened to end the war.

An intercepted message from Foreign Minister Togo to Ambassador Sato in Moscow said

“The fact that the Americans alluded to the Atlantic Charter is particularly worthy of attention at this time. It is impossible for us to accept unconditional surrender, no matter in what guise, but it is our idea to inform them by some appropriate means that there is no objection to the restoration of peace on the basis of the Atlantic Charter.”(\*)

(\*) *Atlantic Charter was the declaration of peace aims by Roosevelt and Churchill on August 14, 1941. “respect the right of all peoples to choose the form of government under which they live ...”. This would have allowed Japan to keep the status of the Emperor intact. While this was ignored at this time, the status of the Emperor was allowed to remain intact even after the Bombing of Hiroshima and Nagasaki.*

# Powerplay at Potsdam



July 17-Aug.2: The goals of Potsdam conference included the post-war order, peace treaty issues, and countering the effects of the war.

*President Truman delayed the conference to be sure of the Trinity test in the hope that it will enhance the bargaining power. On July 24, 1945 in conversation with Stalin, the President informed him that the United States had successfully detonated the first atomic bomb on July 16, 1945. Apparently Stalin already knew from the intelligence network. The attempt was to keep Stalin out Japan's surrender. The Powerplay at Potsdam marks the beginning of the Cold War.*

# The bombing

- Acting Chief of Staff General Handy gave the orders for bombing to the Air Force General Carl Spaatz after about 3 August 1945 as soon as weather permits. “ personnel from the War Department to observe and record effects of the explosion of the bomb...additional bombs will be delivered ... as soon as made ready by project staff...”
- The actual bombing took place on Hiroshima on 6 August, followed by Nagasaki on the 9th. There is no satisfactory explanation for the bombing of Nagasaki- it was not one of the original targets.
- Truman in his radio address after the bombing on the 9th said “...The world will note that the first atomic bomb was dropped on Hiroshima, a military base. ...we wished to avoid in this first attack to avoid, insofar as possible, the killing of civilians... attack is only a warning of things to come...”. Was he misinformed or did he not understand!



# Later Recollections

What did the Military (outside the secret Manhattan project)? As documented in the interviews, dairies etc we have

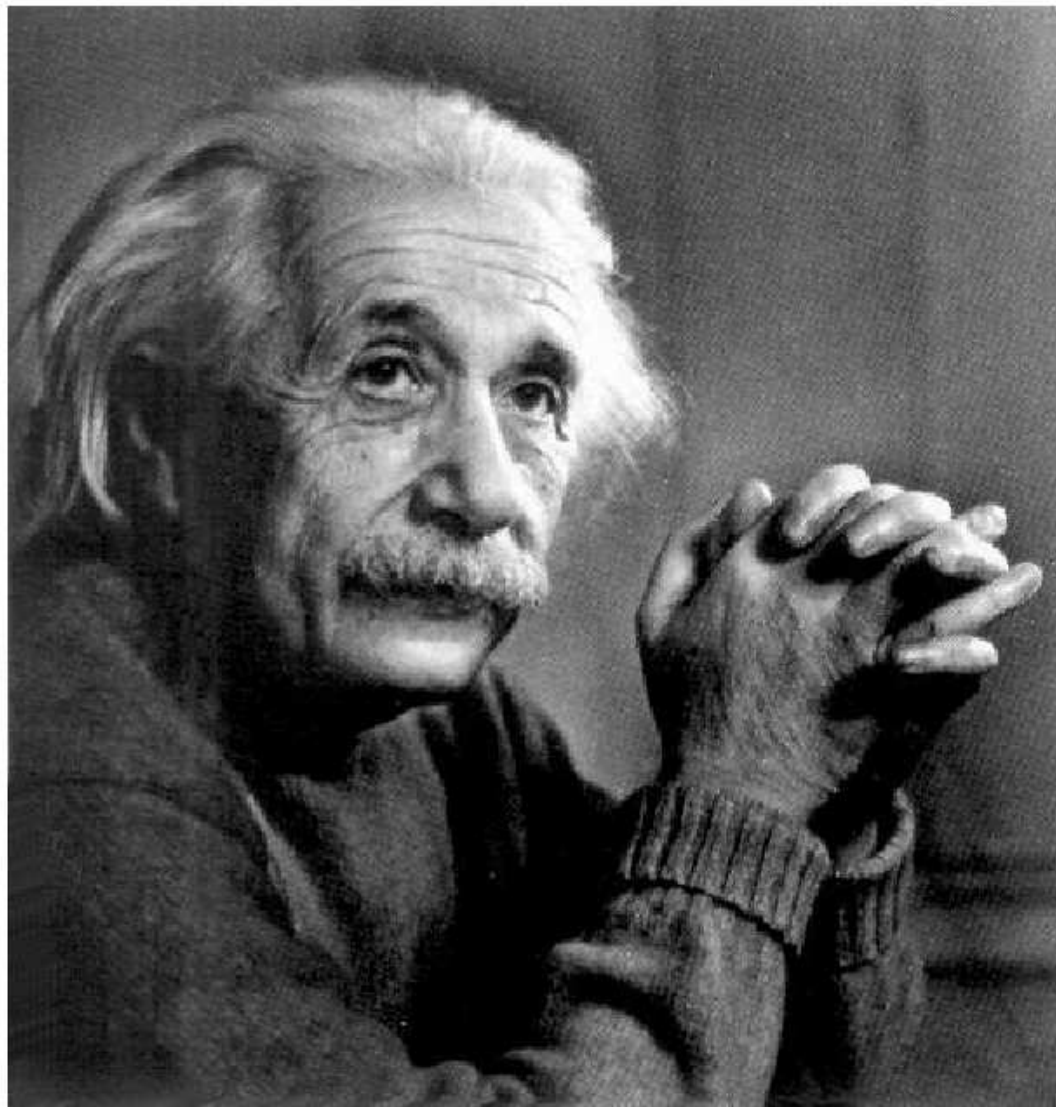
- Admiral Willian D Leahy (Chief of Staff to President)- “The use of this barbarous weapon at Hiroshima and Nagasaki was no material assistance in our war against Japan. **The Japanese were already defeated and ready to surrender....**”
- The commanding general of US Army-Air Forces: Henry H Arnold—**“The Japanese position was hopeless even before the first atomic bomb fell...”**
- General Carl Spaatz- Commander of US Army Strategic Air Force— “I thought that if we were going to drop the atomic bomb drop it on the outskirts- say in Tokyo Bay...made this suggestion over phone...” He insisted on receiving written orders before going forward—commented that **the decision was purely political and not a military one.**
- General MacArthur thought it was a tragedy..., In his memoirs Eisenhower says that the dropping was **“completely unnecessary...no longer mandatory as a measure to save American lives.”**

# Final Word

This talk began with Szilard prodding of Einstein to write the letter to the President Roosevelt. We give him the final word:



*“Suppose Germany had developed two bombs before we had any bombs. And suppose Germany had dropped one bomb, say, on Rochester and the other on Buffalo, and then having run out of bombs she would have lost the war. Can anyone doubt that we would then have defined the dropping of atomic bombs on cities as a war crime...governments acting in a crisis are guided by questions of expediency, and moral considerations are given very little weight,... **Truman did not understand**”*



“... We scientists recognise our inescapable responsibility to carry to our fellow citizens an understanding of atomic energy and its implications for society. In this lies our only security and our only hope—we believe an informed citizenry will act for life and not for death.”