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# The Manhattan Project

Part of the **Einstein** exhibition.

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In 1938, three chemists working in a laboratory in Berlin made a discovery that would alter the course of history: they split the uranium atom. The energy released when this splitting, or fission, occurs is tremendous--enough to power a bomb. But before such a weapon could be built, numerous technical problems had to be overcome.



President Franklin Delano Roosevelt

Photo: FDR Library Archives

When Einstein learned that the Germans might succeed in solving these problems, he wrote to President Franklin Roosevelt with his concerns. Einstein's 1939 letter helped initiate the U.S. effort to build an atomic bomb, but work proceeded slowly at first. Two other findings in 1940 and 1941 demonstrated conclusively that the bomb was feasible and made building the bomb a top priority for the United States: the determination of the "critical mass" of uranium needed and the confirmation that plutonium could undergo fission and be used in a bomb. In December 1941, the government launched the Manhattan Project, the scientific and military undertaking to develop the bomb.

## A Letter to the President

In August 1939, Einstein wrote to U.S. President Franklin Roosevelt to warn him that the Nazis were working on a new and powerful weapon: an atomic bomb. Fellow physicist Leo Szilard urged Einstein to send the letter and helped him draft it.

## Einstein: A Security Risk

In July 1940, the U.S. Army Intelligence office denied Einstein the security clearance needed to work on the Manhattan Project. The hundreds of scientists on the project were forbidden from consulting with Einstein, because the left-leaning political activist was deemed a potential security risk.



Photo: U.S. National Archives

## August 6, 1945

First atomic bomb dropped on Hiroshima, Japan

"Woe is me."—Albert Einstein, upon hearing the news of the Hiroshima bombing

## The Bombing of Japan

On August 9, 1945, the United States dropped an atomic bomb on the city of Nagasaki, Japan, three days after bombing Hiroshima. By the end of 1945, an estimated 200,000 people had died in the two cities.

# Einstein and the Nuclear Age

Although he never worked directly on the atomic bomb, Einstein is often incorrectly associated with the advent of nuclear weapons. His famous equation  $E=mc^2$  explains the energy released in an atomic bomb but doesn't explain how to build one. He repeatedly reminded people, "I do not consider myself the father of the release of atomic energy. My part in it was quite indirect." Nevertheless, Einstein

was frequently asked to explain his role—as he was when a Japanese magazine editor asked him, "Why did you cooperate in the production of atomic bombs, knowing full well their... destructive power?"

Einstein's answer was always that his only act had been to write to President Roosevelt suggesting that the United States research atomic weapons before the Germans harnessed this deadly technology. He came to regret taking even this step. In an interview with *Newsweek* magazine, he said that "had I known that the Germans would not succeed in developing an atomic bomb, I would have done nothing."

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