

## Twitter Thread by AKASH



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### **LEO SZILARD - THE MAN WHO OWNED THE PATENT ON ATOMIC BOMB & CHANGED THE WORLD**

**Leo Szilard, an almost unknown scientist in today's times, made some surprising important contributions to science and society. Give in ur 10 mins to this thread bcoz ur mind is about to be blown.**

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Szilard owned the patent on the atomic bomb - (<https://t.co/MLq4JXPxVs>). Pause for a minute and let that last statement sink in - there was a patent on the atomic bomb and this man owned it. The neutron was discovered in 1932 by James Chadwick and soon after, Szilard invented

and patented the idea of a neutron based nuclear chain reaction in 1933-34, which also describes the resulting explosion.

In his university days, Szilard took courses from Einstein, who also highly praised Szilard's doctoral thesis.

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In the late 1920s, they worked together to develop refrigerators with no moving parts and they shared a few patents on those. Yes - Einstein had patents on refrigerators. Unfortunately, these refrigerators never became a commercial success,

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though a form of such refrigerators are still used today in nuclear power plants. Einstein and Szilard were very good friends throughout their lives. After discovery of fission in 1938,

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Szilard was one of the very first to understand that creating nuclear weapons was now feasible and that the Allies needed to build atomic weapons before the Nazis did it (WWII was just around the corner).

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To explain this urgency, he (with a bit of help from Wigner and Teller) wrote a letter to President Franklin D Roosevelt (FDR)... but he also knew that he was not famous enough to be taken seriously enough.

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He was not going to let the letter get lost or overlooked in other random communication. He was very close friends with Einstein, whom he asked to sign the letter to increase its importance.

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When Szilard approached Einstein for signing the letter, Einstein had barely heard about the fission of Uranium in Germany, but he had no idea about the possibility of an atomic bomb.

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When Szilard explained the situation, Einstein exclaimed -, 'Daran habe ich gar nicht gedacht' - "I had not thought of that at all". Einstein shared Szilard's concerns about Germany building the bomb before the allies and agreed to sign the letter.

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Einstein later said that his only contribution to the atomic bomb was to act as Leo Szilard's mailbox

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## Einstein and Szilard recreating in 1946 the original Roosevelt Letter



Albert Einstein and Leo Szilard, in 1946 after the war, recreating the signing of the Roosevelt letter. In the original letter mostly drafted by Szilard, Einstein wanted a shortened version to which Szilard composed both a shortened and more lengthened version. Einstein accepted the lengthened version after some revisions.

This letter, written by Szilard and signed by Einstein, was delivered to FDR and was directly responsible for the creation of the Manhattan Project and the atomic bomb. Unfortunately, the letter became widely known as the "Einstein letter".

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In the above picture, its referred to as the "Roosevelt letter". It should really be called the "Szilard-Einstein letter". Szilard, along with Enrico Fermi, owned the patent on the nuclear reactor.

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As a proof of concept experiment, and one of the first tasks undertaken under the Manhattan project, they collaborated to create the first self sustained nuclear chain reaction ( world's first nuclear reactor ) in Chicago in 1942.

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Even before the bomb had been built, Szilard and Niels Bohr envisioned the bomb as a vehicle for world peace... a bomb which will make it impossible for any country to invade another (assuming both had it). That is exactly what the atomic bomb achieved.

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I love the inherent irony in this idea... build a huge bomb which will eradicate world wars. The best example of an out of the box solution.

This is the reason why Szilard and Bohr (and many others) wanted to share the bomb technology with other countries (Russia specifically).

Many scientists working on the bomb also believed that the bomb was too great a weapon to be a monopoly in the hands of any single country. If the technology was not shared, Szilard and Bohr foresaw the cold war and the nuclear arms race as the logical conclusion arising

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from such a situation (<https://t.co/Ook5f3ijMi>). They were right again. Bohr and Szilard were the Seldons of our world (ref Asimov's Foundation series).

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Szilard wanted the bomb to be used only as a deterrent (as a defensive weapon), and when he came to know about the plans of the military to use it aggressively against Japan, he argued and verbally fought with General Leslie Grove

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(Groves was Oppenheimer's boss and the head of the overall Manhattan Project).

When Szilard shouted at Groves in anger, Groves threw Szilard out of the Manhattan project and toyed with the idea of imprisoning Szilard (<https://t.co/rUxmclzAUP>)

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He was spared imprisonment when many other scientists working on the bomb voiced their support for Szilard. Either way, Groves failed to find any hard evidence against Szilard.

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Szilard wrote another letter to FDR (again through Einstein) explaining that the bomb should not be used against Japanese cities, but FDR died a few days before receiving the message.

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Szilard then tried to contact President Truman but his message never reached Truman (or was ignored).

After the bombs were dropped on Japan, Szilard left nuclear physics and started working on molecular biology.

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Later in life, he was diagnosed with bladder cancer, and doctors gave him a bad probability of survival. Using his knowledge of radioactive elements and biology, Szilard came up with an experimental radiotherapy treatment regimen to irradiate the cancerous cells

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using gamma radiation from the Cobalt 60 isotope. The doctors warned him that he would die because of the increased radiation, but Szilard persisted. Using this method, he cured his cancer and made a complete recovery.

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This new regimen of Radiation therapy has been since used to treat some cancers.

Leo Szilard died of a heart attack in his sleep on 30th May, 1964. The next day, the New York Times published the news of his death on their front page.

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Although not well known today, he has not been forgotten. He is well known in the inner circles of nuclear physicists and scientific historians; the proof is that there is a crater on the Moon that is named after Szilard, but its on the far side of the moon - which will

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never be visible to humans directly from the Earth. Might be appropriate in a way... its looking farther into space. He was also inducted in the US National Inventors Hall of Fame in 1996.

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Leo Szilard is responsible for eradicating large scale conflicts and World Wars, inventing nuclear power plants, and on top of all that, he also invented a new radiotherapy regimen to fight cancer.

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Few famous people have had such a huge impact on the world and it saddens me that he is so obscure.

Szilard, in this picture, is carrying a book titled "A plan for peace".

But his own plan worked

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