Oppenheimer Paradox: Power Of Science And The Weakness Of Scientists

Prabir Purkayastha – Photo: Newsclick

The new blockbuster film on Oppenheimer has brought back the memories of the first nuclear bomb dropped on Hiroshima. It has raised complex questions on the nature of the society that permitted such bombs to be developed and used and the stockpiling of nuclear arsenals that can destroy the world many times over. Did the infamous McCarthy era and hunting for reds everywhere have any relationship with the pathology of a society that suppressed its guilt over the bombing of Hiroshima and Nagasaki, substituting it instead with a belief in its exceptionalism? What explains the transformation of Oppenheimer, who had emerged as the "hero" of the Manhattan Project that built the atomic bomb, to a villain and then forgotten?

I remember my first encounter with American guilt over the two atom bombs dropped on Japan. I was attending a conference on distributed computer controls in Monterey, California, in 1985, and our hosts were the Lawrence Livermore Laboratories. This was the weapons laboratory that had developed the hydrogen bomb. During dinner, the wife of one of the nuclear scientists asked the Japanese professor at the table if the Japanese understood why the Americans had to drop the bomb on Japan. That it saved a million lives of American soldiers? And many more Japanese? Was she looking for absolution for the guilt that all Americans carried? Or was she seeking confirmation that what she had been told and

believed was the truth? That this belief was shared even by the victims of the bomb?

This is not about the Oppenheimer film; I am only using it as a peg to talk about why the atomic bomb represented multiple ruptures in society. Not just at the level of war, where this new weapon changed the parameters of war completely. But also the recognition in society that science was no longer the concern of the scientists alone but of all of us. For scientists, it also became a question that what they did in the laboratories had real-world consequences, including the possible destruction of humanity itself. It also brought home that this was a new era, the era of big science that needed mega bucks!

Strangely enough, two of the foremost names of scientists at the core of the anti-nuclear bomb movement after the war also had a major role in initiating the Manhattan Project. Leo Szilard, a Hungarian scientist who had become a refugee in England first and then in the United States, sought Einstein's help in petitioning President Roosevelt for the United States to build the bomb. He was afraid that if Nazi Germany built it first, it would conquer the world. Szilard joined the Manhattan Project, though he was located not in Los Alamos but in the University of Chicago's Metallurgical Laboratories. Szilard also campaigned within the Manhattan Project for a demonstration of the bomb before its use on Japan. Einstein also tried to reach President Roosevelt with his appeal against the use of the bomb. But Roosevelt died, with Einstein's letter unopened on his desk. He was replaced by Vice-President Truman, who thought that the bomb would give the United States a nuclear monopoly, therefore, help subjugate the Soviet Union in the post-War scenario.

Turning to the Manhattan Project. It is the scale of the project that was staggering, even by today's standards. At its peak, it had employed 125,000 people directly, and if we include the many other industries who were either directly or indirectly produced parts or equipment for the bomb, the number would be close to half a million. The costs again were huge, $2 billion in 1945 (around $30-50 billion today). The scientists were an elite group that included Hans Bethe, Enrico Fermi, Nils Bohr, James Franck, Oppenheimer, Edward Teller (the villain of the story later), Richard Feynman, Harold Urey, Klaus Fuchs (who shared atomic secrets with the Soviets) and many more glittering names. More than two dozen Nobel prize winners were associated with the Manhattan Project in various capacities.

But science was only a small part of the project. The Manhattan Project wanted to build two kinds of bombs: one using uranium 235 isotope and the other plutonium. How do we separate fissile material, U 235, from U 238? How do we concentrate weapons grade plutonium? How to do both at an industrial scale? How do we set up the chain reaction to create fission, bringing sub-critical fissile material together to create a critical mass? All these required metallurgists, chemists, engineers, explosive experts, and the fabrication of completely new plants and equipment spread over hundreds of sites. All of it is to be done at record speeds. This was a science "experiment" being done, not at a laboratory scale, but on an industrial scale. That is why the huge budget and the size of the human power involved.

The U.S. government convinced their citizens that Hiroshima, and three days after that, the Nagasaki bombings led to the surrender of Japan. Based on archival and other evidence, it is clear that more than the nuclear bombs, the Soviet Union declaring war against Japan was what led to its surrender. They have also shown that the number of "one million American lives saved" due to Hiroshima and Nagasaki, as it avoided an invasion of Japan, had no basis. It was a number created entirely for propaganda purposes.

While the American people were given these figures as serious calculations, what was completely censored were the actual pictures of the victims of the two bombs. The only picture available of the Hiroshima bombing—the mushroom cloud—was the one taken by the gunner of Enola Gay. Even when a few photographs of Hiroshima and Nagasaki were released months after the nuclear bombings, they were only of shattered buildings, none of actual human beings.

The United States, basking in their victory over Japan, did not want it to be marred by the visuals of the horror of the nuclear bomb. The United States dismissed people dying of a mysterious disease, what the United States knew was radiation sickness, as propaganda by the Japanese. To quote General Leslie Groves who led the Manhattan Project, these were "Tokyo Tales". It took seven years for the human toll to be visible, and only after the United States ceased its occupation of Japan. Even this was only a few pictures, as Japan was still cooperating with the United States in the hushing up of the horror of the nuclear bomb. The full visual account of what happened in Hiroshima had to wait till the sixties: the pictures of people vaporized leaving only an image on the stone on which they were sitting, survivors with skin hanging from their bodies, people

dying of radiation sickness.

The other part of the nuclear bomb was the role of the scientists. They became the heroes who had shortened the war and saved one million American lives. In this myth making, the nuclear bomb was converted from a major industrial scale effort to a secret formula discovered by a few physicists which gave the United States enormous power in the Post War era. This was what made Oppenheimer a hero for the American people. He symbolized the scientific community and its godlike powers. And also the target for people like Teller, who later on combined with others to bring Oppenheimer down.

But if Oppenheimer was a hero just a few years back, how did they succeed in pulling him down?

It is difficult to imagine that the United States had a strong left movement before the 2nd World War. Apart from the presence of the communists in the workers movements, the world of the intelligentsia— literature, cinema and the physicists—also had a strong communist presence. As can be seen in the Oppenheimer film. The idea that science and technology can be planned as Bernal was arguing in the UK, and should be used for public good was what the scientists had embraced. That is why the physicists, at that time at the forefront of the cutting edge in sciences—relativity, quantum mechanics—were also at the forefront of the social and political debates *in* science and *on* science.

It is this world of science, a critical worldview collided with the new world where the United States should be the exceptional nation and the sole global hegemon. Any weakening of this hegemony could only happen because some people, traitors to this nation, gave away "our" national secrets. Any development anywhere else could be only a result of theft, and nothing else. This campaign was also helped due to the belief that the atom bomb was the result of a few equations that scientists had discovered and could therefore be easily leaked to enemies.

This was the genesis of the McCarthy era, a war on the U.S. artistic, academic and the scientific community. For a search for spies under the bed. The military industrial complex was being born in the United States and soon took over the scientific establishment. It was the military and the energy—nuclear energy—budget that would henceforth determine the fate of scientists and their grants. Oppenheimer needed to be punished as an example to others. The

scientists should not set themselves up against the gods of the military industrial complex and their vision of world domination.

Oppenheimer's fall from grace served another purpose. It was a lesson to the scientific community that if it crossed the security state, no one was big enough. Even though Rosenbergs—Julius and Ethel—were executed they were relatively minor figures. Julius had not leaked any atomic secrets, only kept the Soviet Union abreast of the developments. Ethel, though a communist, had nothing to do with any spying. The only person who did leak atomic "secrets" was Klaus Fuchs, a German communist party member, who escaped to the UK, worked in the bomb project first in the UK and then in the Manhattan project as a part of the British team there. He made important contributions to the nuclear bomb triggering mechanism and shared these with the Soviet Union. Fuchs' contribution would have shortened the Soviet bomb by possibly a year. As a whole host of nations have shown, once we know a fissile bomb is possible, it is easy for scientists and technologists to duplicate it. As has been done by countries as small as North Korea.

The Oppenheimer tragedy was not that he was victimized in the McCarthy era and lost his security clearance. Einstein never had security clearance, so that need not have been a major calamity for him either. It was his public humiliation during the hearings when he challenged the withdrawal of his security clearance that broke him. The physicists, the golden boys of the atomic era, had finally been shown their true place in the emerging world of the military industrial complex.

Einstein, Szilard, Rotblatt and others had foreseen this world. They, unlike Oppenheimer, took to the path of building a movement against the nuclear bomb. The scientists, having built the bomb, had to now act as conscience keepers of the world, against a bomb that can destroy all humanity. The bomb that still hangs as a Damocles sword over our heads.

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