

The United States' General Advisory Committee on H-Bomb in the report of 30th Oct, 1949 to the Atomic Energy Commission

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In respect to those who suffered from the Japan bombing (WWII).

Abstract: Signed in 1946 by President Harry S. Truman, the Atomic Energy Commission was established to foster the peacetime development of the atomic sciences. On having witnessed the magnitude of atomic bombs on Hiroshima and Nagasaki in 1945, and having realized the need to revisit the nuclear security to match with the European and Russian competition, GAC recommended the project 'Super Bomb' (hydrogen fission mechanism weapon) to be dealt with high priority in the famous report of 30th Oct, 1949 to the commission. This essay showcases the resistance in the report on ethical and humane grounds by many dominant figures of the physics community who had worked earlier on the Manhattan project in Los Alamos.

It was on witnessing their deployment that the federal government realized with these nuclear weapons their practically unrestrained potential to inflict destruction.¹ Edward Teller discussed the possible design of the super bomb in a conference at Los Alamos on April 18-20, 1946, where his assessments were concluded to be too favorable to account for high radiation loss in deuterium burning. Teller's model was so uncertain that Robert J. Oppenheimer, the director of Los Alamos for the atomic bombs, and on whose and Hans Bethe's approval – Teller devoted one year on the super bomb, said later that he wished the Russians were building their own H-bomb based on that design, so that it would almost retard

¹ Divyansh Mansukhani, "On Physics and Politics in the United States after World War II," General Science and Philosophy, ViXra, 04.20.2019, pp 2

their progress on it.² Nonetheless, Teller's optimism was taken seriously at least by those who proposed and verified that the addition of tritium to the thermonuclear mixture would likely lower its ignition temperature. As we know, Teller is known today as "the father of H-bomb." If it was proposed in 1946 itself, and that the advancement rate since the establishment of Los Alamos could have likely accommodated the bomb's production, why did the GAC had to emphasize on initiating some solid work on the bomb as delayed as on 30th Oct, 1949? The first reason pertains to the deduction by Neil deGrasse Tyson that history has shown expensive projects including the Apollo missions to have driven by geopolitical purposes and not merely for science exploration.³ In this case, the committee had to follow up for President Truman's announcement of a crash development program for the H-bomb on the Soviet Union's first test detonation of an atomic bomb on 29 Aug, 1949. The second reason was the unsurety within the committee members to proceed for something which shall bear exponentially devastating potential in comparison to the deployed atomic bombs. By presenting the majority and minority annex along with the primary report as "separate views of the members," they were essentially utilizing the platform to persuade the AEC to influence the policy in their favor.^{4,5}

While the primary report was issued with the undersigning of Oppenheimer, who was the then chairman of the committee, the annexes were signed by eight dominant figures including E. Fermi.⁶ In contrast to the primary report which included the technicalities concerning the production and delivery of tritium, the annexes bluntly iterated that the members recommend strongly against building of the bomb. On the military advantage from the bomb, while the majority annex read that "the

² Richard Rhodes, "Dark Sun: The Making of the Hydrogen Bomb," New York: Simon and Schuster, 1995, pp 252-255

³ Neil deGrasse Tyson, "The Storytelling of Science," 2017

⁴ Divyansh, "On the Physics and Politics...", pp 3

⁵ GAC, "General Advisory Committee's Majority and Minority Reports on Building the H-Bomb," Developing the Hydrogen Bomb, atomicarchive

⁶ Ibid

extreme dangers to mankind inherent in the proposal wholly outweigh any military advantage that could come from this development, the minority annex emphasized that “such a weapon goes far beyond any military objective.”⁷ To resist immediate “all-out” effort to produce the weapon, the majority annex mentioned the high uncertainty of Russians producing the bomb within a decade.⁸ Further on this, it mentioned the large stocks of atomic bombs to counter the slight chances. By mentioning that to sustain hopes of mankind, President should confront America and the world to accept that proceeding will be wrong, the report suggested the fission weapons as the upper-bound that America should never cross.^{9,10}

Rest, as is encompassed in the history, the first test of the H-bomb was conducted on 1st Nov, 1952 under the code name ‘Ivy Mike’ on the island of Elugelab, Pacific. The apparatus, the thermonuclear device, which could produce every known naturally occurring element and a few more in a certain transit and had its mushroom rose to an altitude of more than 41 km with the top eventually spreading out to a diameter of 161 km is what one might consider as a mega-engineering. **Ethics was compromised.** The U.S. politics extracted benefits from the physics community for their intentions and those who kept on resisting such as Oppenheimer – the hero of WWII – were excluded and suppressed for the rest of their lives.¹¹

[1] Divyansh Mansukhani, “On Physics and Politics in the United States after World War II,” General Science and Philosophy, ViXra

[2] Richard Rhodes, “Dark Sun: The Making of the Hydrogen Bomb,” New York: Simon and Schuster

[3] Neil deGrasse Tyson, “The Storytelling of Science,” 2017

[4] GAC, “General Advisory Committee’s Majority and Minority Reports on Building the H-Bomb,” Developing the Hydrogen Bomb, atomicarchive

⁷ GAC, “General Advisory Committee’s ...”

⁸ Ibid

⁹ Ibid

¹⁰ Divyansh, “On the Physics and Politics...,” pp 3

¹¹ Ibid, pp 2-7