

**ANALYSING THE SHADES OF TRAUMA IN *OPPENHEIMER* :**

**A VINDICATION**



*Project submitted to St. Teresa's College (Autonomous) in partial fulfilment of the requirement for the degree of BACHELOR OF ARTS in English Language and Literature*

**By**

**JYOTHY KRISHNA C SAJU**

**Register No. AB21ENG016**

**III B. A. English Literature**

**St. Teresa's College (Autonomous)**

**Ernakulam**

**Cochin -682011**

**Kerala**

**Supervisor**

**DR. JEENA ANN JOSEPH**

**Assistant Professor**

**Department of English**

**St. Teresa's College (Autonomous)**

**Ernakulam**

**Kerala**

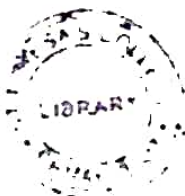
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| Author Name              | JYOTHY KRISHNA C SAJU  |
| Course of Study          | BA English Language & Literature                                 |
| Name of Guide            | Dr JEENA ANN JOSEPH  |
| Department               | English & Centre For Research                                    |
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**Jyothy Krishna C Saju**

**Register No: AB21ENG016**

**III B.A. English Language and Literature**

**Ernakulam**

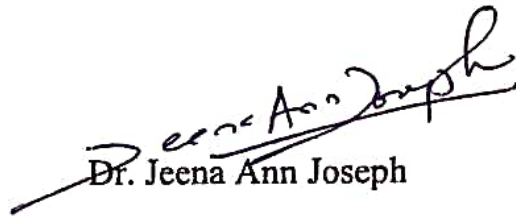
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## CERTIFICATE

I hereby certify that this project entitled “Analysing the Shades of Trauma in *Oppenheimer* A Vindication” by Jyothy Krishna C Saju is a record of bona fide work carried out by her under my supervision and guidance.

  
Dr. Jeena Ann Joseph

Assistant Professor

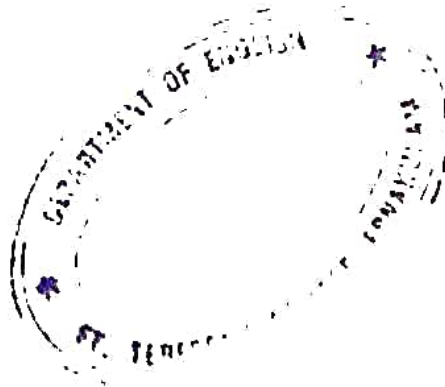
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Jyothy Krishna C Saju

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## Introduction

World War I, also known as the Great War, lasted from 1914 to 1918 and was one of the deadliest conflicts in human history. It involved major world powers divided into two opposing alliances: the Allies, which included France, Russia, the United Kingdom, Italy (from 1915), and later the United States from 1917, among others, and the Central Powers, primarily Germany, Austria-Hungary, and the Ottoman Empire.

*J. Robert Oppenheimer* was born in April 1904 to an upper-class family in New York city. A consistent theme throughout his life was not only his intelligence, but the broad range of subjects over which he excelled and was interested. This characteristic was apparent early-on: as a child, he studied science extensively, but also was interested in poetry and literature. He was also an avid rock collector; indeed, keeping with his precocious nature, he became such an adept amateur geologist that he was even admitted to the Mineralogical Club in New York at the age of 11. *Oppenheimer* went on to earn a bachelors degree at Harvard in 1925 and a doctorate at Göttingen in 1927 under Max Born, all in physics. He took on a joint position between Caltech and Berkeley in 1930. The bulk of *Oppenheimer's* work during this focused on the blossoming field of quantum mechanics, and specifically experimental nuclear physics.

The fall of France in 1940 horrified *Oppenheimer*, and after the U.S. entry into the war, he felt a deep obligation to join the American war effort. For *Oppenheimer*, joining the war effort was not merely a matter of patriotism; he believed that stopping fascism was a matter of saving Western civilization itself. Soon after the American entry into the war, he was appointed leader of the Manhattan Project in early 1942, and began searching for the brightest nuclear physicists, chemists, and engineers in the United States. As a technological achievement, the bomb is perhaps only rivalled by the computer in human history: because

the scientists lacked anything beyond rudimentary computational power, and experiments with nuclear material was far too expensive and dangerous, the scientists and engineers designed the bomb using purely theoretical principles. After several years, their efforts proved fruitful: on July 16, 1945, the first-ever atomic bomb was detonated at Alamogordo, New Mexico, and in August 1945 two perhaps only rivalled by the computer in human history: because the scientists lacked anything beyond rudimentary computational power, and experiments with nuclear material was far too expensive and dangerous, the scientists and engineers designed the bomb using purely theoretical principles. After several years, their efforts proved fruitful on July 16, 1945, the first-ever atomic bomb was detonated at Alamogordo, New Mexico, and in August 1945 two atomic bombs were dropped on Hiroshima and Nagasaki, which ultimately pushed the Japanese to surrender. Oppenheimer was largely credited with the success of the Manhattan Project. Because of his successful leadership, he eventually arose to national - even international - fame as a scientist surpassed only by Albert Einstein.

The first chapter “The Politics of Creation and Destruction” gives a detailed description of the trauma faced by *Oppenheimer* during his research and foregrounds the inherent the politics of creation and destruction. It also gives a detailed description of the initial days of the Manhattan project.

The second chapter talks about the aftermath of creative destruction, how it affected Hiroshima and Nagasaki and indirectly, the man behind the bomb. This project seeks to examine the challenges faced by Oppenheimer during the Manhattan project, the aftermath of the notorious atomic bombings, and also attempts to vindicate the scientist Oppenheimer who remains a misinterpreted figure in history.



## Chapter-1

### The Politics of Creation and Destruction

Trauma theory is an area of cultural investigation that emerged in the early 1990s as a product of the so-called ethical turn affecting the humanities. It promised to infuse the study of literary and cultural texts with new relevance. Amid accusations that literary scholarship, particularly in its deconstructive, poststructuralist, or textualist guise, had become indifferent or oblivious to 'what goes on in the real world the world outside the text: history, politics, ethics, trauma theory confidently announced itself as an essential apparatus for understanding 'the real world' and even as a potential means for changing it for the better. The study of trauma, particularly in psychology and related fields, has been a subject of interest for many researchers and scientists. There isn't a single "trauma theory" but rather a collection of theories and perspectives that have evolved over time to explain how individuals experience and respond to traumatic events. traumatic experiences can lead to repressed memories and unconscious conflicts that influence behaviour and mental health later in life.

Trauma is seen as an unresolved psychological conflict that continues to impact the individual. *Oppenheimer's* experiences during the Manhattan Project and the subsequent use of atomic bombs on Hiroshima and Nagasaki undoubtedly had profound psychological effects on him. Witnessing the destructive power of the atomic bomb and being involved in its creation likely raised moral and ethical questions for him. These experiences could have contributed to feelings of guilt, responsibility, and existential angst. In terms of trauma theory, one could speculate that Oppenheimer may have experienced symptoms consistent with post-traumatic stress disorder or moral injury. PTSD can result from exposure to traumatic events, while moral injury occurs when an individual's actions or witnessing of

events conflict with their moral beliefs. However, it's important to note that without direct evidence or *Oppenheimer's* own statements on the matter, these interpretations remain speculative. *Oppenheimer's* experiences with the Manhattan Project undoubtedly had profound psychological effects on him, and they continue to be subjects of historical and psychological analysis.

The scientist *J Robert Oppenheimer* had to undergo intense trauma during his research. He faced lot of problems and mental issues while working on the bomb. While talking about his mental health it is imperative to understand the challenges he faced in his life too. Oppenheimer was under immense pressure to succeed in developing the atomic bomb.

The success of the Manhattan Project was seen as essential to the Allied war effort, and Oppenheimer knew that the lives of millions of people could depend on the outcome. Oppenheimer, the "father of the atomic bomb," led the Manhattan Project, developed the first atomic bombs, and regretted their use, emphasizing the need for ethical guidelines in scientific advancements. The story of *Oppenheimer* raises questions about the ethical responsibilities and potential dangers of Scientific and technological advancements, reminding us of the need to consider the long- term consequences and impacts on society.

The story of *Oppenheimer* raises questions about the ethical responsibilities and potential dangers of Scientific and technological advancements, reminding us of the need to consider the long- term consequences and impacts on society. He faced so many pressure to succeed.

The Manhattan Project was a top-secret project, and *Oppenheimer* had to keep the work at Los Alamos hidden from the public. This secrecy made it difficult to recruit and retain top scientists, and it also made it difficult to share information with other scientists who could have helped with the project. Oppenheimer faced many

technological challenges. The development of the atomic bomb was a technically challenging undertaking. *Oppenheimer* and his team had to overcome many obstacles, including the lack of basic knowledge about nuclear physics and the need to develop new technologies. *Oppenheimer* also had to deal with the human challenges of leading a team of scientists and technicians under pressure. He had to manage egos, resolve conflicts, and keep morale high. The pressure on *Oppenheimer* to succeed was immense. The success of the Manhattan Project was seen as essential to the Allied war effort, and seen *Oppenheimer* knew that the lives of millions of people could depend on the outcome. He often felt that he was carrying the weight of the world on his shoulders. The secrecy of the project made it difficult to recruit and retain top scientists, and it also made it difficult to share information with other scientists who could have helped with the project. *Oppenheimer* had to be very careful about what he said and to whom he said it.

*Oppenheimer* was able to lead Los Alamos to success. The atomic bomb was developed, and it played a decisive role in the Allied victory in World War II. However, the challenges that *Oppenheimer* faced left a lasting mark on him, and he never fully recovered from the experience. *Oppenheimer* faced lot of personal struggles during his career like McCarthyism and Security Clearance Revocation. One of the most challenging periods in *Oppenheimer's* life came during the McCarthy era in the United States in the early 1950s. Due to his past associations and left-leaning political views, *Oppenheimer's* security clearance was revoked by the Atomic Energy Commission (AEC). He was accused of being a security risk and having communist sympathies. This event had a profound impact on his career and personal life, leading to public humiliation and tarnishing his reputation. Guilt and Moral Responsibility, *Oppenheimer's* work on the Manhattan Project, where he played a

crucial role in developing the atomic bomb, weighed heavily on him. He struggled with the ethical implications of his scientific contributions. After witnessing the destructive power of the bomb, particularly during the bombings of Hiroshima and Nagasaki, *Oppenheimer* expressed regret and moral anguish.

He later said, "Now I am become Death, the destroyer of worlds," quoting from Hindu scripture.

*Oppenheimer* experienced a sense of disillusionment regarding the direction of scientific research, especially with regards to nuclear weapons. He became an advocate for international control of atomic energy and spoke out against the development of the hydrogen bomb. *Oppenheimer's* stance put him at odds with influential figures in the American government and military, leading to further conflicts and strained relationships. *Oppenheimer* faced several health challenges throughout his life. He suffered from a series of ailments, including gastric problems, duodenal ulcers, and severe depression. These health issues often impacted his work and personal well-being, causing depression. In a world where weapons proliferate, who can rival the destructive might of one invention that altered history forever. The nuclear weapons infact delved into the life of J Robert Oppenheimer, the genius behind most potent weapon known to humanity.

Step into the life of Oppenheimer and there unveils the story behind the development of the atomic bomb; a tale of brilliance, power and a quest for peace. All began on April 22,1904 in the bustling New York City where young *Oppenheimer* was born to a family that valued education. As he grew, his brilliance became evident during his school years. Math and Science were his playgrounds and he tackled them with insatiable enthusiasm setting him apart as an extraordinary brain. Enrolling at Harvard University, *Oppenheimer* immersed himself in a spectrum of subjects

nurturing his insatiable thirst for understanding but it was in England Cambridge Cavendish laboratory under the guidance of renowned physicists that he witnessed the wonders of theoretical physics. This newfound knowledge would prove instrumental in the development of atomic bomb returning to the United States.

*Oppenheimer* pursued his PhD at the California Institute of Technology where he dedicated himself to research and collaboration with brilliant minds but faith had grander plans for him. In 1942, Oppenheimer was recruited by U.S army general Leslie R Groves to lead the Top Secret Manhattan Project, a daring Endeavour to create a nuclear weapon alongside a team of exceptional scientists. Oppenheimer worked relentlessly for three years culminating in the successful Trinity Test in July 1945. But this triumphant moment was bittersweet as he realized the terrifying power of his creation. As World War II raged on, the decision to use the atomic bomb weighed heavily on the United States. The devastation witnessed after the bombs were dropped on Hiroshima and Nagasaki was a chilling reminder of the weapons. Oppenheimer confronted President Truman seeking International controls on nuclear weapons but his plea fell on deaf ears. The bombings of Hiroshima and Nagasaki shocked the world and marked the first use of nuclear weapons in warfare. The destruction and loss of civilian lives lead to Japans unconditional surrender in 1945 effectively. Ending world war 2 the bombings also sparks international debate about the ethical implications of nuclear warfare and the devastating consequences of these weapons.

The United States' decision to use atomic bombs on civilian populations remains a topic of controversy and raises questions about the use of such weapons in Modern conflicts in the aftermath of the bombings. The survivors known as 'hibakusha' faced numerous health challenges due to exposure to radiation, many

suffered from acute injuries, burns and radiation sickness. While others experience long term effects such as increased cancer risks and genetic mutations. Despite his successful scientific and military career, *Oppenheimer* struggled with guilt, was fully aware of immense destructive power of the weapon they were creating. The knowledge that his work would lead to the deaths of thousands of innocent civilians weighed heavily on his conscience. Oppenheimer's internal struggle reached a critical point when the first successful test of an atomic bomb known as the Trinity test took place on July 16 1945 in New Mexico as the bomb detonated with tremendous force and blinding flash.. He sought to prevent nuclear war and worked with the U.S atomic energy commission to control the use of nuclear weapons. Despite his efforts to prevent further nuclear weapon development, he faced personal and professional challenges during the McCarthy era. He was accused of having communist ties and of opposing the development of the hydrogen bomb in 1954.

The government stripped him of his security clearance which deeply affect him though he was eventually cleared of being a security risk, the damage was done and retreated from public life. *Oppenheimer* retreated into solitude forsaking research and turned to sailing with his wife Catherine. The Scandal surrounding his clearance haunted him until his death in 1967 leaving behind the legacy of brilliance by political turmoil, Today the world remember as the brilliant mind persecuted for grappling with the moral implications of his creation. Hiroshima and Nagasaki rebuilt from the ashes stand as reminders of the horrors of nuclear warfare. Humanity has heeded the call for peace and no nation has dared to use such devastating weapons since. One of the key themes explored in *Oppenheimer* is the weight of responsibility and his fellow scientists are faced with the moral and ethical dilemma of developing a weapon of mass destruction, knowing the devastating consequences it could have.

The movie delves into *Oppenheimer's* internal struggle and the profound impact his choices had on himself and the world, examines the power and consequences of scientific discovery. It delves into the clash between scientific progress, the desire to push the boundaries of knowledge, and the potential dangers that arise when scientific advancements are applied to destructive ends. It raises questions about the ethical boundaries of scientific research and the responsibility of scientists in harnessing the knowledge they possess. The movie delves into the complex relationship *Oppenheimer* had with ethical boundaries of scientific research and the responsibility of scientists in harnessing the knowledge they possess. The movie delves into the complex relationship had with his colleagues, friends, and government. It explores the dynamics of loyalty and betrayal as various characters grapple with their allegiances, personal rivalries, and the pressures of espionage investigations during the Cold War era, delves into the personal and political repercussions faced by *Oppenheimer* and his associates. It explores the tension between personal choices and the demands of patriotism, as well as the impact of political paranoia and McCarthyism on their lives and careers. The play also highlights the intellectual curiosity and idealism of the scientists involved in the Manhattan Project. It examines their desire to understand the fundamental workings of the universe, their shared passion for knowledge, and the clash between these idealistic aspirations and the sobering reality of creating weapons of mass destruction. Through exploring these themes, *Oppenheimer* provides a multi-dimensional portrayal of J. Robert Oppenheimer, shedding light on the desire to understand the fundamental workings of the universe, their shared passion for knowledge, and the clash between these idealistic aspirations and the sobering reality of creating weapons of mass destruction. Through exploring these themes, *Oppenheimer* provides a multi-

dimensional portrayal of *J. Robert Oppenheimer*, shedding light on the complexities of his character, the moral dilemmas he faced, and the broader social and political context of the atomic age. desire to understand the fundamental workings of the universe, their shared passion for knowledge, and the clash between these idealistic aspirations and the sobering reality of creating weapons of mass destruction.

In the film, *Oppenheimer* is fully aware that he will have difficulty performing the experiments, so he chooses a theoretical physicist. Despite his chosen major, he struggles with calculations and is humble enough to ask for help from his colleagues and even Einstein. Awareness of our weaknesses is crucial in our careers as well as in our personal lives, as overestimating our abilities can lead to terrible things. mistakes Also, multifaceted skills are necessary to succeed in innovation in technology development.

The creating the A-bomb required teamwork. As head of the Manhattan Project, had to lead rather than carry out tasks himself. A strong leader recognizes the talents of each team member and empowers them to succeed without micromanaging. Hiring the right people and managing conflict are also key elements of good leadership.

The film highlights various examples. Scientists in the Chicago group founded the magazine *Bulletin of the Atomic Scientists*; scientists mainly from the Los Alamos group and other parts of the Manhattan Project founded the Union of Atomic Scientists, soon renamed the Federation of American Scientists. The National Academy of Sciences, founded in 1863 to provide scientific advice to the government during the Civil War, included many prominent Manhattan Project scientists, including Oppenheimer, Teller, Bethe, Ernest Lawrence, and George Kistiakowsky, all of which influenced government policy.



The National Academies of Sciences, Engineering and Medicine continue to advise the government on the consensus studies of many voluntary expert committees. A number of current and recent National Academies studies address the legacy of the Manhattan Project, including the potential environmental effects of nuclear war, counterterrorism strategies for weapons of mass destruction, risk assessment methods for nuclear war and nuclear terrorism, and a review of the analysis. of nuclear war and nuclear terrorism. nuclear war and nuclear terrorism. the further processing of low-level waste at the Hanford Nuclear Reservation. The importance of *Oppenheimer's* life and work lives on for scientists and is beautifully presented in the film.

The study of nuclear history offers one of the most pristine instances of paradigm-shifting scientific advancements altering the international status quo. This paper focuses on the influence, as scientific celebrity and consultant for the US government, had on American nuclear policy at a time when scientists were understood in the social imaginary as the quintessence of wisdom, and discusses his contributions to the emerging of the nuclear age. Three key fields, each representing fundamental stages in the unfolding of the Cold War, are assessed, *Oppenheimer's* vision for the international control of atomic energy; his opposition to the development of the hydrogen bomb; and, lastly, his advocacy for tactical nuclear weapons. Analyzing *Oppenheimer's* fluctuating influence, this paper traces the development of his understanding of atomic armaments, separating facts from the mythology which came to surround one of the most iconic and age-defining figures of the 20th century.

*Oppenheimer's* contribution to ushering in the nuclear age as the "Father of the Atomic Bomb" cemented his legacy as an iconic figure of the 20th century. After

World War II, he enjoyed great prestige in both the US government and the media, developing celebrity status. He quickly adopted a public image as the voice of the American scientific community, especially among those who worked at Los Alamos during the war. That prestige helped him to rise to senior positions, including president of the General Advisory Commission of the AEC. Using his position of influence, Oppenheimer attempted to reorient American nuclear policy with varying degrees of success. Between the end of World War II and the cancellation of the Q Survey in 1954, he became involved in many political conflicts, at the instigation of his political enemies, who further deepened his political rivalry.

## Chapter-2

### The Aftermath of Creative Destruction

The war was coming closer and closer to Japan's doorstep. The United States was creating a secret weapon not even their allies, nor most high-ranking officials of the United States government knew about. The citizens of Hiroshima were also unaware that they were going to be some of the last casualties of World War Two. Lives would be changed forever as well as future family bloodlines instantly erased from history and lasting effects would be felt over a lifetime for the citizens of Hiroshima. Citizens were unaware of their fate and were going on about their days. Men, women, and children all fell victim to the nuclear bomb that was dropped on Hiroshima. The bombing of Hiroshima caused the deaths of thousands of citizens instantly and more to the nuclear fallout and the lack of infrastructure which would lead to the deaths of many more Japanese civilians due to the devastating destruction by the atomic bomb. The United States' main goal for the Atomic Bomb was for it to be used on military targets only and minimize civilian casualties as much as possible. Hiroshima was used by the Japanese Army as a staging area but was also a large city with a population of roughly 410,000 people. Hiroshima was selected for the first bomb to be dropped and to be observed for future bombs that could be used in the future. August 6th, 1945 was a typical morning for Hiroshima. The city was flourishing with activity of people going to work, children playing, and businesses opening. The warning signs began around 7A.M. with air raid sirens which was a common occurrence for the people of Japan and most ignored it. Around 8:14 A.M. however, is when Hiroshima changed forever. Many heard a moderately loud explosion which seems to come from a distance and, at the same time, the windows are

broken in with a loud crash. Once the bomb was dropped it was felt for miles of way and the damage was tremendous. Once the initial explosion took place, it is estimated that 60,000 to 80,000 people died instantly due to the extreme heat of the bomb, leaving just shadows of where they once were. Fires broke out and spread rapidly while people were trying to find loved ones as well as figure out what exactly had happened. The lack of people physically able to fight the fire and the weather increased the fires and the whole city became a blazing fireball all from a single bomb. Not only were people instantly vaporized, the people who did survive the initial blast, succumbed to radiation sickness and would later die a painful slow death. Sometimes symptoms did not reveal themselves until weeks or even years after being exposed to such high levels of radiation.

Hiroshima went to a busy city to a nuclear wasteland with little to no resemblance of a city. The smell of burning bodies and destruction left survivors in shambles with little to no hope in sight for most people. The world had never seen such destruction from a single bomb and this is what lead to other things that were unknown about this new weapon. The radiation was not a new concept to the world, but how much radiation that Hiroshima had was unknown and soon became a testing centre. Many people became sick months after the bomb dropped and it was initially thought that the United States had dropped a poisonous gas along with the atomic bomb. Sores soon developed on people's skin which would be removed and reappeared, as well as skin becoming rougher due to high radiation exposure and due to exposure to the bright light that was emitted after the detonation.

The destruction of Hiroshima left a glaring problem for the people still in the city and the surround area, which was how to treat the wounded properly and effectively. Not only was there a large population of people that were not receiving medical care, the Japanese Government was slow to respond with aid which prolonged the recovery process.

After the second atomic bomb was dropped, Japan surrendered and was left with a large mess to clean up. To help aid in the process, the United States set up a form of government in Hiroshima to help rebuild the city and give jobs to the people who were struggling to find work. This also allowed for the Red Cross to come in and start to treat the wounded but for many of them it was too late and they were slowly dying with little to no hope for them. Hospitals surpassed occupancy levels and people were tended in the streets where they had fallen when the bomb dropped. People also became test subjects for American doctors and scientists who flocked by the hundreds to observe the effects of the radiation on the Japanese citizens. American Army doctors flocked by the dozens to observe the sick. Japanese experts questioned them, and Hiroshima became one large research facility. Not only was it used for research it was also a relief point for Japan and other Asian countries that needed help.

The initial detonation of the atomic bomb lead to the death of over 60,000 to 80,000 people instantly and another 60,000 due to radiation sickness. In that time Hiroshima was destroyed and the surrounding area was also effected tremendously. This was also the site where the United States government set up a large scale recovery process due to Japan's lack of resources for its people and allowed for medical treatment for people that were caught in the crossfire of the use of the atomic bomb. The bombing of Hiroshima caused the deaths of thousands of citizens instantly and more to the nuclear fallout and the lack of infrastructure which would lead to the deaths of many more Japanese civilians due to the devastating destruction by the atomic bomb.

The Manhattan Project was a top-secret program to make the first atomic bombs during World War II. Its results had profound impacts on history: the subsequent nuclear arms race has radically changed the political world order in ways that are still evident today. Thousands of scientists, including theoretical physicist J. Robert Oppenheimer, took part in

the Manhattan Project, often while they and their families were lodged at secret military bases in remote locations. It resulted in the two atomic bombs dropped on the Japanese cities of Hiroshima and Nagasaki in August 1945, which brought World War II to its end and probably killed more than 100,000 people.

"The Manhattan Project harnessed the enormous energy in the nucleus of the atom for the first time," explains Cynthia Kelly, founder and president of the Atomic Heritage Foundation, a non-profit dedicated to the history of the project and the atomic age. One of the project's consequences was the creation of terrifying opposing arsenals of nuclear weapons. But it also resulted in innovations from medicine to space exploration and in the science and engineering of civilian nuclear energy, says Kelly. The U.S. Army Corps of Engineers created the Manhattan Engineer District in June 1942 to hide the development of the atomic bomb during the war-hence that effort's name of the "Manhattan Project."

But historian of science Alex Wellerstein explains in an online overview that the project originated in an idea from the late 1930s-that Nazi Germany might build an atomic bomb, so the U.S. should do so first. Historical records reveal that Germany didn't get far, but the prospect of a Nazi bomb was horrifyingly real. Several leading researchers worked for wartime Germany.

In July 1939 Szilard and others enlisted the help of the renowned physicist Albert Einstein, then on holiday on Long Island, N.Y., to support them by writing a letter to President Franklin D. Roosevelt. The Einstein-Szilard letter, as it's known, changed history. It prompted Roosevelt to convene a committee to investigate the possibility of building an atomic bomb, and 1941 this group became a new committee to lay the groundwork for the full project.

These early stages involved key contributions from the U.K. and Canada. But in the end, the atomic bomb was mostly an American weapon. After 1942 the Manhattan Project was the

recognized Allied effort to build an atomic bomb. It mainly used uranium ore from a mine in what is now the Democratic Republic of the Congo, which was kept secret from the Germans. Otherwise the project was conducted in the U.S., primarily at three top-secret towns: Oak Ridge, Tenn., where uranium was enriched until it was radioactive enough for nuclear fission; Hanford, Wash., where reactors transformed uranium into plutonium, an even more powerful nuclear fuel; and Los Alamos, N.M., where Oppenheimer directed the laboratory that designed and built experimental atomic bombs. There were also dozens of smaller sites. And officials went to extraordinary lengths to keep it all secret.

World War II historian Alexandra Levy says most of the more than 600,000 people involved including the thousands of scientists, engineers and technicians who worked on the weapons, as well as construction workers and the people who kept the secret towns going-were deliberately not told their purpose. Aside from one or two key senators agreeing to a blank check for the Manhattan Project, Congress and the press were kept in the dark. That would be impossible today. The Manhattan Project culminated in the Trinity test in New Mexico on July 16, 1945-the first detonation of a nuclear weapon. By that time, the U.S. had spent around \$2.2 billion- the equivalent of around \$37 billion today.

But the dangers of a Nazi bomb had faded, and Japan was now the designated target. Although Japan never had an atomic bomb program, the idea of stopping its aggression with a show of awful destruction became fixed among Manhattan Project leaders; says science historian Wellerstein. He notes that Oppenheimer, then the charismatic director of the Los Alamos laboratory, twice voted in favour of the initial atomic bomb attack on Hiroshima. Oppenheimer is seen as essential to the success of the American atomic bomb project. He contributed to some of the early scientific breakthroughs of the project Levy says. His great gift was bringing together scientists, engineers and other technicians to collaborate on and solve problems.

But *Oppenheimer* was also ambivalent about its results. In recalling his experience at the Trinity test in 1965, he quoted a story from the Hindu scripture the Bhagavad Gita about a prince, reluctant to kill his enemies, who witnessed the transformation of Krishna, an incarnation of the Hindu deity Vishnu: "Now I am become Death, the destroyer of worlds" *Oppenheimer* is seen as essential to the success of the American atomic bomb project. "He contributed to some of the early scientific breakthroughs of the project, Levy has *Oppenheimer* was the reluctant prince, not Krishna. He didn't want to kill people, Wellerstein says. "But he knew that nuclear weapons were going to be built anyway, and he felt that he had a duty to do this horrible thing".

Both cities were rebuilt and are now modernized communities in Japan. However, there were thousands of victims that survived the two nuclear bombings. Their stories are truly ghastly. Everyone should be made aware of them as well. Exposure to such should provide the world a true understanding and dire warning of what actually follows a nuclear explosion. With the proviso that the most powerful nuclear weapons currently in existence are up to a thousand times more powerful as the two bombs used on Japan. Which implies the aftermath of such weapon usage will be far worse than anyone can possibly imagine. The lucky ones will be those who die in the first second of the explosion. The survivors will have been condemned to the worst imaginable Hell. The nuclear bombardment of Hiroshima and Nagasaki certainly shocked the Japanese government, and more importantly, Emperor Hirohito.

The Hiroshima attack demonstrated that the US had developed a nuclear weapon and was quite willing to use it in combat. The Nagasaki attack demonstrated that the US was able to build multiple nuclear weapons and reinforce their willingness to use them. That was barely enough to convince the Cabinet to consider surrender, but it provided Emperor



Hirohito with an excuse to intervene and force a surrender. By August 1945, Japan had effectively lost the war.

In addition to introducing the previously top-secret nuclear research program known as the Manhattan Project to the world, Truman doubled down on the threat of nuclear weapons presented to Japan, America's only adversary in the war. When the Japanese did not agree to the terms of unconditional surrender presented by Allied leaders in the Potsdam Declaration, Truman wrote, "they can expect from the air a rain of destruction such as has never been seen on this earth."

But even when Truman made his statement, another nuclear attack was already in the works. According to an order drafted at the end of July by General Leslie Groves, director of the US Army Corps of Engineers, Manhattan Project, the president authorized additional bombs to be dropped on the cities of Kokura (now Kitakyushu) in Japan, Niigata and Nagasaki as soon as the weather permits..

Nagasaki was an industrial center and an important port on the west coast of Kyushu. As was the case at Hiroshima, by the time of the early morning air raid warning, the "all clear" was when the B-29s began bombing. A small routine attack on Nagasaki on August 1 led to a partial evacuation of the city, especially school children. At the time of the bomb blast, there were still almost 200,000 people in the city. The hastily aimed weapon exploded almost exactly between the city's two main targets, the Mitsubishi Steel and Weapons Works to the south and the Mitsubishi-Urakami Torpedo Factory (left) to the north. If the bomb had exploded further south, the residential and commercial buildings in the heart of the city would have suffered much greater damage.

Although Fat Man generally exploded with more force than Little Boy, the damage caused in Nagasaki was not as great as in Hiroshima. Nagasaki's mountains, geographic location, and the explosion of a bomb over an industrial area helped protect parts of the city from the effects of the weapon's explosion, heat, and radiation. The explosion affected a total of about 43 square kilometers. About 8.5 square kilometers were covered with water and another 33 square kilometers were only partially inhabited. Many roads and railways escaped serious damage. Power was not lost in some areas, and fire outages in recent months have helped prevent the fires from spreading south.

Although the destruction of Nagasaki generally received less attention than Hiroshima, it was still massive. Almost everything within half a mile of ground zero was completely destroyed, including the earthquake-hardened concrete structures that once survived at similar distances in Hiroshima. According to a report from Nagasaki, men and animals died almost immediately within 1 kilometer (0.62 mi) of the blast site. Almost every home within a mile and a half radius was destroyed and dry combustible materials such as paper caught fire instantly up to 10,000 feet above ground level. Of Nagasaki's 52,000 homes, 14,000 were destroyed and 5,400 were more seriously damaged. Only 12 percent of homes survived undamaged. The Manhattan Engineer District's official report on the attack called the damage to the two Mitsubishi factories "considerable." Despite the lack of a firestorm, many secondary fires broke out around the city. Breaks in water mains hampered firefighting efforts, and six weeks later the city was still without water. A US Navy officer who visited the city in mid-September said that even more than a month after the attack, "the place still reeks of death and corruption." As in Hiroshima, the psychological impact of the attack was undoubtedly significant.

As with the Hiroshima death toll, one will never know for sure how many people died in the Nagasaki atomic attack. The best estimate is that 40,000 people were initially killed and another 60,000 injured. By January 1946, the death toll was probably close to 70,000, and within five years the death toll was perhaps twice that number. In those areas of Nagasaki affected by the explosion, the death toll was comparable to that of Hiroshima.

## Conclusion

*Oppenheimer*, a film directed by Christopher Nolan, portrays the life and work of J. Robert Oppenheimer, focusing particularly on his role as the scientific director of the Manhattan Project during World War II. The film delves into the moral and ethical dilemmas faced by Oppenheimer in developing the atomic bomb and the profound psychological impact of his involvement in creating a weapon of mass destruction.

The conclusion drawn from the film could be that *Oppenheimer* grappled with the consequences of his actions and the immense power of the atomic bomb. His experiences during the Manhattan Project, witnessing the destructive potential of nuclear weapons, and the devastation caused by their use in Hiroshima and Nagasaki likely left him with a profound sense of moral ambiguity and existential angst. The later activism against the development of hydrogen bombs could be seen as an attempt to reconcile with the ethical implications of his work and to prevent further catastrophic consequences.

In summary, *Oppenheimer* offers a portrayal of J. Robert Oppenheimer's internal conflicts and moral struggles in the face of scientific innovation and the realities of war. The conclusion might emphasize the complexity of Oppenheimer's character and the lasting impact of his experiences on his worldview and actions. The exact death tolls from the bombings are difficult to ascertain due to factors like the immediate and long-term effects of radiation exposure, as well as the chaotic conditions following the attacks. However, it's estimated that tens of thousands died in each city in the immediate aftermath, with many more succumbing to injuries, radiation sickness, and related illnesses in the years that followed.

The bombings prompted Japan's surrender and the end of World War II, but they also raised profound moral and ethical questions about the use of nuclear weapons and the

devastation they can cause to civilian populations. The events of Hiroshima and Nagasaki have left a lasting impact on global consciousness, shaping discussions around peace, nuclear disarmament, and the protection of civilian lives during conflicts.

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