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TAH – Year 3
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My interest in learning more about Robert Oppenheimer came about not from our class but from reading Malcolm Gladwell's book Outliers: The Story of Success. Gladwell mentions how Oppenheimer, due to his relatively privileged upbringing, was able to learn the skills necessary to not only be a leader but to be able to convince his advisors to not kick him out of the University of Cambridge after he tried to poison one of his professors! My knowledge of Oppenheimer was limited to his role in developing the atomic bomb, so this story inspired me to find a biography about him.

The most thorough biography was written by a fellow physicist, Abraham Pais, during the late 1990's. Pais worked with Oppenheimer from just after World War I until Oppenheimer's death in 1967. Pais' book, J. Robert Oppenheimer: A Life, was published posthumously in 2006. The book was about 85 percent complete when Pais died, so Robert Crease, a historian of physics, completed the book. The biography focuses on Oppenheimer's life and career both before and after his time developing the atomic bomb in Los Alamos. While his early career shows signs of his talents towards the new developments in the field of physics, the real value of the book lies in Pais and Crease's examination of the loss of Oppenheimer's security clearance in the midst of the Red Scare in the 1950's.

Pais begins the book with his first meeting with Oppenheimer in 1946. Pais had just recently left Europe, where (as a Jew) he remained hidden from Hitler and Germany during the war. Oppenheimer was chosen as director of the Institute for

Advanced Studies (a research facility in Princeton, New Jersey) and he was recruiting Pais to work in the physics department (which also included Albert Einstein) at the Institute. Pais was impressed by Oppenheimer's direction and ideas for the institute, and he worked with and under Oppenheimer until the early 1960's. Because of Pais' access to Oppenheimer (and to many of Oppenheimer's critics and supporters in the physics world), the book contains many excerpts from letters and extensive passages from people who worked closely with Oppenheimer.

After Pais introduces his relationship with Oppenheimer, he then looks at Oppenheimer's pre-World War II career. Pais starts with Oppenheimer's upbringing in New York City, where he went to private schools. Here, his talents and proclivity for science were already apparent. Oppenheimer was also a scholar of classical philosophy and of ancient languages, frequently quoting Greek and Latin. Pais also points out how Oppenheimer was often aloof and uninterested in his classmates or anyone he felt was "below" his intellect, remembering none of his classmates from elementary or high school.

The book then moves on to Oppenheimer's college years, first at Harvard, then his graduate studies at Cambridge. Oppenheimer took as many courses as possible at Harvard, while he suffered from emotional problems while in England. Although Pais does not mention any account of Oppenheimer poisoning one of his professors, he does talk about Oppenheimer seeing a psychiatrist and acting oddly while in Europe. While Pais points out these problems, he also counters the claims with his personal and others accounts from later life, where Oppenheimer is seen as strong willed and unwavering during times of troubles.

Unfortunately, Pais forgets that most people do not have an advanced knowledge of physics while he talks about Oppenheimer's accomplishments while he was a professor at Cal-Berkley and Caltech. Pais mentions that these times were Oppenheimer's happiest, that he enjoyed working with physics students and facilitating new research in physics. When Pais begins to describe Oppenheimer's research, the book becomes almost unreadable to anyone who is not well versed in physics. Despite toggling between the book, Wikipedia, and other reference sites, all I could gather is that Oppenheimer had some important contributions in the field of quantum electrodynamics (QED), and that Oppenheimer wished that he could have been born earlier to have been able to be in the first wave of research in the field. The rest was a muddling of physics theories and ideas that were extremely difficult to follow.

Despite his successes later in life, Oppenheimer felt that he lacked a distinctive accomplishment during this time that would make him well respected in the field. Pais retells a story from the 1950's in which a physics doctoral candidate is asked to describe Oppenheimer's greatest accomplishment in physics. The flustered student says that he cannot answer. Before the student could finish that he cannot not answer because he failed to study the material, his professor commends him for his correct answer! Pais does shoot down the story as pure fiction, but does admit that Oppenheimer's accomplishments in the field were more of a secondary than primary nature.

Pais says very little about Oppenheimer's time at Los Alamos, where he was head of development of the atomic bomb. He does point out Oppenheimer's

leadership skills in working with over 6,000 people. Pais mentions how these skills were valuable when Oppenheimer was leading the Institute for Advanced Studies. Oppenheimer refused to fundraise, but donations still came in to the IAS because of the Oppenheimer name.

Pais also mentions how many of the people who Oppenheimer worked with in the 1940's felt he was extraordinarily loyal and focused on the bomb. Pais mentioned that Oppenheimer was connected tangentially to the Communist Party during his time in California in the 1920's and 1930's, allegations that would haunt Oppenheimer in the 1950's. Despite his past, the organizers of the Manhattan Project insisted that Oppenheimer was the man who could make the project work. His successes made people forget about his past until the Red Scare emerged in the 1950's.

Pais extensively talks about all of the comings and goings at the IAS during Oppenheimer's tenure. Most of those people who talked about Oppenheimer praised his leadership at the institute, expanding the scope and research being done at the IAS. As a member of the institute, Pais had unlimited access to these people. The members also trusted Pais with personal papers and letters, which makes this section long but effective in showing his position of leadership.

Pais concludes his writing with the preparation for meetings to decertify Oppenheimer's national security clearance in a chapter cleverly entitled "In Which the Excrement Hits the Ventilator". Oppenheimer's opposition to the development of the hydrogen bomb by Edward Teller led many (including Teller and Senator Joseph McCarthy) to demand that Oppenheimer not only be removed from nuclear

advisory committees, but to have his security clearance revoked. Oppenheimer's past came back to haunt him at this point, as the government repeatedly questioned him about his past connections to the Communist Party and other objectionable groups. Despite the fact that his past was not enough to disqualify him from the Manhattan Project, it was enough in the 1950's to have him removed from government work. Although Oppenheimer received an unofficial apology in the form of an invitation to the White House in 1963, he would no longer have any role in the government's development of nuclear weapons.

Abraham Pais died in 2000, just as he was beginning the section dealing with Oppenheimer's decertification hearings. Robert Crease continued the work, continuing Pais' style (calling Oppenheimer "Robert" and using a unique notation system) for the last decade of Oppenheimer's life. Except for Teller, almost the entire scientific community continued to support Oppenheimer. Other physicists in particular continued to support Oppenheimer, as many of them did not want to further explore the destructive properties of nuclear weaponry. Oppenheimer continued on as director of the IAS, continuing to develop the IAS as a premier research community.

Oppenheimer's end came quickly, as he was diagnosed with cancer in 1965, and died less than two years later in 1967. Until the day before his death, Oppenheimer continued to attend meetings and conduct research. Crease shows how Oppenheimer's supporters pointed out after his death how he was proud to be an American, quoting him as saying, "Damn it, I happen to love this country" when

he was asked by a prominent university in Europe about continuing his research abroad.

Robert Oppenheimer is best known for his work at Los Alamos in developing the atomic bomb, but his biography shows how he was also a widely respected physicist, government advisor, and leader of one of the finest research institutions in the world. Abraham Pais was inspired to write this biography because very little was written about Robert Oppenheimer the person, versus Robert Oppenheimer as the leader of the Manhattan Project. As a whole the book turns Oppenheimer into a person, and more than just the answer to a trivia question. Despite some difficult, technical sections involving Oppenheimer's physics accomplishments, the biography provides a thorough look at all of Oppenheimer's work, both before and after World War II.