

Summer Assignment

Book Review

# The Making of the Atomic Bomb

Richard Rhodes

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## 1. **What is the author's thesis and did he prove it?**

Richard Rhodes sets out to describe, in exquisite detail, the background, development and deployment of the first atomic bombs in human history. In effect his thesis is less about creating an argument and defending it, than it is about providing insight into the unfolding of one of the greatest and most terrifying episodes of human achievement. Virtually everyone in Western society has a cursory knowledge of the bombing of Hiroshima – if only to recognize what it is – the effective end of World War II and the first military use of atomic weapons. However, it is my guess that few people, without the benefit of this book, understand the layered complexity and mixture of fortitude, courage, luck and brilliance that culminated on August 6<sup>th</sup> 1945. Rhodes created a work that is worthy of the opening quote by Robert Oppenheimer, “ the discoveries in the sciences are among the great epics.” (Rhodes 8)

On another level however, Rhodes infuses his opus with an array of theses or themes he elaborates upon throughout the book including bravery, risk, and their consequences. The theme of bravery was applied to a variety of topics, particularly, in Rhodes' admiring hands, the scientific community. The book illustrated the intellectual risks the scientists took to push their ideas further whether it was the early figures who suffered physically like Madame Curie or the emotional challenges which grew out of charting the unknown by such as Einstein who felt “something actually snapped in him” (Rhodes 152). The author consistently acknowledged the extraordinary bravery of the men who fought whether it was describing the mindset of the soldiers preparing to invade the Japanese homeland (Rhodes 556) or the Norwegian commandos who destroyed the Norsk heavy water plant and its products (Rhodes 517). The people who suffered under the impact of the global struggle also received attention in Rhodes descriptions of Hamburg and Dresden (Rhodes 593) and certainly the aftermath of Hiroshima was chilling (Rhodes 715). But the author certainly tried to emphasize the bravery and near social martyrdom of those scientists like

Niels Bohr who pursued the physics adamantly but also saw the destructive potential of the bomb and tried to urge restraint and openness during the furor of World War II.

Coupled with the evident bravery was an allusion to the risks everyone in wartime faced to varying degrees. There was a discussion of the reworking of people's lives that the creation of Los Alamos required with consequences that were both personal and wrenching such as the trials of Kitty Oppenheimer. Rhodes interwoven narrative also touched on the great pain of the decisions made by world leaders such as Roosevelt (Rhodes 476). Bravery and risk are not difficult tales to tell in times of war, but the most intriguing discussion highlighted seemed to me the dichotomous nature of the lives of the most sensitive scientists, who simultaneously built the most terrible bomb in history and understood that the bomb made the future ominous with apocalyptic threats. Men such as Chadwick who had to take sleeping pills to rest in 1941 to deal with a future with the bomb and who, "never stopped since then. It's 28 years, and I don't think I've missed a single night in all those 28 years" (Rhodes 356). Or the architect of the US effort Robert Oppenheimer who, after the atomic bombings of Japan, turned his energy to halt an arms race, "...I do not come away from a profound grief, a profound perplexity..." (Rhodes 752). The quiet bravery these scientists displayed as they wrestled with the need to protect their country and their consciences was inspiring.

In effect, all of these themes form what I took as an unstated thesis, that Rhodes felt the risks of war led to great scientific rewards but with dire consequences. In more concise terms, Rhodes felt the fog of war shaped the foresight of many of the smartest scientists in the world. The risks, as discussed above, included the realization of the sheer terror of the weapon these eminent thinkers had created, as Oppenheimer said, "When it first went off, in the New Mexico dawn, that first atomic bomb, we thought of Alfred Nobel, and his hope, his vain hope, that dynamite would put an end to wars" (Rhodes 676). As the Los Alamos community realized the force of its creation, many opposed its use, but Rhodes has drawn a careful arc that included the Atlantic Charter focus on

unconditional surrender, the move to accept Allied bombing of primarily civilian targets as legitimate, the heightened brutality of the Pacific Theatre, and the overarching drive to end the war that made its use all but inevitable. As Churchill wrote convincingly, “To avert a vast, indefinite butchery, to bring the war to an end, to give peace to the world, to lay healing hands upon its tortured peoples by a manifestation of overwhelming power at the cost of a few explosions, seemed, after all our toils and perils, a miracle of deliverance” (Rhodes 697). The energies and efforts of the combined American-English endeavor had gained too much momentum and the fog of war descended, even if surrender was imminent, consequences be damned. Yet, Rhodes clearly indicates that many thinkers realized that the nature of Atomic weaponry changed war to the degree that it was no longer “winnable” (Rhodes 532).

## **2. What did I learn from this book?**

It would be an over-simplification to say that this book taught me something significant on every page because I know the events and history surrounding World War II well. However, I knew little of the science and the scientific history that Rhodes weaves so effectively together with the concise but illustrative historical narratives. I was amazed at how inventive the key scientists were as they not only theorized and looked into the unknown, and also imagined and developed the instruments to prove their points, such as Chadwick’s discovery of the neutron (Rhodes 163). The competitiveness of the leading scientists was interesting to me and I hadn’t realized how vicious the struggles over intellectual accuracy were. For example, Leo Szilard challenging the three leading physicists over the possibilities of “harnessing nuclear energy” (Rhodes 228) or the community disapproval Seth Neddermeyer initially faced when he proposed the idea of implosion to trigger the chain reaction of plutonium. Time and again these brilliant men and women overcame the tendency to “group think” orthodoxy or cutthroat competition. By contrast, I was struck by the collegiality of the scientists, who though clearly

competitive still shared ideas and proffered help to others such as Otto Hahn and Lise Meitner (Rhodes 253). Rhodes, despite remarkable objectivity, clearly felt fond of the many inventors and experimenters who pried the atom's secrets from its nucleus, and who achieved what so many including Einstein had initially "compared to shooting in the dark at scarce birds" (Rhodes 228).

I was struck by how many of the leading scientists, responsible for the production of the bomb, were exiles of the Nazi regime. Whether it was the troika of brilliant, Jewish, Hungarian scientists including Edward Teller, Italy's Enrico Fermi, Poland's Stanislaw Ulam, Lise Meitner of Austria, Denmark's Neils Bohr or the Ukranian-born Kistiakowsky, I again remembered how critical Hitler's manias were to his own defeat. A large percentage of the brainpower responsible for the groundbreaking research and development of the atom bombs was within the grasp of the Nazis. But Hitler's insanity would have alienated the majority of the scientists who may have worked to "with(o)ld as much information as (they) dared" (Rhodes 371) as Fritz Houtermans did in another striking display of bravery.

The enormous scale of the Manhattan Project was something of which I was keenly aware, but reading about the resources at General Groves' disposal and the specifics surrounding the parallel development tracks at Oak Ridge, Tennessee and Hanford, Washington brought home the enormity of the US effort at a new level.

The power of the fog of war is seen clearly in the case of Edward Teller perhaps "the mania of war" is a better term. Teller may have been driven by his fear of the Soviet Union and Communists based on youthful experiences, but he seemed to become obsessed with an ever-increasing destructive power and his own role in its creation. By 1954, Oppenheimer wrote critically of the shift "that summarized the Hungarian physicist's turnabout from proponent of world government to aggressive weaponeer..." (Rhodes 776). However, the author regularly describes the shifting rationales the scientists used to justify the use of the weapon's development to themselves (Rhodes 697). With the development of "the Super", the thermonuclear bomb, Oppenheimer remarked that "This thing is the plague of Thebes" (Rhodes 777), and he had been critically important in its creation – he was haunted.

### **3. How will I use this information?**

I will use this information as I have used the previous assignments; I will infuse it into my teaching as foundational knowledge and more specifically as an array of small sample quotes for the students. The quotes I have used from the previous books I have read in the TAH have been successful in helping my students develop a richer and more complex understanding of the events the textbooks often address too quickly. The most effective approach I have used creates a brief Document Based Question (DBQ) style exercise that allows the students to supplement the understanding they have developed from texts with primary excerpts. However, I was so impressed by Rhodes' concise description of the conduct of the war that I may use it as a primary tool for teaching World War II. In addition, there are several multi-page sections I will use to accentuate areas of study such as a brief history of Judaism in Europe on pages 177 through 181 or the excerpt on the Japanese attack on Pearl Harbor on pages 389-393. Because of the balance that Rhodes consistently employs, I will also use several sections from Allied bombing of German cities such as Hamburg on pages 474 and 475. Ultimately, this is one of the finest "history" books that I have read, and I look forward to returning to it repeatedly for source material and to refresh my own understanding. If I can introduce students to this quality of scholarship, I think I have done them a service that transcends history class and allows students to see into an possibilities and potentials of an educated adult life.