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An Interview with *Ultimate Weapon* Author Edward T. Sullivan

What inspired you to write a book about the Manhattan Project?

When I moved to Oak Ridge, Tennessee, I knew the city had played a role in the building of the atomic bomb, but I did not realize how integral that role was. I wanted to know more and started reading books. Since I am a school librarian, I was curious to know what books there were on the subject for children and teens. I was shocked at how poorly the few books available treated the subject. They focused almost exclusively on the work at Los Alamos, ignoring what was done in Oak Ridge, Hanford, and universities around the country. There was one book I read about the Hiroshima bomb that did not even mention Oak Ridge! It discussed Los Alamos but said nothing about how the uranium that gave the bomb its explosive power was manufactured in Oak Ridge. I decided that there needed to be a book that told young people the whole story of the Manhattan Project—the desperate, furious race to build an atomic bomb before the Nazis; the massive industrial complexes built in record time to produce the weapon; the brilliant, eccentric scientists who created the weapon; the government and military leaders who wrestled with the moral consequences of using the bomb; secret cities created to house and support the hundreds of thousands of civilian and military personnel who worked on the project; the acts of espionage and sabotage behind the scenes; and the incredible and largely successful efforts made to keep a project of such massive scale and importance secret. The Manhattan Project unleashed the first nuclear weapons that forever changed the world, and we live with its consequences to this day. This was a story too important not to be told.

How long did it take you to research and write the book?

I spent approximately two years thoroughly researching the subject, reading not only about the Manhattan Project itself but also books about World War II, Hiroshima and Nagasaki, and biographies of principal players in the project, like J. Robert Oppenheimer, to get the "big picture." The book went through six major revisions over four years before it bore a resemblance to what was published. Even after the last major revision, minor revisions had to be made all the way up to the time the book went to press.

What kinds of research did you do for the book?

Living in Oak Ridge made researching the book relatively easy. For a community of its size, Oak Ridge has an excellent public library. The library has a special collection containing almost everything published about the Manhattan Project, so I had just about every secondary source I could possibly want easily accessible to me. In addition, the same collection contains considerable primary source materials, including many official government documents and other artifacts from the era. Oak Ridge is also still home to veterans of the Manhattan Project who were happy to share with me anecdotes and memories of what it was like to live and work in Oak Ridge during the war. There are

also several excellent web sites devoted to information about the Manhattan Project and nuclear weapons that I found helpful to my research.

Did you visit all of the places discussed in the book?

Unfortunately, all of the traveling I did was the virtual kind through reading and other research. Someday, I would like to visit all of the places discussed in the book.

Where did you find the photographs for the book?

Photography was severely restricted at the Manhattan Project sites as a security precaution, but there were a handful of official photographers who did a remarkable job of documenting life and work at these sites. Many of the photographs in the book are by Ed Westcott who documented life and work in Oak Ridge during the war years. My local public library has negatives of his photographs, so all I had to do was arrange for prints to be made at my expense. The Library of Congress and National Archives were also sources for photographs. I found photographs of Hanford, Los Alamos, the Trinity test site, and university labs that I wanted to use in the book on various web sites, but finding reproducible copies of the images was a challenge. I had to contact a variety of government agencies around the country to assemble those.

What surprised you the most in your research?

What surprised me most was how naïve the scientists were about the potential dangers of nuclear energy and weaponry. The first nuclear chain reaction was conducted on a squash court at the University of Chicago. Historian Richard Rhodes writes that Enrico Fermi and his team were "risking a small Chernobyl in the midst of a crowded city." Another disturbing story is that of a debate among the Los Alamos scientists about the likelihood of the atomic bomb detonating a fusion reaction which could theoretically result in setting the Earth's atmosphere on fire and ending all life. The scientists were later relieved when calculations showed there was only 1 chance in 3 million of the bomb igniting the atmosphere. One would think that the fact that there was any chance at all, however remote, of igniting the atmosphere would be reason enough not to detonate the bomb. The safety precautions Trinity test observers took, such as Edward Teller wearing heavy gloves, extra dark sunglasses, and smearing his face with sun screen for protection from the ultraviolet rays, are as amusing as they are frighteningly absurd.

What was the most difficult aspect of writing the book?

Writing about the science behind the bomb was most difficult. I am not a scientist and have no background or education in the sciences—not even a course in chemistry or physics in high school or college. That's not to say I am not interested in science. I read articles and books about scientific subjects if they are written in a way I can understand, but most of the literature on nuclear physics is hard to penetrate. I even asked a couple of physicists I know in Oak Ridge, one who actually worked on the Manhattan Project, to explain some basic concepts, but they have a hard time explaining what they know to

an average person like me. As a writer, the challenge to me was trying to understand the science myself and then explaining it to young people without overwhelming them with too much technical information. My editor and I went back and forth over this part of the book more than any other, and we kept revising those sections over and over up until the book went to press.

What did you discover in your research that you want to learn more about?

I read a couple of biographies of Oppenheimer in preparation for writing this book, but there is a lot more I want to know about him. He was a brilliant, eccentric genius whose life is full of irony and tragedy. After being hailed for his achievement as "father of the atomic bomb," his career and reputation were virtually in ruins a few years later when he became one of the many innocent victims of the anti-Communist paranoia that consumed the country when Joseph McCarthy was accusing everyone from Hollywood stars to top government officials of being Soviet puppets. Oppenheimer was "guilty by association," for his brother's activities in the Youth Communist League and American Communist Party and for attending a couple of party meetings himself. The tragedy was that it was some of Oppenheimer's own colleagues who helped bring him down. Like other Manhattan Project scientists, Oppenheimer always had moral qualms about what he had helped to unleash upon the world. He's a fascinating person with an amazing life story that I would one day like to shape into a book for young people.

Moe Berg, the professional baseball player turned spy, is another fascinating character I discovered in my research whose life story would make an excellent biography for young people. Like Oppenheimer, Berg was an eccentric, enigmatic genius with a spirit of curiosity and adventure that led him into amazing and sometimes dangerous situations.

Who is the audience for the book?

I wrote *The Ultimate Weapon* specifically for young people because there were no books that told them whole story of the Manhattan Project. It is a book that could be appreciated by readers as young as ten-years-old if they have know enough about World War II to understand the historical context of the story. Middle school and high school age readers are the primary audience, but I believe adult readers will also find the book informative and interesting if they want to learn about the Manhattan Project but do not want to tackle an authoritative history like Richard Rhodes's 800-page *The Making of the Atomic Bomb*.

What do you hope readers will get out of reading of this book?

What I would most like readers to understand is that learning history is much more than a matter of knowing the facts about events. Facts tell us nothing unless we examine them thoughtfully and critically and interpret them from different points of view in various contexts. I want readers to realize that history is really more about asking questions that it is about providing answers. It is only through asking questions about the events of the past that we can begin to understand the impact of the past on our present and future.