

Bombs without Qualms

A Manhattan Project scientist looks back on the most controversial event of the 20th century

by *Kyle Alspach and Karl Gibberson*

Like many scientists in the 1940s, Dr. Carl Crouthamel was called to work on America's top secret project to build an atomic bomb. Code-named the Manhattan Project, the effort involved the creation of several major national laboratories and the collaboration of thousands of scientists and engineers. While underway, the project took on the air of a great quest to solve the most challenging scientific problem that had ever been posed. The effort was completely successful by just about every measure.

The first test bomb, code-named Trinity, exploded in the New Mexico desert at 5:30 on the morning of Monday, July 16, 1945. The blast was far larger than expected and some of the project scientists began to wonder about the wisdom of having created such an extraordinarily powerful device, clearly capable of unimaginable destruction. When Robert Oppenheimer, the brilliant project director, viewed the mushroom cloud from the world's first atomic bomb that fateful morning in the New Mexico desert, he went weak in the knees and had to hold onto a post to keep from collapsing. He took an odd consolation in some lines from the Hindu scriptures: "I am become Death, the Destroyer of Worlds."

Three weeks later another bomb, code-named Little Man, was dropped on Hiroshima. One hundred thousand Japanese perished; many more suffered from exposure to radiation. Three days later Fat Boy was dropped on Nagasaki with similar casualties. Reports of these "successes" occasioned celebration on the lonely mountaintop in Los Alamos New Mexico. Champagne flowed through the winding dirt roads of Los Alamos even as blood

flowed through the streets of the two destroyed Japanese cities.

Three days later, Japan surrendered. A land invasion predicted to result in 750,000 Allied casualties and 2 million Japanese was averted. The long war had ended, quite literally, with a bang.

The scientists who had built the bomb had varied reactions. Leo Szilard, the original inspiration for the bomb, was completely demoralized and left physics altogether and went into biology; Edward Teller, inspired by his hatred of the communism that had taken over his homeland of Hungary, pursued the next generation of atomic weapon-the Super Bomb. Robert Oppenheimer became a victim of the McCarthy hearings and lost his security clearance. Enrico Fermi worked on the peaceful use of nuclear energy until he died of cancer in 1954. Carl Crouthamel worked with him during this period and recalls with sadness the ominous phone message informing Fermi that he had incurable cancer just about everywhere in his body.

Meanwhile, Albert Einstein, whose seminal work in 1905 had offered the first hints of the terrible energies that resided in the nucleus, watched with his deep sad eyes as humanity failed to make peaceful use of nuclear energy.

As predicted, the mere existence of the bomb drastically altered the geopolitical landscape, despite the fact that no atomic bombs were ever used after the two that were dropped on Japan. The few original bomb-makers that have lived into the 21st century have had many decades to reflect on their experiences. Carl Crouthamel is one of them. For many years he has been worshipping in a Mennonite fellowship, a Christian denomination that is strongly pacifist. It is an unexpected place for a bomb maker. Nevertheless, he remains convinced that, in the complex moral context of 1945, dropping the atomic bomb on Japan was the right thing to do.

-Karl Giberson

S&S: As a Christian, how do explain your work on the atomic bomb to someone from a pacifist religious tradition?

Carl Crouthamel: As far as I am concerned, God opened the door

for me to work on the bomb. Near the end of World War II, it appeared that the Japanese would defend their homeland even if it meant sacrificing every last man. President Truman estimated that we saved about a million Japanese civilian lives plus a million Japanese soldiers' lives and about 750,000 casualties of our own. I don't have any apologies for using the bomb. As Truman was dying, people kept asking him whether or not he regretted dropping the bomb, and the last statement he made before he died was that he certainly did not. He could stand before God and feel that he had saved millions of lives.

S&S: How did you happen to get involved in working on the atomic bomb?

CC: After graduating from Eastern Nazarene College in 1942, I went to Boston University. I then got notice to report to the University of Chicago where I was introduced to Enrico Fermi and given assignments in the Manhattan program. They didn't tell me they were making an atomic bomb or a nuclear reactor. They did tell me they wanted to make several tons of very high purity uranium metal for Fermi's reactors.

S&S: Enrico Fermi, with whom you worked, is credited with having co-invented the nuclear reactor, making possible the creation of the atomic bomb. He has been called one of the most significant scientists of the 20th century and even one of the most influential people of all time. What did you think of him?

CC: He was one of the brightest men I have ever run up against. Students loved to go to his physics classes. He was one of the greatest teachers that I ever met—he could clarify the most difficult subjects. I met Oppenheimer, who was as bright or brighter than Fermi, but there was a big difference between the two. Fermi combined an outgoing personality with his super intellect. Oppenheimer was cold and you didn't feel like he had any concern for you at all.

S&S: What did you do specifically with Fermi?

CC: I audited his physics classes, and we had seminars where we

discussed the Manhattan project. We also got assignments. Mine was to go to Iowa State University and work on the production of uranium metal that was high enough in purity to work in the plutonium production reactors in Hanford, Washington.

S&S: Who were some of the other Manhattan project scientists you were involved with?

CC: I got to know Leo Szilard, Edward Teller, Glenn Seaborg, and Willard Libby, the inventor of carbon dating. Most of my close contact with them was in seminars or planning meetings. I had a closer relationship with Fermi. I remember when he started feeling sick and went into the hospital, and I remember thinking what a terrible waste for him to die at such a young age (58). There was cancer all over his body. Fermi didn't admit this, but I'm sure that the cancer was a consequence of his work at the University of Rome, where he took dosages of fast neutrons.

S&S: Talk about the test blast, Trinity, that went off in the New Mexico desert.

CC: Oppenheimer thought that the first trial bomb would yield energy of about 500 tons of TNT. Admiral Leahy predicted that it would be a dud and wouldn't go off at all. The highest prediction was about 1,500 tons of TNT. It turned out to be around 20,000 tons, and this shocked even Oppenheimer. He called it a "doomsday device."

S&S: Oppenheimer had some reservations about the bomb.

CC: He felt that we were doing things that man shouldn't be doing. He was an extremely brilliant man, but he suffered from depression. Oppenheimer opposed the hydrogen bomb, and so the military essentially bypassed him and brought in Edward Teller who supervised the construction of the fusion bomb.

S&S: Do you think Oppenheimer was wrong?

CC: No. He was entitled to his opinion. But I don't think you can stop science just by leaving and ignoring a project. When it's ripe

and ready for harvest, the knowledge is going to be harvested. I could say I think it's wrong for us to have decoded the DNA molecule, and for us to manipulate our own genetics. That could be as wrong as developing a nuclear bomb, but there's nobody in this world that is going to stop it from being done.

S&S: Did you ever have any moral qualms about having worked on the bomb?

CC: My opinion was that God is in control, and God is allowing mankind to do this. I used to say to my wife that God promised to never again destroy us by a flood, but maybe he would allow us to destroy ourselves by our own knowledge.

S&S: Do you think that the United States has gotten carried away with developing nuclear weaponry?

CC: I think the United States had no business making the tons of plutonium that they did out at Hanford. They had all these nuclear-trained people, and if they shut the reactors down, they were going to throw thousands of people out of work, so they just kept making plutonium when they had no need for it. The directors of four of the national laboratories are going to Washington to propose that we burn it in fast nuclear reactors, which will produce electricity, and also reduce our burning of coal and oil and gas.

S&S: Talk about your work after the war.

CC: In 1958, the Argonne National Laboratory was being built, and I transferred there after working at the University of Chicago. I worked at Argonne for almost 30 years. My job involved determining nuclear cross-sections and manufacturing nuclear fuel. We produced innovative new methods of making and reprocessing nuclear fuel, and I went to Europe and Asia to supervise the refueling of the reactors there.

S&S: What do you think is the future of nuclear energy in the U.S.?

CC: That depends on many factors. The size of the population is

important, but it also depends on how well we tolerate the pain and strain of either a lack of oil or a high price for oil and gasoline. The burning of hydrocarbons and the increase in the CO₂ of the atmosphere are also factors. Whether they are responsible for global warming is a big question right now.

S&S: Looking back over your distinguished career, did you ever think that maybe science was not the best profession for a Christian?

CC: No, I didn't; I thought it was a good thing to study God's creation and understand how it works. No matter what I discovered, I said, "Gee, that's the way God does it."

This interview was conducted by Kyle Alspach on January 14.