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Title: A Father's Day Tribute Father-son Nobel Prize-winning physicists worked together at the Lab

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## **A Father's Day Tribute**

### **Father-son Nobel Prize-winning physicists worked together at the Lab**

**By Ellen McGehee, historian, [National Security Research Center](#)**

Partners in physics during the World War II years, father and son Niels and Aage Bohr worked side by side on the Lab's top-secret effort to create the first atomic bombs.

Arriving in Los Alamos in late 1943, Aage was just 21 years old. He had been studying physics to follow in the footsteps of his father, who had won a Nobel Prize in 1922. Aage's higher education, however, had been interrupted by the rapid spread of Nazism in Europe.

The Bohrs, who had Jewish heritage, fled their native Denmark to escape persecution, eventually arriving in Los Alamos to aid in the creation of weapons that would help end the war. Their story is part of the collections at the National Security Research Center, which is the Lab's classified library and also houses unclassified historic materials.

While at Los Alamos, Niels and Aage were accorded VIP status because of the family's scientific renown and given new names to protect their identities: Aage was James Baker, while his father was Nicholas Baker, but the scientific community called him Uncle Nick.

Whether called Niels and Aage or Nick and Jim, father and son were inseparable.

### **Co-workers, companions, confidantes**

Lab Director [J. Robert Oppenheimer](#) noted in 1964, the son was his father's "companion, his confidante."

Aage later described his role: "I was acting as his assistant and secretary and had the opportunity daily to share in his work and thoughts."

The son often served as an intermediary between his father and other scientific staff, even during social occasions. Physicist Hugh Richards described how Niels liked to tell jokes at dinner and Aage would save their table guests the awkwardness of not understanding his father's heavy accent.

"Fortunately, Aage always laughed at his father's jokes so even when we missed the point, we got along OK by cueing our laughter to Aage's," Richards said.

Physicist Enrico Fermi's wife, Laura, wrote in her memoir, "When he (Niels) walked about town, he did not seem to care where he was going. He let himself be led by his young son, a physicist like himself, who never left his side."

In records from the Army Corps of Engineers, the Bohr's assigned security detachment also noted:

"Both the father and son appear to be extremely absent-minded individuals, engrossed in themselves, and go about paying little attention to any external

influences. As they did a great deal of walking, this Agent had occasion to spend considerable time behind them and observe that it was rare when either of them paid much attention to stop lights or signs, but proceeded on their way much the same as if they were walking in the woods.”

It was during these regular walks that Aage perhaps played his most important service to the Lab and its war-time mission – helping his father work through the complexities of the development of the atomic bomb.

Scientist Joseph Hirschfelder noted in his memoir, “Each day they would take a long walk during which they would discuss some very difficult physics problem.”

### **Father-son verify weapons’ success**

One of the biggest challenges faced by the wartime laboratory in its quest for deliverable weapons designs was the development of a proven initiator device, which is located inside the weapon and helps trigger the nuclear reaction.

Scientist Charles Critchfield recalled in his memoir both the crisis and urgency in the development of the plutonium bomb. Oppenheimer “got very worried that we weren’t going to be able to do an implosion device because the initiator might not work. ... He’d lost I don’t know how many pounds.”

After two days of intense review, Niels and Aage determined the initiator would work.

And it did. First, at the Trinity test on July 16, 1945, when the bomb’s successful detonation marked the dawn of the Atomic Age, and then weeks later in combat when Fat Man was released above Nagasaki, Japan, on August 9, 1945.

### **Following in his father’s footsteps**

After WWII ended in the summer of 1945, Aage returned to Denmark, where he completed his PhD and would spend most of his career. In the early 1960s, after a stint as a university professor, he took over the directorship of the Niels Bohr Institute, founded by his father for scientific research. From 1975 to 1981, was the director of the Nordic Institute for Theoretical Atomic Physics.

Among his many honors, Aage was awarded the Nobel Prize in Physics in 1975. It was 53 years after his father received the same honor. Niels, however, had died in 1962 and did not see his son win the prize.

They are just one of four father-and-son sets to receive the physics prize.

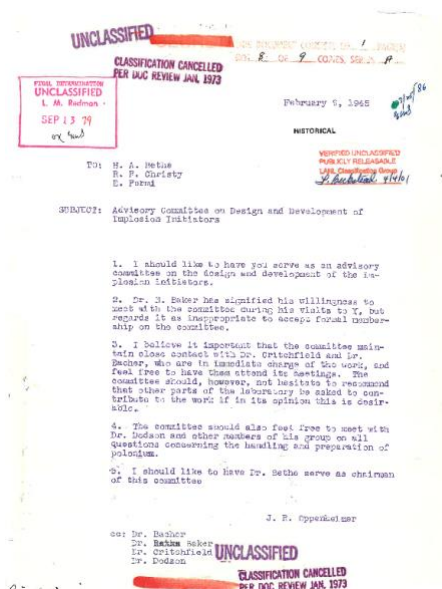
Aage died in 2009 at the age of 87.

Want to read more stories on the people and events that make up the Lab's history? Visit the Lab's National Security Research Center [online](#). Have feedback or need research assistance? [Contact us!](#)



<https://drive.google.com/file/d/19q8heCfN5iovPPVLbP0igDgfeXXa7n7r/view?usp=sharing>

Caption: In this photo from 1953, Aage Bohr, left, and his father, Niels Bohr, inspect a camera. The two physicists were described as inseparable by the Los Alamos scientific community. They were awarded Nobel Prizes 53 years apart. (Courtesy AIP Emilio Segrè Visual Archives).



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Caption: This February 9, 1945 memo from Lab Director J. Robert Oppenheimer announces the formation of an advisory committee on implosion initiators. Father and son Niels and Aage Bohr determined the initiator, which helps trigger a nuclear reaction, would work. The memo is part of the collections in the National Security Research Center (NSRC), the Lab's classified library.



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caption: Physicists Aage and Niels Bohr worked at the then-secret wartime Lab in Los Alamos, where they assisted in creating the implosion, plutonium weapon codenamed Fat Man. Father and son were constant companions. Aage would later win the Nobel Prize in Physics, 53 years after his father also did. (Courtesy AIP Emilio Segrè Visual Archives).