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Jane Smiley's nonfiction tale of the invention of the computer

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THE MAN WHO INVENTED THE COMPUTER

The Biography of John Atanasoff, Digital Pioneer

By Jane Smiley

Doubleday. 246 pp. $25.95

Americans have a romanticized idea about the nature of invention. We see invention as a flash of insight - a Eureka! moment - that strikes after years of careful, deliberate work. We enshrine this vision in our histories, popular culture and even the U.S. Constitution, which offers patents to inventors as an incentive to share their creations with the public. We celebrate our inventors, teaching our children about the inventor of the light bulb, the airplane, the radio, the polio vaccine and other transformative developments of the modern era. And yet most Americans have no idea who invented the electronic digital computer - arguably the most transformative leap of all.

Smiley, a Pulitzer Prize-winning novelist, argues [in this work of nonfiction](#) that computers owe their existence to a combination of wartime necessity and intellectual curiosity. It's widely acknowledged that the need to crack codes, compute artillery tables and even crunch the numbers for the first atomic bomb provided governments in England and the United States with the incentive to marshal the manpower and the financial resources necessary to build the first computers - massive machines that filled a room and required the same amount of power to run as did a hundred households. She tells the story of the secret efforts in England to build Colossus code-cracking computers and of work at the University of Pennsylvania to build the ENIAC, a massive machine designed to compute artillery tables. Colossus was a success, but most of the machines were destroyed after the war, and its existence was kept a secret for decades. ENIAC, on the other hand, was widely toted as the world's first "electronic brian." Its two inventors, John Mauchly and [J. Presper Eckert](#), went on to create the world's first computer company.

But the real heart of Smiley's volume is her portrayal of the lives of two scientists who worked on much smaller machines that they designed by themselves and built with limited means, after which the scientists were largely forgotten: Konrad Zuse, who built the world's first functioning digital computer in Nazi Germany using discarded relays; and John Atanasoff, a physics professor at Iowa State College, who built a tube-based electronic digital machine the size of a desk for solving systems of simultaneous linear equations.

Smiley, herself an alumna and former faculty member of the same institution, now Iowa State University, spends roughly half of her book following all four computer projects, as well as Atanasoff's post-computer contributions to World War II and the Cold War. Atanasoff had his Eureka! moment after a 200-mile drive in December 1937. He had been working for years on machines to help physicists perform the laborious

calculations required by quantum physics. Suddenly the entire design came to him while he was having dinner at a restaurant. He sketched his idea on a napkin, spent two years designing the machine, obtained a $650 grant in 1939 to build a prototype, hired a graduate student named Clifford Berry, and spent the next two years building the contraption itself.

Iowa State College never really understood the value of what Atanasoff was building and never bothered to file a patent application. But Mauchly did. After a chance meeting with Atanasoff, the two corresponded and in 1941 Mauchly drove from Philadelphia to Iowa to spend five days with Atanasoff, where he immersed himself in the design and operation of what is now called the Atanasoff-Berry Computer. Mauchly went back to Philadelphia, built ENIAC, filed for patents with his partner Eckert, and started a company that eventually became Sperry Rand, a leader of the computer industry in the 1950s and '60s.

The second half of Smiley's book follows the 20-year fight over these patents. Smiley describes the dirty underbelly of invention, showing how prototypes are destroyed, how inventors move on to new projects, and how major patent disputes are sometimes decided by an old letter found in a box of papers. Indeed, it was only after Berry's suspicious death in a hotel room in 1965 - he was found with a plastic bag over his head - that Atanasoff, now a wealthy man, devoted himself to using the historical record of the machine he had built with Berry to invalidate the Mauchly patents. His aim, Smiley writes, was to secure a place in history for Berry.

A federal judge overturned those patents because Mauchly had not disclosed Atanasoff's prior work, but Smiley fails to make her case that Atanasoff invented what we think of as the modern digital computer. She can't, because Atanasoff's machine was not programmable - it was a single-purpose machine. Most readers will miss this critical detail because Smiley doesn't focus on such technical stuff.

To be fair, her history of the digital pioneers is one of the most approachable volumes that has been written about this crucial invention. She convincingly shows that the digital revolution resulted from the efforts of many pioneers, in effect disproving her thesis, but also proving the value of her book.

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