Book illuminates life, legacy of physicist Feynman

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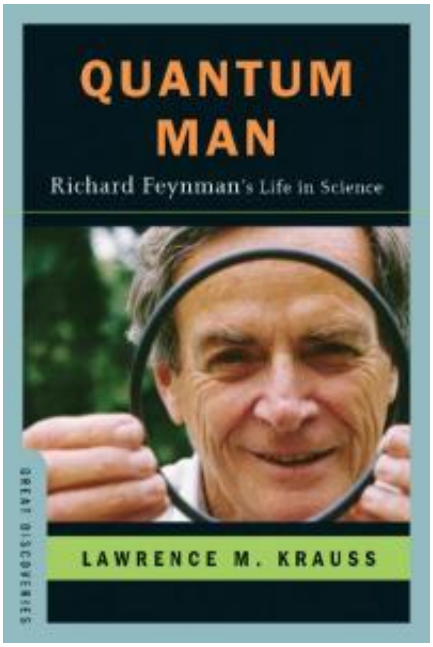

In the new scientific biography, "Quantum Man: Richard Feynman's Life in Science," due out March 21, Arizona State University professor Lawrence Krauss depicts the Nobel Prize winning Feynman as more than "just" a brain. He paints a picture of Feynman, a sprightly and multifaceted man of varied talents and intellectual pursuits ranging from percussion to Mayan hieroglyphs, by exploring the essence of the man as seen through his scientific contributions. Credit: W.W. Norton & Company

From childhood sweetheart to quantum electrodynamics, the life and scientific contributions of the legendary Richard Feynman, a physicist of

mythic hero status, are given a new and stimulating perspective in a book by Arizona State University professor Lawrence M. Krauss.

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"Richard Feynman was one of the most colorful physicists of the 20th century but more importantly, he was one of the most beloved and important physicists as well," said Krauss, a theoretical physicist and cosmologist who teaches in the School of Earth and Space Exploration and the Department of Physics in ASU's College of Liberal Arts and Sciences.

"There has been a lot of interest in his life. But what I wanted to do is convey why he is an icon for scientists; I wanted to convey his scientific legacy and describe his science as seen through the arc of his life," said Krauss.

"I wanted to use his fascinating life as a hook to get people to explore the key ideas of 20th and 21st century physics because Feynman's work encompasses many of the profound ideas we are still grappling with today. Some of his ideas have literally changed our view of the universe and ourselves," said Krauss, who also is the founding director of the ASU Origins Project.

Feynman's work affected the understanding of essential concepts in quantum electrodynamics, the superfluidity of supercooled liquids, and particle physics, as well as the fields of computing, nanotechnology, and

the study of gravity. Among his other achievements are work on the Manhattan Project and his service on the panel that investigated the disaster of the space shuttle Challenger.

Krauss wrote in the book that Feynman "in one sense" had been preparing for his work at Los Alamos his whole life. "All his talents were to be exploited during (these) two years: his lightning computational abilities; his mathematical wizardry; his physical intuition; his clear appreciation for experiment; his disrespect for authority; his breadth of physics knowledge, from nuclear physics to the physics of material; and his fascination with computing machines."

Unorthodox approach

A free and inquisitive spirit, Feynman's innately calculated disregard for commonly accepted scientific approaches and the ways in which this characteristic led to his scientific legacy are artfully captured in the biography.

Even if an idea had already been proven, Feynman chose to ignore convention and distrusted any idea unless he had worked it out from first principles using his own methods; this unique approach and thoroughness expressed Feynman's strong emphasis on the journey of doing science in and of itself rather than the end result. "Accomplishment was not his purpose," wrote Krauss in the epilogue of the book. "It was learning about the world. He felt the fun lay in discovering something, for himself, even if everyone else in the world already knew it."

This unorthodox technique to solving problems and genuine love for science persisted throughout Feynman's life until his death in 1988.

"I wanted to show in this story how Feynman changed our view of

quantum mechanics. It took a man who is willing to break all the rules to tame a theory that broke all the rules," said Krauss. "I realized that Feynman's physics provides, in microcosm, a perspective on the key developments in physics over the second half of the 20th century, and many of the puzzles he left unresolved remain with us today."

The biography works to not simply track the evolution of different scientific theories and Feynman's work on them, but to also illustrate how his work, relationships and carefree persona are all intertwined.

Krauss cited letters between Feynman and Arline Greenbaum, his childhood sweetheart, to illustrate the power of their relationship on his work. "Her spirit provided her husband with the vital encouragement he needed to keep going, to find new roads, to break traditions, scientific and otherwise," said Krauss.

From the early evidence of Feynman's extraordinary ability to concentrate all of his energy on a single problem to the strength that domestic stability provided him to focus on his work, Krauss merges science and biography in such a way that "presents a whole new paradigm for scientific biography."

Krauss is the author of seven other books, including "Hiding in the Mirror: The Mysterious Allure of Extra Dimensions, from Plato to String Theory and Beyond," "The Physics of Star Trek," and "Quintessence: The Mystery of the Missing Mass." His ninth book, "A Universe from Nothing," is scheduled to appear in January 2012.

What others are saying about "Quantum Man"

"Krauss's wonderful biography puts Feynman's remarkable contributions to science front and center, accessibly, in the context of his life and times. Feynman would approve." – Frank Wilczek, MIT, Nobel laureate

in physics.

"'Quantum Man' is a masterpiece." – Walter Isaacson, author of "Einstein: His Life and Universe."

"Richard Feynman was one of those larger-than-life characters that the popular imagination associates with artists and writers rather than 'coldly rational' scientist. Such a charismatic figure deserves a charismatic, knowledgeable, and literate physicist as his warts-and-all-biographer. Lawrence Krauss fits the bill admirably." – Richard Dawkins, author of "The God Delusion" and "The Greatest Show on Earth."

"Krauss's account is both entertaining and masterly. A great read." – Brian Greene, author of "The Hidden Reality" and "The Elegant Universe."

"A lively and engrossing biography of a lively and engrossing man. Krauss recounts the life and ideas of one of the century's greatest scientists with a deep understanding of both the physics and the man, presented with great lucidity and charm." – Steven Pinker, Harvard, author of "How the Mind Works" and "The Stuff of Thought."

"Krauss excels in his ability, like Feynman himself, to make complicated physics comprehensible. ... This book is highly recommended for readers who want to get to know one of the preeminent scientists of the 20th century." – Publisher's Weekly.

"Krauss shares with his subject that rare affinity for making science appealing to all manner of audiences." – Raya Kuzyk, Library Journal.

Provided by Arizona State University

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