Dr. F. William Lawvere, 85, UB professor who transformed advanced mathematics

Feb. 9, 1937 – Jan. 23, 2023

F. William Lawvere, a professor emeritus at the University at Buffalo regarded as one of the greatest modern visionaries in advanced mathematics, died Jan. 23 in his daughter's home in Chapel Hill, N.C., after a period of declining health. He was 85.

In a tribute on Twitter following Dr. Lawvere's death, applied mathematician and data scientist Evan Patterson wrote:

"In his PhD thesis, (Dr.) Lawvere revolutionized our understanding of universal algebra in a completely original way. He went on, with various collaborators, to unify category theory and mathematical logic through a far-reaching program that included the development of topos theory.

"This work has been transformative in category theory and related fields but remains largely unknown in the broader mathematical sciences. I hope to see that change during my lifetime as I believe there is much untapped potential in these ideas, especially in applied mathematics."

Born Francis William Lawvere in Muncie, Ind., the son of a farmer, he studied with noted mathematician Clifford Truesdell at Indiana University, where he earned a bachelor's degree in mathematics and lectured in one of Truesdell's courses.

He told an interviewer in 2007: "I liked experimental physics but did not appreciate the imprecise reasoning in some theoretical courses. So I decided to study mathematics first. Truesdell was at the Mathematics Department, but he had a great knowledge in Engineering Physics. He took charge of my education there."

He received a National Science Foundation fellowship at Indiana, which was transferable to Columbia University, where he went with Truesdell's recommendation to study with Samuel Eilenberg, a founder of category theory.

He completed his doctorate in 1963 and first taught at Reed College in Oregon, where he reworked the teaching of set theory for undergraduates and developed axioms that were the basis for his publication, "Elementary Theory of the Category of Sets."

In Switzerland in 1966, while doing post-doctoral studies as a visiting research professor at the ETH, the Swiss Federal Institute of Technology in Zürich, he married Fatima Fenaroli. Fluent in eight languages, she has served as his editor and expedited his many travels to academic conferences in the U.S. and abroad.

Later in the 1960s, he developed the field of categorical logic, which has seen wide application in geometry and computer science.

His son Danilo explained that throughout his career Dr. Lawvere emphasized that a close relationship should be maintained between teaching and research and that the principles of philosophy should be employed as a tool to unite them.

"Many mathematicians shied away from philosophy because it seemed disconnected," his son said. "No matter what conversation he was having, he was about the big picture. He was asking how does it relate, how does it integrate, how do you simplify it."

Dr. Lawvere taught at the University of Chicago and the City University of New York Graduate Center and for two years headed a group of researchers at Dalhousie University in Halifax, Nova Scotia, which refused to renew his contract in 1971 because of his opposition to Canada's draconian War Measures Act.

He went on to run a seminar in mathematics theory in Perugia, Italy, from 1972 to 1974, then joined the faculty at UB, helping to make its Mathematics Department one of the world centers for Category Theory. He was UB's Martin Professor of Mathematics for five years and was a visiting research professor at the Institut des Hautes Études Scientifiques in Paris in 1980-81.

Dr. Lawvere became a professor emeritus of mathematics and adjunct professor emeritus of philosophy in 2000. In 2012, he became a fellow of the American Mathematical Society.

He was author of several books, including the textbooks "Conceptual Mathematics" and "Sets for Mathematics" during his tenure at UB, and wrote many articles representing his research and collaborations with many colleagues.

He also served as a mentor to numerous undergraduate and graduate students and researchers around the world.

In addition to his wife, survivors include four sons, John T., Philip, Danilo and Marco Fenaroli; a daughter, Silvana Lawvere de Moreno; a brother, Jon; a sister, LaRea Lawvere Slater; and four grandchildren.

Memorial celebrations of his life and scientific work are being planned.