

MEMORIAL RESOLUTION**David Charles McCarty**

October 20, 1953 – November 25, 2020

Professor David Charles McCarty was born in Chicago, Illinois to Charles Albert and Mary Loretta McCarty. He received his B.S. and M.S. in Mathematics from Iowa State University in 1975 and 1978 respectively, an M.A. in Philosophy from the University of Minnesota in 1981, and the DPhil from Oxford University in 1984, where he studied with Dana Scott. He began his career as an Assistant Professor at Ohio State in 1983. He was a Joint University Lecturer at Edinburgh University from 1984 to 1987, and an Assistant Professor at Florida State from 1987 to 1990. He joined Indiana University in 1991, first on a visiting appointment and then as Associate Professor in 1995. He was promoted to Full Professor in 2003. He was a member of the Cognitive Science program and an adjunct professor in Computer Science and in History and Philosophy of Science. He was the director of the IU Logic Program from 1996 to 2002 and the director of the Cognitive Science Logic Certificate Program from 1996 to 2008. Professor McCarty held visiting appointments at Konstanz, as a DAAD Research Fellow, 1998-99, and at the Hebrew University of Jerusalem, as a Senior Research Fellow at the Sidney M. Edelstein Center for the History and Philosophy of Science, Technology, and Medicine, 2019-20. He was a Fellow at the Copernicus Center in Cracow, 2015, and President of the Indiana Philosophical Association 2012-13.

Professor McCarty's primary fields of research were foundations of logic and mathematics, early analytic philosophy, and the history of mathematics and logic in the late 19th and early 20th centuries. He published over 120 peer-reviewed papers. He wrote on intuitionism, the completeness problem for intuitionistic logic, Markov's Principle, constructive validity, realizability and recursive mathematics, potentially infinite sets, denotational semantics, Church's Thesis, logical truth, the meanings of the connectives, limits of mathematical explanation, mathematical realism, structuralism, antirealism, the philosophy of logical atomism, as well as Hilbert and du Bois-Reymond, Carnap, Brouwer, Helmholtz, Frege, Wittgenstein, Dedekind, Gödel, Anselm's ontological argument, Goethe, historical fiction, the pathetic fallacy, and other topics. His book, *To an Infinite Power: Mathematical and Philosophical Writings of Paul du Bois-Reymond*, in press at the time of his death, was published posthumously by Oxford University Press in 2021.

Professor McCarty had several main lines of work in logic. He was one of the world's leading experts on constructive mathematics and intuitionistic logic, and all matters related to their history and philosophy. He proved a number of results on these topics that are of permanent importance both to people in that field and to outsiders. For example, he answered the question of whether one can prove the completeness of intuitionistic logic inside of intuitionistic logic the way one can for classical logic; he showed that this cannot be done. But his work in logic should not be reduced to a list of technical results. Rather, it was a decades-long deep involvement on topics coming from the area of constructive mathematics. While he did do technical work—lots of it—he always did so as part of philosophical or foundational explorations or arguments.

The topics of constructive mathematics and intuitionistic logic have always had a special and noteworthy relationship to more mainstream views in logic and philosophy of mathematics. Indeed, during the time that McCarty started to work on these topics, they were very much a minority pursuit: a small number of people did study constructive mathematics, but many of these people were doing so in order to provide an outsider's understanding, a translation of constructive mathematics into something other than what was originally intended. Professor McCarty's work challenged this move. It is also fair to say that he didn't just study constructive mathematics, he advocated it. It should be noted that he was far ahead of his time in this: these days, computer scientists who think about philosophical matters typically are advocates of constructive mathematics. So his contributions as a philosopher of mathematics and of logic will be increasingly more important in the future.

It is sometimes said that the highest form of teaching is iconoclasm. In this, Professor McCarty would be one of our greatest teachers in the philosophy of mathematics. He pioneered the reconsideration of the continuum. Mainstream mathematicians "know all about" the real numbers, since the foundations of the real number system were laid by people in the 1800's. Professor McCarty demonstrated that the question of how to think about fundamental objects like the set of real numbers was not settled in a straightforward manner. Indeed, he and his PhD student Lisa Keele (Lee Buckley) brought back from obscurity the views of Paul du Bois-Reymond and others. Even more striking was his reconsideration of the notion of finiteness in mathematics. In a move that he was uniquely qualified to make, he reformulated finiteness from a constructive point of view, obtaining results that were sometimes incompatible with classical mathematics.

Professor McCarty was a legendary if intimidating teacher. He had exacting standards and expected a lot of his students, but he was extraordinarily clear, and an inspirational teacher and entertaining lecturer, known for being very supportive of students and generous with his time. He taught a wide range of subjects, from mathematical logic, intuitionistic logic, computability, category theory, set theory, and the foundations and philosophy of mathematics to cognitive science, philosophy of language, the later Heidegger, Existentialism and Phenomenology, 19th century German philosophy, ancient philosophy, metaethics, political philosophy, aesthetics, and film and philosophy, among others. In remembrance of Professor McCarty, a former student, Joshua Alexander, wrote, "He was tough as nails but cared so much about our academic success. He would host these amazing weekly work groups with his logic students, which always ran into the night, and then we'd go out afterwards for drinks at Bears Place, where we'd talk about logic and the profession, but also about music, which he loved almost as much as he loved logic and teaching. He invited us to participate in academic life from day one, but also demanded that we live up to what that invitation meant and that we take seriously what academic life was all about." Professor McCarty was also notably successful as a dissertation supervisor, providing both encouragement and rigorous feedback, and seeing many students across the finish line. He was exceptionally proud of the accomplishments of his PhD students.

Professor McCarty curated a vast library that he used for his research projects, which included the first logic book he bought in high school. He was an avid reader, loved traveling, exploring museums, eating exotic foods, teaching, mentoring students, taking walks in the woods with his grandson, music—especially Erich Wolfgang Kornold—and opera.

Professor McCarty's illustrious career as a logician and philosopher of mathematics is a message that foundational matters are calls to action, that simple-minded slogans that 'everyone knows' are always worth examining, and that a life of passionate engagement with issues at the heart of mathematics and logic is a life very much worth living.

We request that this memorial tribute to David Charles McCarty be presented to the members of the Bloomington Faculty Council, that it be preserved in its minutes and archive, and that after its presentation copies be sent to members of his family.

Kirk Ludwig, Professor and Chair, Department of Philosophy

Larry Moss, Professor, Department of Mathematics, Director, Program in Pure and Applied Logic