

J. Barkley Rosser

Born December 6, 1907, Jacksonville, Fla.; died September 5, 1989, Madison, Wis.; mathematical logician who contributed the Church-Rosser theorem to the study of computer science.



Education: BS, physics, University of Florida; MS, physics, University of Florida; PhD, logic, Princeton University, 1934.

Professional Experience: Proctor Research Fellowship, Princeton; National Research Council Fellowship, Harvard University, 1935-1936; Cornell University, 1936-1963; director, Mathematics Research Center (MRC), University of Wisconsin, 1963-1978.

Honors and Awards: Presidential Certificate of Merit; Commendations from the Department of the Army and the Secretary of the Navy~

J. Barkley Rosser, professor emeritus of mathematics and computer science at the University of Wisconsin and former president of SIAM, died on Tuesday, September 5, 1989, at the age of 81.

Rosser was born in Jacksonville, Florida, on December 6, 1907. (He was to claim later that he owed his interest in scholarship to the enforced rest that had accompanied the periodic bouts of malaria he experienced while living in Florida.) He graduated from the University of Florida with BS and MS degrees in physics, and received a PhD in logic from Princeton University in 1934 under Alonzo Church. He held a Proctor Research Fellowship at Princeton and a National Research Council Fellowship at Harvard University (1935-1936), after which he moved with his wife Annetta to Cornell University, which remained his academic home until 1963.

Initially, the focus of Rosser's mathematical research was on the foundations of mathematical logic, and he had a parallel interest in number theory. Over the years, Rosser wrote three books on logic: *Many-Valued Logics* (1952), *Logic for Mathematicians* (1953), and *Simplified Independence Proofs* (1969).

The world events of 1939 and 1941 affected Rosser as they did many pure mathematicians. Turning to his early interest in physics and applications, in 1944 he went to the Allegheny Ballistics Laboratory to work on rocket theory and design. Several books emerged from this experience: two dealing with the mathematical aspects of rocket flight and ballistics, and the three-volume *Space Mathematics*, which appeared in 1966 under his editorship. This wartime experience also left him with a respect for those who support the security of the nation and a personal acceptance of the possibility that he could be called on to fill similar roles in the future.

As a logician, Rosser could appreciate the exciting possibilities that lay ahead for the primitive computers he had seen and used. Accordingly, he was well prepared when approached in 1949 to become director of research at the newly created Institute for Numerical Analysis, located at UCLA and sponsored by the National Bureau of Standards. At this early stage in the history of computing, Rosser was able to assemble a stellar group of mathematicians whose ultimate impact on the future of computing would be impressive. In addition, he saw the potential of the computer for research in many areas of pure mathematics. One example is the project on rigorous computation of the zeros of the Riemann zeta function; while the final report by Rosser, Lowell Schoenfeld, and James Michael Yohe appeared in 1969, the project had been conceived and planned much earlier.

Rosser continued to make Cornell his base; he served as department chair and directed a total of nine doctoral students, mostly on topics in logic and related areas. With a joint Guggenheim-Fulbright fellowship, he spent the academic year 1953-1954 in Europe, devoting much of his time to research on topics in logic.

Because able scientific administrators are rare, however, he continued to receive requests to fill administrative posts. In addition to serving on many panels and committees connected with the space program and related projects, he also held other key professional scientific positions, among them director of the Institute for Defense Analysis, chair of the mathematics division of the National Research Council, and chair of the conference board of the Mathematical Sciences.

In 1963 Rosser accepted an invitation to move from Cornell to the University of Wisconsin as director of the Mathematics Research Center (MRC), replacing the retiring founding director, Rudolph Langer. MRC, then seen as one of a number of similar semiautonomous research centers on the campus, was operating under a contract from the US Army originally awarded to the university in 1956. After an initial period, Rosser modified the center's organization to integrate it more closely into the normal departmental structure of the university. He adhered to his policy of bringing in the best possible persons in an important field, with tenure when available, and providing them with an environment in which they were free to carry out research. Consultation with government mathematicians was a voluntary choice, as for mathematicians elsewhere.

The events of 1965 to 1969 produced tensions on many college campuses, and MRC was an obvious target for protest. Once Rosser realized that reason was of no avail with the opponents of MRC, he continued on the path he felt was right and bore the affronts with stoicism.

In 1970, a misdirected bombing that killed a young physicist who had no affiliation with MRC brought the period of protest to a halt. Yet the incident did not end the productive work of MRC or that of Barkley Rosser; two of his papers on the zeta function were yet to appear. He retired from the University of Wisconsin in 1978 as professor emeritus of both mathematics and computer science.

It is interesting that at different times Rosser served as president of both the Association of Symbolic Logic and SIAM, two organizations whose stated goals might seem rather far apart. His invited address at the end of his term as president of SIAM was titled "A Runge-Kutta for All Seasons," and his last publications dealt with number theory. His public service record was recognized by a Presidential Certificate of Merit and other decorations and commendations from the Department of the Army and the Secretary of the Navy.¹

BIBLIOGRAPHY

Biographical

Buck, R.C., S.V. Parter, and L.B. Rail, Obituary, *SIAM News*, 1989.

¹ From Buck et al. 1989.

UPDATES

Portrait added (MRW, 2013)