



IN MEMORIAM

Abraham Haskel Taub
Professor of Mathematics, Emeritus
Berkeley
1911–1999

Abraham Haskel Taub was born in Chicago on February 1, 1911, and, after attending public schools in Chicago, he enrolled in the University of Chicago in 1927. Graduating with a degree in mathematics in 1931, he went to Princeton University for graduate work. There he came under the influence of Oswald Veblen and worked with him on spinors – work that led to two publications in 1934, one jointly with Veblen and John von Neumann. In 1933 he married his college sweetheart Cecilia, generally known as "Cece". The warmth and closeness of their relationship lasted until his death. His dissertation, *Quantum Equations in Cosmological Space*, was completed in 1935 under H. P. ("Bob") Robertson, and began Taub's lifelong interest in general relativity. This was a time of great advances in the subject and Taub's paper on Dirac's equation in Robertson's spatially homogeneous spaces is widely recognized as a significant contribution. At the end of a postdoctoral year at the Institute for Advanced Study at Princeton, Taub became an assistant professor at the University of Washington.

During World War II Taub was called back to Princeton as a research physicist for the National Research Committee under the direction of Walker Bleakney. There he developed the theory of the shock tube and worked on the interaction of shock waves, their oblique reflection, and the Mach reflection of shock waves from a wall, including the Mach stem phenomenon. In 1946 he received the Presidential Certificate of Merit for this work. The results were published in 1946-1951, together with experimental verifications. The excellent agreement of the theory with the data, in most cases, was a source of great satisfaction for Taub; the few cases of disagreement point out the difficulty of the subject and are for the most part still poorly understood today.

Taub had one postwar year back in Seattle but in 1947 he returned to the Institute for Advanced Study as a Guggenheim Fellow, where he worked on shock waves as well as on differential geometry. One of the fruits of this year was his classical paper on empty space- times that admit a three parameter group of motions, which contains, among other things, an interesting Ricci- flat solution known as the Taub universe. This paper has exerted a profound influence on the development of general relativity.

His war work and the influence of John von Neumann brought digital computers to the forefront of Taub's scientific interest. In 1948 he went to the University of Illinois as the chief mathematician in the group that built the ORDVAC computer, which was completed in 1952. The design of this computer was very influential, and the effort was continued with the ILLIAC computer at Illinois. These designs inspired many other computer construction projects, such as the WEIZAC in Israel. Taub was the head of the Digital Computer Laboratory at Illinois from 1961 to 1964. In later years he did not seem to be sufficiently proud of his accomplishments in computers and computing, holding them to be less interesting than his more mathematical results, but this judgment is belied by the high esteem in which this work is held worldwide.

It is indeed computers that brought Taub to the University of California, Berkeley. In 1964 he was appointed director of the Computing Center, with a joint appointment in the Department of Mathematics, and a mandate from the chancellor to start an instructional program and ultimately a department of computer science. The possibility of a department of computer science in another college alarmed the Department of Electrical Engineering (EE) which already had a research program in this nascent field of study. The ensuing struggle (1964-67) between Taub and Lotfi Zadeh, the chair of EE, for "control" of computer science frustrated Taub. When the administration acted to "resolve" the conflict by creating a department of computer science within the College of Letters and Science on July 1, 1967, and, on the same day, changing the name of EE to the Department of Electrical Engineering and Computer Science (EECS), Taub chose not to join the new department he had come to Berkeley to establish. The complexity and difficulty of the situation that the campus administration had created was a source of glee at rival institutions but was painful for the participants on campus.

Taub became a full time professor of mathematics at Berkeley in 1967, a position that he held until his mandatory retirement in 1978. Upon his retirement, Taub received the Berkeley Citation from the University. As professor emeritus he remained active in research, and died on August 9, 1999, after a long illness.

Taub had many distinguished postdoctoral collaborators and very successful students, who have also made significant contributions to computer science, applied mathematics, and relativity. He edited several books, including John von Neumann's collected works in six volumes. His research accomplishments were recognized by his election to the American Academy of Arts and Sciences in 1972. He was not an easygoing person nor particularly sociable, but had exquisite manners and a strong sense of duty. Those he liked and felt comfortable with he treated with great warmth, and he could display a lovely playfulness, especially when children were present. He is survived by his wife of 66 years, Cecilia Vaslow Taub, and by three children and a grandchild.

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