

*At a meeting of the FACULTY OF ARTS AND SCIENCES on October 11, 2022,
the following tribute to the life and service of the late Gerald Enoch Sacks
was spread upon the permanent records of the Faculty.*

GERALD ENOCH SACKS

BORN: March 22, 1933

DIED: October 4, 2019

Gerald E. Sacks, age 86, Professor of Mathematical Logic, *Emeritus*, at Harvard and the Massachusetts Institute of Technology, passed away at his home in Falmouth, Maine, after a long illness.

Sacks was born in Brooklyn to Irwin and Ethel Sacks and graduated from Brooklyn Technical High School. Sacks began his college career as an engineering major but interrupted his college studies at Cornell University and served in the U.S. Army from 1953 to 1956.

After returning to Cornell, he developed an interest in mathematical logic and continued his studies in that area, receiving his Ph.D. in 1961 as a student of J. Barkley Rosser. Afterward, he joined the Cornell mathematics faculty, where he received tenure within just a few years.

Sacks joined the M.I.T. mathematics faculty as Professor of Mathematics in 1967 and so began a long and storied career in the Boston area, where he remained until his retirement. His appointment at M.I.T. became a joint appointment at Harvard in 1973, which within mathematics is rather a remarkable arrangement.

Sacks had a brilliant mind for mathematics and an abiding curiosity about it. In addition, he had a magnetic personality and was always a center of attention. He was a charismatic teacher and a captivating speaker, giving lectures with humorous overtones and undertones of great depth.

His knowledge and interests were broad, covering not only his field of expertise but also the major developments in mathematics as a whole and in the world at large. Sacks was a voracious reader with an extensive library, wrote poetry, and was a movie buff with an extraordinary recall of highlights of movies.

Sacks began his career working in classical computability theory when the field was in its infancy. The striking results of Friedberg and independently Muchnik, which answered a

question of Post on recursively enumerable Turing degrees, created an atmosphere of excitement setting the stage for the subsequent innovations.

But it was the pioneering work of Sacks in his monograph *Degrees of Unsolvability* that generated an exhaustive study of those degrees. The work of Sacks in that monograph, and in later papers, covered many aspects of degree theory.

Several of the theorems Sacks proved now have his name attached to them, in large part because of the techniques he pioneered to prove them. These include the Sacks splitting theorem and the Sacks jump inversion theorem. The enormously fecund technique he introduced for proving these theorems has the somewhat odd name of “infinite injury.”

Remarkably, another technique he pioneered, that of Sacks forcing, has been fundamental not only in computability theory but also in the seemingly distant area of set theory.

He published two important books in addition to *Degrees of Unsolvability*. *Saturated Model Theory* was a popular choice for a first course in model theory for several generations of students, and *Higher Recursion Theory* remains the main reference today for those studying that topic.

Sacks was also a founding editor of the book series *Perspectives in Mathematical Logic*, which has published many important books both for beginning students and for use as reference texts by researchers at all levels.

Sacks supervised 32 Ph.D. students, the vast majority of whom were at Harvard and M.I.T. These students and their descendants (who currently number over 850) have populated many universities.

His successful mentoring of outstanding students led to the establishment of the Sacks Prize, which is awarded annually to the student writing the best Ph.D. thesis in mathematical logic worldwide and is sponsored by the Association for Symbolic Logic.

Respectfully submitted,

Warren Goldfarb
Peter Koellner
Theodore Slaman (University of California, Berkeley)
W. Hugh Woodin, Chair

An extended version of this Minute was previously published by Manuel Lerman and Theodore A. Slaman, “In Memoriam: Gerald E. Sacks, 1933–2019,” *The Bulletin of Symbolic Logic* 28, no. 1 (2022): 150–55, <https://doi.org/10.1017/bsl.2022.8>. © The Authors, 2022. Published by Cambridge University Press on behalf of The Association for Symbolic Logic. Reprinted with permission.