GERALD J. LIEBERMAN

1925–1999

Elected in 1987

"For significant technical contributions to quality control and reliability, and for leadership as an engineering educator."

BY FREDERICK S. HILLIER
SUBMITTED BY THE NAE HOME SECRETARY

GERALD J. LIEBERMAN was born December 31, 1925, in Brooklyn, New York; his parents, Joseph and Ida, had come to this country from Lithuania. After attending high school in Brooklyn Jerry obtained an undergraduate degree in mechanical engineering from Cooper Union in 1948 and a master's degree in mathematical statistics from Columbia University in 1949. He then worked for a year at the National Bureau of Standards. It was there that he met his future wife, Helen Herbert; they married in 1950.

Jerry enrolled in the PhD program in the Department of Statistics at Stanford University in 1950 and did his doctoral dissertation on multistation inspection schemes. This and much of his later research on sampling inspection and quality control were subsequently incorporated into military standards.

With his background in engineering and engineering statistics, Jerry received a joint appointment as an assistant professor in Stanford's Departments of Industrial Engineering and Statistics, reflecting the Statistics Department's interest in having a link with the School of Engineering and the desire of

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Additional details of interest are available in the Stanford bio of Dr. Lieberman, available at https://web.stanford.edu/~infanger/DantzigLieberman/Bio_GJL.htm.

the Industrial Engineering Department to strengthen its statistical activities. This was a good fit for Jerry and he rose from assistant professor in 1953 to professor in 6 years. It also was a great fit for Stanford students in these areas because Jerry was an outstanding teacher whose congenial and welcoming personality made him beloved by his students.

At the outset, Jerry's research and writing were largely in statistics. His first book (coauthored with Albert Bowker), *Handbook of Industrial Statistics*, was published by Prentice-Hall in 1955. A full-length Prentice-Hall textbook (again with Bowker), *Engineering Statistics*, followed in 1959, with a 2nd edition in 1972. This influential textbook was widely used for many, many years and Jerry also frequently taught a popular course on this topic.

During the mid-1950s Jerry became interested in the emerging field of operations research, a discipline that involves applying mathematical models and techniques to decision making. He soon introduced a new course, Introduction to Operations Research, and urged Stanford to take the lead in offering a curriculum in this relatively new field.

Thanks largely to Jerry's efforts, Stanford established an interdepartmental PhD program in operations research in 1962, with Jerry as its chair. With outstanding faculty from throughout the university, the program drew many exceptional students who went on to become leaders in the field. In 1966 Jerry succeeded in luring the renowned pioneer in the field, George Dantzig (NAE 1985, NAS 1971; commonly referred to as the father of linear programming), to join the Stanford faculty.

The following year the interdepartmental program became a full-fledged Department of Operations Research in the School of Engineering, adding a master's program and a few undergraduate courses. Jerry continued as chair for another 8 years, and the department was soon widely acclaimed as a leader in the field and a magnet for top students. For example, for many years at least half of the NSF fellows entering operations research chose to join the Stanford program.

Jerry turned his expository skills from engineering statistics to operations research. In 1967 he and I, his former student,

published *Introduction to Operations Research* (Holden-Day Publishers); it immediately became the preeminent textbook in the field and still retains this status (the 11th edition was published in 2020 by McGraw-Hill). The book has been translated into more than a dozen languages and is estimated to have been used by over a million students around the world.

Even with his responsibilities as program and department chair, as well as his work on textbooks, Jerry remained a very active researcher. He did seminal work on the mathematic theory of system reliability, replacement policies, inventory control, and stochastic management problems.

After 13 highly successful years as chair of the Interdepartmental Program and then the Department of Operations Research, Jerry stepped down because the Stanford administration had bigger plans for him. He served as associate dean of humanities and sciences, vice provost and dean of research, vice provost and dean of graduate studies, chair of the Centennial Celebration, and chair of the faculty senate. He gained such confidence from the Stanford presidents that he was called on to serve as the provost or acting provost under three of them. He clearly was one of Stanford's most preeminent university citizens of his generation. At the same time, he managed to stay in close touch with his faculty colleagues in the Department of Operations Research, participate in department decisions, supervise doctoral students, and contribute to new editions of our coauthored textbook.

In addition to his extensive service to Stanford, Jerry had a broad record of national leadership in statistics, quality control, and operations research. He held national offices in four professional societies in these fields, including serving a term as president (1980–81) of the Institute of Management Sciences. He also served on the editorial board of three journals and was active in committees of the National Academies of Sciences, Engineering, and Medicine. He served on the Board on Mathematical Sciences (1988–94) and its Panel on Applied Mathematics Research Alternatives for the Navy (1981–89), the NIST Assessment Board's Panel for Computing and Applied Mathematics (1983–85; chair, 1986–89), and the

Committee on National Statistics Panel on Quality Control of Family Assistance Programs (1986–88), among others.

For his contributions, Jerry was honored with the 1972 Shewhart Medal of the American Society for Quality Control for his research on sampling plans and statistical quality control; election to the NAE (1987); the Institute for Operations Research and the Management Sciences (INFORMS) President's Award (1994), which is presented "to recognize, and thereby encourage, important contributions to the welfare of society by members of our profession at the local, national, or global level"; and the institute's 1996 George E. Kimball Medal for his exceptional service to the profession.

Tragedy struck in the 1990s when Jerry developed amyotrophic lateral sclerosis (Lou Gehrig's disease). He retired from Stanford in 1995, and this terrible disease took his life at the age of 73 on May 18, 1999.

Having described Jerry's spectacular academic career, I would be remiss if I did not acknowledge the remarkable personal qualities that enabled it. Jerry was my freshman advisor, undergraduate, graduate, and dissertation advisor, mentor, friend, and coauthor, and I can personally attest to these qualities. Beyond being a fine scholar, he had tremendous wisdom, integrity, and courage, and he gave generously to others. He was a congenial, good-natured man who engaged life fully and cheerfully. He was a kind and sympathetic man who listened well and was always ready to help. He also was a wise man who offered sage advice. He was a very special role model for both his colleagues and his students. He was a real prince of a man.

Upon the passing of both Jerry and the eminent George Dantzig, I had the privilege of leading a fundraising campaign to establish Stanford's Dantzig-Lieberman Operations Research Fellowships. The response was overwhelming, especially from the alumni of the Department of Operations Research (now part of the Department of Management Science and Engineering). This endowment fund now holds well over $4 million, supporting multiple fellowships each year. In addition, the university established 12 one-year Gerald J. Lieberman

Fellowships for graduate students who show potential for becoming the next generation of academic leaders.

Jerry is survived by Helen; their four children: Janet Lieberman Argyres of Castro Valley, CA, and Joanne Lieberman, Diana Lieberman, and Michael Lieberman, all of Palo Alto; and two grandchildren.