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## **A Memorial Tribute to Gerald J. Lieberman**

Gerald J. Lieberman (Jerry) was born on December 31, 1925 in Brooklyn, New York, where he remained through high school. His parents had come to this country from Lithuania. He obtained an undergraduate degree in Mechanical Engineering from Cooper Union in 1948 and a master's degree in Statistics from Columbia in 1949. He then worked for a year at the Bureau of Standards. It was there that he met his future wife, Helen. They were married in 1950.

Jerry then joined the Ph.D. program in the Department of Statistics at Stanford in 1950. His doctoral dissertation on the topic of multi-station inspection schemes was completed in 1953. This research and much of his subsequent research on sampling inspection and quality control were subsequently incorporated into military standards.

Because of his background in engineering and engineering statistics, Jerry received a joint Assistant Professor appointment in Stanford's Departments of Industrial Engineering and Statistics in 1953. This joint appointment reflected the interest of Statistics in having a link with the School of Engineering and the desire of Industrial Engineering to strengthen its statistical activities. This was a good fit for Jerry and he quickly rose from Assistant Professor to Professor in six 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 was largely on the statistics side. For example, his first book (with Albert Bowker), *Handbook of Industrial Statistics*, was published by Prentice-Hall in 1955. A full-fledged Prentice-Hall textbook (with Albert Bowker), *Engineering Statistics*, followed in 1959, with a 2<sup>nd</sup> 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-1950's, 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 began

promoting having Stanford take the lead in offering a full-fledged curriculum in this relatively new field.

Largely due to Jerry's efforts, Stanford established an Interdepartmental Program in Operations Research offering a Ph.D. degree in Operations Research in 1962. Jerry was appointed the chairman of this program. By drawing on distinguished faculty scattered throughout the university and adding some outstanding junior faculty, this program drew many exceptional students who went on to become leaders in the field. Then in 1966, Jerry succeeded in luring the renowned pioneer in the field, George Dantzig (commonly referred to as the father of linear programming), to join the Stanford faculty.

The following year (1967), this interdepartmental program became a full-fledged Department of Operations Research in the School of Engineering, offering both a master's program and a doctoral program in Operations Research, as well as a few undergraduate courses. The department quickly became widely acclaimed as a real leader in the field and a magnet for the top students. For example, at least half of the NSF Fellows entering operations research each year chose to join the Stanford program for many, many years. Jerry was appointed as the first chairman of this new department and continued providing this leadership for another eight years.

Meanwhile, Jerry had turned his expository skills from the engineering statistics area to operations research. In 1967, he and his former student, Frederick Hillier (the author of this memorial tribute), published a path-breaking textbook, *Introduction to Operations Research*. This book immediately became the preeminent textbook of its kind and it has retained this status ever since. (Even since Jerry's death, I have continued developing new editions, including the 11th edition published in 2020.) This book has been translated into well over a dozen other languages and is estimated to have been used by over a million students around the world.

Despite his heavy responsibilities as a program chairman and then a department chairman through these years and beyond, as well as his work on textbooks, Jerry continued to be a very active researcher. In 1972, he was the recipient of the Shewhart Medal of the American Society for Quality Control for his research on sampling plans and statistical quality

control. He also did seminal work on the mathematic theory of system reliability, replacement policies, inventory control, and stochastic management problems.

In addition, 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 of The Institute of Management Sciences in 1980-81. He also served on the editorial board of three journals and as a member of various advisory panels. In 1996, he was awarded the Kimball Medal by INFORMS (the Institute for Operations Research and the Management Sciences) for his exceptional service to the profession.

After 13 highly successful years as the chairman of the Interdepartmental Program in Operations Research and then the Department of Operations Research, Jerry stepped down because the Stanford administration had bigger plans for him. Over the subsequent years, he served in such positions as the Associate Dean of Humanities and Sciences, Vice Provost and Dean of Research, Vice Provost and Dean of Graduate Studies, Chairman of the Centennial Celebration, and Chairman of the Faculty Senate. He gained such confidence from the Stanford presidents that he was called upon to serve as the Provost or Acting Provost under three of these presidents. He clearly was one of Stanford's most preeminent university citizens of his generation. At the same time, Jerry was managing to stay in close touch with his faculty colleagues in the Department of Operations Research, participate in department decisions, supervise doctoral students, and participate in developing new editions of the Hillier-Lieberman textbook.

Tragedy struck in the 1990's when Jerry developed amyotrophic lateral sclerosis (Lou Gehrig's disease). Jerry fought valiantly, but this terrible disease took his life at the age of 73 on May 18, 1999.

Having described Jerry's spectacular academic career above, I would be remiss if I did not add something now about his remarkable personal qualities that enabled this career. 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 freely shared his sage advice.

I can personally attest to these qualities and to the impact that Jerry has had on so many others. In an obituary that appeared the day after his death, the following paragraph quoting me was included.

“Jerry Lieberman was a very special role model for so many of his colleagues and his students,” said Hillier, who had Lieberman as his freshman advisor, undergraduate advisor, graduate advisor, dissertation advisor, mentor, friend, and co-author. “Beyond being a fine scholar, he had tremendous wisdom, integrity, and courage. He gave so generously to others. He was such a special individual, a real prince of a man.”

Upon the passing of both Jerry and the eminent George Dantzig, I had the privilege of leading a fund-raising campaign to establish new Dantzig-Lieberman Operations Research Fellowships at Stanford. The response was overwhelming, including 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, so multiple such fellowships are awarded each year. In addition, the university has established twelve one-year Gerald J. Lieberman Fellowships for graduate students who show potential for becoming the next generation of academic leaders.

These fellowships are such fitting tributes to Jerry Liberman, who was such an academic giant and, yes, truly a real prince of a man.

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