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CITATION

The James R. Killian, Jr. Faculty Achievement Award was established to recognize extraordinary professional achievements by members of the MIT faculty, and, in so doing, to honor Dr. Killian and the contributions he has made to the life of the Institute. For the 1987-88 Killian award, the committee is very pleased to announce the selection of Professor Jay W. Forrester, Germeshausen Professor in the Alfred P. Sloan School of Management.

Jay is a pioneer. He is one of those rare individuals who possess not only the intellect and imagination to see the path ahead, but the skill and stamina to lead the journey. During his career of over 40 years at MIT, Jay has applied these talents across a remarkable spectrum of professional fields. In the process, he has left his mark on some of the most important technological achievements, as well as critical national issues of our day, including our national security and the management of our industries, cities and national economy.

Raised on a Nebraska cattle ranch, Jay took his university education in electrical engineering -- first earning a B.S. in 1939 from the University of Nebraska and then an M.S. from MIT in 1945. Beginning his MIT career in Gordon Brown's Servomechanism

Laboratory during World War II, Jay helped to initiate work in the field of digital computation. From 1946 to 1951, he was director of the MIT Digital Laboratory and was responsible for the design and construction of one of the world's first high-speed computers, the Whirlwind I. In 1952, Jay became head of the Digital Computer Division of the Lincoln Laboratory. In this role he guided the planning and technical design of the SAGE (Semi-Automatic Ground Environment) system of continental air defense. In its time, SAGE was the most extensive application of digital computer technology.

In the early days of digital computation, progress was limited by the use of the existing vacuum-tube technology for computer memory. Jay was responsible for one of the key breakthroughs that led to the modern computer era. He invented (and holds the patent for) random-access, coincident-current magnetic storage, the so-called "core memory" that was the heart of the modern digital computer for some 20 years, until the development of semiconductor storage devices. Not incidentally, this patent has earned the Institute more revenue by far than any other MIT discovery.

In 1956, Jay left Lincoln Laboratory and began the second stage of his MIT career. He became professor of management at the Sloan School, and there he applied his knowledge of computer sciences and engineering feedback control processes to the analysis of managerial and social systems. In the process, Jay and his students and followers worldwide have created a whole new

field of academic research and applied social analysis, known as system dynamics. It is a distinctive conceptual approach to the understanding of economic and social institutions, facilitated by a set of specialized methods of computer simulation. With Jay as its founder and leader, system dynamics has become an academic field in itself, represented by university departments and research groups across the United States and abroad.

The depth and diversity of Jay's professional contributions are reflected in his many honors. In 1968, he received the Inventor of the Year Award from George Washington University, and in 1969 was awarded the Valdemar Poulsen Gold Medal from the Danish Academy of Technical Sciences. He has been honored several times by the Institute of Electrical and Electronics Engineers (IEEE). In 1972, he received the IEEE Medal of Honor and its Systems, Man and Cybernetics Award for Outstanding Achievement, and in 1982 he was given the IEEE Computer Society's Computer Pioneer Award. He was recipient in 1972 of the New England Award of the Engineering Societies of New England, in 1974 the Howard N. Potts Award of the Franklin Institute, and in 1976 the Harry Goode Award of the American Federation of Information Processing Societies. In 1979, he was inducted into the Inventors Hall of Fame, and in that same year received the Common Wealth Award for Distinguished Service.

Jay is a member of the National Academy of Engineering. He is a Fellow of the Institute of Electrical and Electronics

Engineers, the Academy of Management, the American Academy of Arts and Sciences, the American Academy for the Advancement of Science, and a Benjamin Franklin Fellow of the Royal Society of Arts, which is based in London, England. It is a reflection of the scope of Jay's contributions that he has received honorary doctoral degrees in engineering from the University of Nebraska, the Newark College of Engineering, and the University of Notre Dame; in science from Boston College and Union College; and in political science from the University of Mannheim.

Finally, as a unique tribute to Jay's contributions to the computer industry, the Jay W. Forrester Chair in Computer Studies was endowed at MIT in 1986 by Thomas J. Watson, Jr., the architect and builder of the IBM Corporation.

It is a career of service and achievement in the spirit of Dr. Killian, and we are proud to award to Jay this symbol of the respect and admiration of his colleagues.

Shaoul Ezekiel

Bernard T. Feld

Elias P. Gyftopoulos

Myron Weiner

Henry D. Jacoby (Chairman)