Elliott Irving Organick

Born February 25, 1925, Brooklyn, N. Y; died December 21, 1985, Shreveport, La.; foremost expository writer of computer science; a modern-day Menabrea.

Education: BS, chemical engineering, University of Michigan, 1944; MS, chemical engineering, 1947; PhD, chemical engineering, University of Michigan, 1950.

Professional Experience: chemist, Manhattan Project, 1944-1945; chemical engineer, M.W. Kellogg Co., 1945-1946; United Gas Corp.: senior engineer, 1950-1953, senior research engineer, 1953-1955; University of Houston: associate professor and director, Computing Center, 1955-1963, professor, computer science and chemical engineering, 1963-1971, chairman, Department of Computer Science, 1967-1969; associate director, Ford Foundation Project, University of Michigan, 1960; visiting professor, Project MAC, MIT, 1968-1969; professor, University of Utah, 1971-1980; visiting professor, electrical engineering, Stanford University, 1977-1978; member staff, Inferno Manufacturing Corp., 1980-1985.

Honors and Awards: ACM/SIGCSE Award for Outstanding Contributions to Computer Science Education, 1985.

Elliott was a native of New York City, and received a classical education in Manhattan. He left that island, possibly for the first time, to enroll in chemical engineering at the University of Michigan in 1941. Foreshadowing his capacity for intensive work, he earned the bachelor's degree in three years (1944); then followed two years in industry with the Manhattan Project and the M.W. Kellogg Company. He returned to the University of Michigan and received a master's degree in 1947 and a doctorate in chemical engineering in 1950.

His early industrial work and his university research formed a good basis and the motivation for his career. He was introduced to the complexity of property calculations with the Benedict-Webb-Rubin (BWR) equation by Leo Friend and Walter Lobo of M.W. Kellogg Company. His doctoral research, with professors George Granger Brown and Donald L. Katz in the field of complex hydrocarbon vapor-liquid equilibrium, involved the tabulation, manipulation, and correlation of masses of both coherent and scattered data. As almost a recreational sideline, he and a fellow student, Walter Studhalter, published a complete thermodynamic chart for benzene using the BWR equation of state. All of this work was accomplished with the assistance only of graph paper and mechanical desk calculators. Thus, he finished his student career fully persuaded of the value of such work, but aware of the relentless tedium of longhand calculations with their inherent possibility of errors. He was ready for the appearance of large computers.

During his employment with the United Gas Pipeline Company (1950-1955) his interest turned in good part to computer applications in predicting phase behavior and in chemical engineering in the petroleum industry. Another significant event of this period was the marriage of Elliott and Betty Blanchard in Shreveport, La., in July 1953. In 1955 he enjoyed a brief term as a consultant in computer applications. However, at the urging of his doctoral research adviser he returned to academic life by joining the Computing Center at the University of Houston. Within five years he was director of that center.

In 1959, in response to a joint proposal from the University of Michigan Computing Center and the engineering faculty, the Ford Foundation established a major project to introduce the engineering faculty to the use of computers in engineering education and practice. In the program, released time and expenses were provided to bring faculty from the nation's engineering schools to Ann Arbor for a semester's study and practice with computers. Professor Donald L. Katz, the project director, after a nationwide search for technical leadership in computing, invited Elliott to return to Ann Arbor as associate director. There his responsibility was the organization of all instruction and the selection of teachers for the project.

At that time the available computers included the IBM-650 and the Bendix G-15. His first book, A *Fortran Primer*, was initially published in 1961 and later revised in 1966 and 1974; as the language improved his books kept up. His tenure at Michigan provided him with an insight to the programming language MAD.[1] The result was the *MAD Primer*, which although narrowly circulated, somehow seemed to reach the hands of almost every programming language designer of the next generation. After his year in Ann Arbor, he returned for the summers of 1961 and 1962 to broaden the project with National Science Foundation support to embrace engineering design study.

The Ford Foundation project was exceedingly successful in stimulating the growth of computer use in engineering. Perhaps not until the availability of low-cost microcomputers has such a steep change in computer use occurred again.

During 1968-1969 Elliott took a sabbatical leave at MIT with Project MAC and produced a textbook on the Multics system design, thereby establishing him further as an expository writer. His description of the design of Multics far exceeded in clarity the technical publications of the implementers.

In 1971 Elliott was attracted to the University of Utah as professor of computer science, with the mandate to shape an innovative undergraduate computer science curriculum. His commitment to learning and professional service led him to assume a variety of leadership positions in ACM. He served six years on the ACM Education Committee and was instrumental in founding the Special Interest Group for Computer Science Education (SIGCSE). He was editor of the education section of the *Communications of the ACM* for two years and editor-in-chief of *Computing Surveys* during six of its formative years, building its circulation to over 30,000.

In the late 1970s Organick became convinced that he had not as yet made a lasting contribution to his profession. He resolved to put aside his book writing and to devote his prodigious energies to research. With his typically uncanny vision, he grasped a way to do this: by hastening the convergence he foresaw between design techniques for hardware and software. In particular he was convinced that the complexity-taming ideas of modern high-level languages, such as top-down design, abstract data types, and tasking, could be used to reap similar benefits for hardware design. He obtained sizable funding and achieved significant results under the banner “Ada to Silicon.”

One factor of Organick's urgency was the diagnosis of leukemia about a decade before his death.[2]

QUOTATIONS

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[1] Michigan Algorithm Decoder.

[2] From Lindstrom 1986, and notes provided by Brice Carnahan, Donald L. Katz, Brymer Williams, and J.0. Wilkes.

"I am such a slow learner that once I understand something I might as well write it down!"

"This is great stuff, but does it *have* to be so complicated?"

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UPDATES