Harry H. Goode

Born June 30, 1909; New York City; died October 30, 1960; early leader of simulation computers Whirlwind, Cyclone, Hurricane, Typhoon, and (at Michigan) MIDAC and MIDSAC. Chairman of the National Joint Computer Committee (NJCQ and the principal architect of what was to become AFIPS (American Federation of Information Processing Societies).

Education: BA, history, New York University, 1931; BS, chemical engineering, Cooper Union, 1941; MS, mathematics, Columbia University, 1945.

Professional Experience: statistician, New York City Department of Health, 1940-1946; US Navy's Special Devices Section of the Training Division of the Bureau of Aeronautics, Tufts College, 1942-1945; Special Devices Center in

Sands Point, Long Island, 1946-1949; Willow Run Research Center of the University of Michigan, 1950-1954; University of Michigan: professor of electrical engineering, 1954-1960, professor of industrial engineering, 1956-1958; technical director, Systems Division of the Bendix Corporation, 1958-1959.

At his untimely death on October 30, 1960, Harry H. Goode was chairman of the National Joint Computer Committee (NJCC) and the principal architect of what was to become AFIPS (American Federation of Information Processing Societies). Had he lived, Goode undoubtedly would have become the first president of AFIPS, for he was the prime mover in organizing into one federation the three American constituent societies that were members of NJCC.

Early Training[1]

Harry Goode was born in New York City on June 30, 1909. He received his BA in history from New York University in 1931, when the country was in the depths of the Depression. While studying chemical engineering at Cooper Union, Goode earned his living playing the clarinet and saxophone in New York jazz bands. He received his second bachelor's degree in 1940, and in 1941 became a statistician for the New York City Department of Health. During the war years, Goode and Leonard Gillman worked on a special project for Tufts College for the US Navy's Special Devices Section of the Training Division of the Bureau of Aeronautics. At the same time, Goode attended Columbia University and received a master's degree in mathematics in 1945.

From 1946 to 1949, Goode was on the staff of the Special Devices Center in Sands Point, Long Island, and worked with Perry Crawford. Goode progressed through successive responsibilities to become the head of the

[1] This biography is taken from Auerbach 1986.

Special Projects Branch, where he contributed to flight control-simulation training, aircraft instrumentation, antisubmarine warfare, weapons systems design, and computer research. He and Crawford were responsible for initiating such pioneering computer based simulation projects as Whirlwind at MIT, Cyclone at Reeves Instrument Company, Hurricane at Raytheon, and Typhoon at RCA Laboratories.

Willow Run

In 1950 Goode joined the Willow Run Research Center of the University of Michigan, serving first as head of the Systems Analysis and Simulation Group, then as chief project engineer, and finally as director of the center. Under his stewardship, the center carried forward a broad program of research for the US Army, especially the concept and development of the Air Defense Integrated Systems Project, over-the-hill radar used in battlefield surveillance;[1] the computerized ground control system for the BOMARC missile; the MIDAC (Michigan Automatic Computer), which was similar to the SEAC; and the MIDSAC (Michigan Digital Special-Purpose Automatic Computer), which used electrostatic storage.

Goode's work in the field of air defense was of profound importance. He believed that his understanding of system reliability and the value of a decentralized defense system had never been fully appreciated; years after his death the country abandoned the centralized system it had built (SAGE-the Semi-Automatic Ground Environment system) and returned to Goode's concept of decentralization.

I (Isaac Auerbach) met Harry Goode at Willow Run in late 1953. One of my section chiefs at Burroughs wanted me to meet this man who had accomplished so much. Goode gave me a tour of the laboratory, where they were just completing MIDAC and MIDSAC. He was involved in every aspect of the laboratory's activities; his comprehension of systems design and computer design was extraordinary, and he could explain concepts simply and clearly. Harry would be an asset to any organization, and so I recommended him for membership on the administration committee of the Professional Group on Electronic Computers (PGEC) of the Institute of Radio Engineers (IRE). He was later chairman of PGEC, and we became the closest of friends.

Teaching

Goode's ability to break complicated concepts down to simpler essentials made him a brilliant teacher. In 1954 he was appointed professor of electrical engineering at the University of Michigan, and in 1956 he was also appointed professor of industrial engineering. During the summers of 1955 and 1956, he became a consultant to me at the Burroughs Research Laboratory, and we spent a great deal of working and leisure time together.

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[1] The code name for the system was RAWOL, an acronym for radar without line of sight, but everyone knew that it meant radar over the hill-AWOL, of course, meaning over the hill.

Goode's passion for the pursuit of his profession was always evident. One evening we were enjoying an outdoor concert at the Robin Hood Dell in Philadelphia, when I noticed that Harry was distracted by the traffic on the adjacent Schuylkill Expressway. He explained that he was studying the traffic patterns; he was involved in developing simulation models having to do with traffic control in large cities. He developed the theory of bunching in automobile traffic, similar to the effect that one got from electrons in a traveling-wave tube. This interest later led him to a study of the optimum speed for maximum traffic movement through the New York-New Jersey Holland Tunnel.

Goode spent 1958 as technical director of the systems division of the Bendix Corporation, maintaining a fractional appointment at the University of Michigan so he could continue to teach his newly introduced course on systems engineering. In 1959 he decided that he was happier teaching and conducting his own research, so he left Bendix and returned to Michigan as a professor of electrical engineering.

Publishing and Consulting

Harry Goode published many papers touching on statistics, simulation modeling, vehicular traffic control, and systems engineering (see bibliography). He and an associate, R.E. Machol, wrote *Systems Engineering,* the first book on the subject, which was a direct outgrowth of Goode's course at Michigan: Large-Scale Systems Design. The book was a milestone in the concepts of systems engineering and systems analysis, and helped the development of weapons systems as well as commercial ones.

Goode's advice was highly valued and widely sought. His service to industry included consultation with United Aircraft Corporation, Bendix Corporation, Burroughs Corporation, Auerbach Corporation for Science and Technology, Du Pont Company, Ford Motor Company, Texas Instruments, and the Franklin Institute. He served the government as a consultant to the National Bureau of Standards, the Post Office Department, the Air Force, and the House of Representatives Appropriations Committee. He was the chairman of the Committee on Advanced Reconnaissance for the Air Force, and he was a member of the study group on missile reliability for the House committee. He was a key member of the US delegation of computer experts to the Soviet Union in 1959 in the first East-West technical exchange; his presence helped to ensure an effective in-depth study on the Russian state of the art in computer hardware, software, and system design.

Genesis of AFIPS

When Harry Goode was chairman of the National Joint Computer Conference, I served as chairman of the NJCC International Relations Committee and was the NJCC representative on the Committee of Experts organizing the 1959 UNESCO (United Nations Educational, Scientific, and Cultural Organization) conference on information processing in Geneva. The conference led to the formation of IFIP (the International Federation for Information Processing) in 1960. [See Auerbach, Isaac L., “The Start of ITIP Personal Recollections,” *Ann. Hist.* Comp., Vol. 8, No. 2, Apr. 1986.]

A single organization was needed to appoint a US representative to IFIP. At that time the NJCC consisted of four representatives from three member societies: the PGEC of the Institute of Radio Engineers (IRE), the Committee on Computing Devices of the American Institute of Electrical Engineers (AIEE), and the Association for Computing Machinery (ACM). The relationship between the NJCC and the three societies was cumbersome and had no legal standing. Each society had to approve NJCC as being the designated representative to IFIP because NJCC was not a legal entity. Clearly, a federation of information processing societies was needed in the US to be the representative to IFIP.

With uncanny perception, great perseverance, and the ability to forge diverse points of view into a common understanding, Harry Goode did the creative work that would bring AFIPS to fruition. As chairman of NJCC, he was aware that the issue of control was highly sensitive. He asked me to sound out ideas with representatives from the societies, so that he would avoid conflict at formal meetings. If an idea seemed acceptable, he proposed it as a statute for the organization of AFIPS. In his clear and low-key manner, he used these ideas to convince the leaders of the groups that the time had come for such a central organization and, through them, got agreement from their parent societies.

Harry Goode was killed in an automobile accident in October 1960, just a few months before the AFIPS constitution was signed in May 1961. As Morris Rubinoff remarked at the meeting of the founders of AFIPS in 1984, “Without Harry Goode, AFIPS wouldn't have happened.” In 1964, AFIPS established the Harry Goode Memorial Award in recognition of his pursuit of excellence; the first award was presented to Howard H. Aiken, professor emeritus at Harvard, in October 1964 at the Western joint Computer Conference in San Francisco.

Harry Goode was a man of rare versatility and energy. He was a distinguished lecturer, brilliant teacher, outstanding researcher, and capable administrator. He was also a devoted family man and a true friend. He had an ebullient personality and was endowed with a manner disarming in its directness. His sudden death cut short his accomplishments; one can scarcely imagine where his talents might have led him had he lived. Even so, he left behind a rich legacy and friends who will remember him as a man of rare talent, vigor, and vision.

The Harry Goode Memorial Award

At the urging of a number of people, the AFIPS Awards Committee made recommendations which were approved for the establishment of an award for highly significant and meritorious work in the field falling within the scope of AFIPS on June 7, 1962. This award, which may be granted annually to an individual chosen by a group of eminent scientists, was established in memory of Professor Harry Goode, whose efforts were instrumental in the formation of AFIPS.

The Harry Goode Memorial Award was initiated by AFIPS in 1964 in recognition and appreciation of Mr. Goode's invaluable contributions to the information-processing sciences. The annual award was established to encourage further development of the field and to acknowledge and honor outstanding contributions to the information processing sciences.

Harry Goode Memorial Award Recipients

1964 Howard Hathaway Aiken

1965 George Robert Stibitz and Konrad Zuse

1966 J. Presper Eckert and John William Mauchly

1967 Samuel Nathan Alexander

1968 Maurice Vincent Wilkes

1969 Alston Scott Householder

1970 Grace Murray Hopper

1971 Allen Newell

1972 Seymour R. Cray

1974 Edsger W. Dijkstra

1975 Kenneth E. Iverson

1976 Lawrence G. Roberts

1977 Jay W. Forrester

1978 Gordon E. Moore and Robert N. Noyce

1979 Herman H. Goldstine

1980 Fernando J. Corbató

1981 C.A.R. Hoare

1982 Kingsun Fu

1983 Gene M. Amdahl

1984 Ralph E. Gomory

1985 Carver A. Mead

1986 Robert E. Kahn

1992 Edward S. Davidson

1994 Azriel Rosenfeld

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UPDATES