From: Annals of the History of Computing, Volume 6, Number 4, October 1984

Eloge: Niels Ivar Bech, 1920-1975

ISAAC L. AUERBACH

Niels Ivar Bech was one of Europe's most creative leaders in the field of electronic digital computers. He originated Danish computer development under the auspices of the Danish Academy of Technical Sciences and was first managing director of its subsidiary, Regnecentralen, which was Denmark's (and one of Europe's) first independent designer and builder of electronic computers.

Bech was born in 1920 in Lemvig, a small town in the northwestern corner of Jutland, Denmark; his schooling ended with his graduation from Gentofte High School (Statsskole) in 1940. Because he had no further formal education, he was not held in as high esteem as he deserved by some less gifted people who had degrees or were university professors.

During the war years, Bech was a teacher. When Denmark was occupied by the Nazis, he became a runner for the distribution of illegal underground newspapers, and on occasion served on the crews of the small boats that perilously smuggled Danish Jews across the Kattegat to Sweden. After the war, from 1949 to 1957, he worked as a calculator in the Actuarial Department of the Copenhagen Telephone Company (Københavns Telefon Aktieselskab, KTAS).

The Danish Academy of Technical Sciences established a committee on electronic computing in 1947, and in 1952 the academy obtained free access to the complete design of the computer BESK (Binar Electronisk Sekevens Kalkylator) being built in Stockholm by the Swedish Mathematical Center (Matematikmaskinnamndens Arbetsgrupp). In 1953 the Danish academy founded a nonprofit computer subsidiary, Regnecentralen.

Bech was assigned by KTAS to the project and assisted in building DASK (DAnsk BESK), a slightly modified copy of BESK, in a concentrated effort by a devoted group of people who assembled the parts by hand. In 1957 DASK became operational, and Bech was named managing director of Regnecentralen, serving in that capacity until 1971.

During these 14 years, the most productive phase of his life, Bech was the senior Dane in computers-the spokesman for both Regnecentralen and the Academy of Technical Sciences. He was the leader of everything that Regnecentralen did, in hardware and software. For example, he guided some students from the DASK coding courses, which were started in 1955, to develop a library of subroutines, thus laying the foundation for later software projects at Regnecentralen.

Immediately after the completion of DASK in 1959, Regnecentralen developed a prototype of GIER and by the end of 1962 had produced 18 GIER computers. Bech made substantial efforts to strengthen and formalize Regnecentralen's connections with Danish universities. He tried to make permanent collaboration contracts, including a provision that Regnecentralen would establish computing centers at Danish universities. He convinced the government to acquire and install a GIER in every major university in the country, thus creating a network of university computers.

Bech recognized the value of longstanding Danish contacts with the East and saw that the antipathy between the United States and the nations of Eastern Europe offered Regnecentralen some unique commercial opportunities. In 1964 he sold an early GIER to the University of Warsaw. Shortly

thereafter, Regnecentralen's equipment and know-how were introduced into Czechoslovakia, Hungary, and Bulgaria, and later into Rumania, the Democratic German Republic, and Yugoslavia.

Beginning in 1960 Bech worked for 10 years on his concept of merging the computer manufacturers in Denmark, Finland, Norway, and Sweden. The attempts were unsuccessful, but were characteristic of Bech's drive and vision.

Bech was one of the prime movers and financial supporters in the 1960 establishment of a Nordic scientific journal devoted to computer science, BIT. The first issue was published in 1961, and BIT is now an internationally respected journal in the fields of numerical analysis and programming.

Regnecentralen's concern with ALGOL 60 started with a European ALGOL conference in February 1959. Regnecentralen then distributed a series of informal discussion letters, the "ALGOL Bulletins." In March 1960 Regnecentralen published the international effort to define ALGOL-Peter Naur's "Report on the Algorithmic Language ALGOL 60." An ALGOL 60 compiler for DASK was completed in September 1961. Bech's enthusiasm for ALGOL triggered Christian Andersen to write a 1961 text on the language, Algol for School and Home. (The English-language version is titled Everyman's Desk ALGOL.) The portable ALGOL compiler for GIER was ready in August 1962; it prompted a revised version of the text in the next year. In a later version, the language is treated as a tool for describing problems of administrative data processing.

One of the early developments of Regnecentralen under Bech's direction was a high-speed paper-tape reader, the RC2000, which read at the then-unbelievable rate of 2000 characters per second. Although the tape reader challenged Regnecentralen with a number of unfamiliar mechanical problems, for many years it had the reputation of being the most reliable commercial high-speed paper-tape reader on the market.

Bech had the foresight to train his countrymen in computer technology, and he implemented it better than almost anyone else of whom I am aware. He recognized that the Danes had started considerably behind other countries in the development of computers, and so, starting in the late 1950s, he arranged each year to send up to a half-dozen of his prize employees or brilliant young university faculty members to work in different countries, universities, and companies for at least one year, folly supported by Regnecentralen. This cadre of trained people then returned either to Regnecentralen or to Danish universities to advance and teach the state of the art in computer development. By 1970 "Bech's boys" occupied senior positions in nearly every university or college in Denmark and were the principal executives in Regnecentralen. They, in their turn, have been responsible for training many more computer people in Denmark. Bech's brilliant vision was magnificently executed, and his country was made richer.

Bech was one of the original members of the 1959 General Assembly of the International Federation for Information Processing (IFIP). He was of invaluable assistance during the most formative period of IFIP's gestation (he suggested the three-year cycle of IFIP conferences), and he continued to serve IFIP with boundless energy for over a decade. He was the Danish representative from 1960 to 1970, a trustee from 1965 to 1970, and an individual member until 1973. He was program chairman for IFIP Congress 62 (the second World Computer Conference) in Munich and in that year was the founding chairman of IFIP TC3 on Education. (He resigned from TC3 upon realizing that he would not receive adequate national and financial support.) He was a member of the Future Policy Committee from 1967 to 1970, and in 1968 was chairman of the International Liaison Committee and a member in 1970 and 1971.

Bech was an advisor to UNESCO and was involved in the evolution of the International Computation Center in Rome. He was one of the founders of IFIP's Special Interest Group on Administrative Data Processing (IAG). He was one of the first Europeans to identify the need for computer education and training within the European business user community. As a result, he spearheaded the many seminars given on the use of computers and their application to business.

Bech supported the Nordic computer conferences, NordSAM and NordDATA, that have been held annually since 1959. As the number of participants increased from 270 to well over 1000, the main interest shifted from numerical analysis to business data processing.

The computer courses and computing centers supported by Regnecentralen had a major influence on Danish computing. The university contracts Bech suggested were opposed by Datacentralen, the semipublic computation center established in 1959. This caused a major crisis at Regnecentralen, which was reorganized as a corporation in 1964. The nonprofit undertaking was converted into a profitable one.

By the late 1960s, Regnecentralen had grown into a full-fledged Danish computer company, designing and manufacturing hardware, developing software, creating logic for new computers, and operating a public computing service bureau. By U.S. standards it was tiny, in 1970 having only a 150-person production department. Internal and external politics-and competition from private companies within Denmark as well as foreign computer companies-made it difficult for Regnecentralen to compete successfully. Bech took hold of these problems, but time was against him. Regnecentralen was underrated and undermined, and its concept was destroyed. An associate of Bech's suggests that in this difficult period there was a lack of constructive collaboration with Bech on the part of the members of the board of the company. In 1971 Bech was dismissed-a blow from which he never recovered, having lost the most meaningful part of his life. (In 1979, eight years after Bech left, Regnecentralen went bankrupt.)

The last half-dozen years of Bech's life were spent in extreme frustration, disappointment, and illness. The man who was prepared to go to any measure to help his co-workers was incapable of accepting help from others. He remained alone, shaken and burned out, seriously ill. Hospital stays helped only temporarily. In his last winter, he suffered a thrombosis; by spring he had recovered enough to take on work at a firm founded by his former colleagues (Advanced Data Processing Consultants A/S), but this didn't last long. On July 25,1975, he was found slumped over his desk, the victim of a heart attack. He is survived by a son, Mikael Bech, and a daughter, Mette Bro.

Bech was, by any standard, a giant. Virtually singlehandedly, he created the Danish computer industry and trained almost all of the practitioners who today are at the managerial level or hold influential government jobs. He was an outstanding teacher, manager, and communicator. He had a wide conceptual horizon but was singularly focused on his work. He worked quietly, persistently, and unobtrusively.

Bech believed in great flexibility; he had the knack of being able to reformulate a problem to make it easier to solve. He never believed in a formal organizational structure; he was a master of managing by wandering about, thereby creating his own invisible pattern beneath the structure to accomplish his goals and objectives. He was always first to give someone else credit for the accomplishments of Regnecentralen. In some ways he was overly generous in giving credit to others for work he had done. He was far too trusting. His friends and colleagues knew him as a warm, sensitive, apolitical, imaginative, and brilliant supermensch-a tower of strength and source of

sound advice to all who were fortunate enough to know him. He was a thoughtful, generous man of indisputable integrity.

I knew Bech for over 15 years. With his death I lost a valued friend, our profession lost a dynamic contributor, and the industry lost a creative entrepreneur.

Bech would have been pleased to know that after his death his countrymen regarded him so highly that they created a unique memorial volume in his memory (Niels Ivar Bech-en epoke i edb-udviklingen i Danmark, edited by Poul Sveistrup, Peter Naur, H. B. Hansen, and C. Gram, Copenhagen, DATA, 1976, 144 pp.). The volume consists of a number of articles written by those who knew Bech and collaborated in his computing activities. I have excerpted much of this eloge from those articles as a last act of friendship and a final tribute. Reviewers of my first draft have contributed additional material. The record of Bech's accomplishments and the memories of his friends and colleagues are a legacy of great significance.

Isaac L Auerbach's career includes employment with the Eckert-Mauchly Computer Corporation, the Burroughs Corporation, and the Auerbach corporations. He was the founder and first president of the International Federation for Information Processing (IFIP).

® 1984 by the American Federation of Information Processing Societies, Inc. Permission to copy without fee all or part of this material is granted provided that the copies are not made or distributed for direct commercial advantage, the AFIPS copyright notice and the title of the publication and its date appear, and notice is given that the copying is by permission of the American Federation of Information Processing Societies, Inc. To copy otherwise, or to republish, requires specific permission.

Author's Address: Auerbach Publishers Inc., 6560 North Park Drive, Pennsauken, NJ 08109; Isaac L. Auerbach Inc., 455 Righters Mill Road, Narberth, PA 19072.

Categories and Subject Descriptors: A.O [General]- biographies, N. I. Bech; K.2 [History of Computing]- N. I. Bech, hardware, people, software. General Terms: Human Factors. Additional Key Words and Phrases: BESK, DASK, GIER, Regnecentralen (Denmark). © 1984 AFIPS 0164-1239/040332-334$01.00/00