



Koji Kobayashi

KOJI KOBAYASHI

1907–1996

BY MICHYUKI UENOHARA

DR. KOJI KOBAYASHI, chairman emeritus of NEC Corporation, died at age of eighty-nine in a hospital in Tokyo on November 30, 1996.

Dr. Kobayashi was born in Hatsukari village, Yamanashi Prefecture, on February 17, 1907, the fourth boy among nine children, five boys, and four girls. His village was a poor mountain village, and the nearest middle school was eight kilometers away through narrow, mountainous paths. All his elder brothers took jobs in remote cities after they finished the six years of education at the village primary school. He was a very bright boy and kept the top grade throughout the six years. He was so anxious to study further and finally got permission to continue his studies for two more years at the higher class of the same village primary school. He taught himself the middle school curriculum, while taking the regular courses and was admitted into the third-year class (ninth grade) of Tsuru middle school. To save money, he walked sixteen kilometers to school every day, rain or shine. Since he attained the grade average of ninety-four out of a perfect hundred, he was awarded a scholarship. He was determined to work after middle school, but his brothers volunteered to support his school expenses and he advanced to Matsumoto High School in Matsumoto city, where he met many brilliant friends from all over Japan. Fortunately he was awarded the Nomura Fellowship from the Nomura Foundation. He gradu

ated from the Department of Electrical Engineering of Tokyo Imperial University in March 1929 with a B.E. degree. He received a doctor of engineering degree from Tokyo Imperial University in March 1939 for his study on feedback amplifiers.

Dr. Kobayashi accepted a position at the NEC Corporation in April 1929. When he joined the company, NEC remained strongly the business practice it had been since it was founded. The NEC Corporation originated in 1899 as the Nippon Electric Company, Limited, through a joint venture between Japanese investors and the Western Electric Company, Incorporated, then a subsidiary of the American Telephone and Telegraph Company, to manufacture telecommunications equipment in Japan. His initial jobs were mostly the transcription of original product drawings into Japanese versions, far from his desire to create new products. He developed new ideas and proposed them to top management while pursuing his routine jobs. His first successful development was electric power line carrier telephone equipment with a different design concept from that used by giant foreign companies. In 1934 he sold it by himself since no one was willing to sell a product different from the foreign design. His second big challenge was development of a nonloaded cable carrier telephone system at a time when the world standard was the loaded cable system. The research for this national project started in 1932 and ended in 1939 with the completion of a six-channel long-distance nonloaded cable carrier telephone system with circuits between Tokyo and Shenyang, a central city in former Manchuria (now the northeastern part of the People's Republic of China). His contribution was the development of a stable high-gain, low-distortion repeater amplifier, which was the most critical technology in the system. This work resulted in his doctor dissertation and more than a hundred patents.

After the Second World War and complete devastation in Japan, Dr. Kobayashi advised the top management of NEC to place greater emphasis on technological development. He believed that communications should not be restricted by national boundaries, but should have a larger mission of connecting remote parts of the world. He strongly promoted the development of microwave communication systems, troposcatter communication

systems, and satellite communication systems. He was elected a member of the board of directors of NEC in 1949, while managing the operation of the Tamagawa plant. He was promoted to senior vice-president in 1956, executive vice-president in 1961, senior executive vice-president in 1962, and president in 1964.

Dr. Kobayashi was not only an excellent technical leader but also a strong business leader of global vision. He visited more than 100 countries, met numerous government and industrial leaders, and exchanged opinions on global and environmental problems. He always said to me that he gained many new ideas from his friends around the world. However, as many of his friends told us, he also gave them many valuable ideas. The forewords contributed by Jerome B. Wiesner in his book *Computers and Communications* (MIT Press, 1986) and by Peter F. Drucker in *The Rise of NEC* (Blackwell Publishers, 1991) express how valuable his communications had been with those scholars. To pursue his dream of connecting remote parts of the world, he helped 144 countries to build a communications infrastructure by selling NEC products and by establishing forty-seven local companies and twenty-five manufacturing plants in twenty-one countries.

During the Second World War almost all of NEC's research and development resources, over 1,000 scientists and engineers, were put in requisition for military purposes. To change their military mind-set to a civilian, market-oriented mind-set, Dr. Kobayashi advised the president of NEC to dissolve the central laboratories and relocate them to business divisions. His advice was put into action in 1949. Research and development engineers effectively contributed to building up the development capability of business divisions to meet the needs of rebuilding the communications infrastructure in Japan, and they gained reasonable business minds. Appreciating these facts and recognizing the rapid development of new technology, Dr. Kobayashi reassembled the central research laboratories in 1953 and imposed a three-tiered decentralized system of research and development activity in 1965. Because the business division is most sensitive to current market needs, its engineering unit has the responsibility of developing technology for today while the de

velopment laboratories within each operating group have the responsibility for research and development into technology for tomorrow. Finally, primary responsibility for research and development for the “day after tomorrow” belongs to the central research laboratories, which are detached from the central corporate staff and placed on a par with line operating groups, stressing closer communication and collaboration with business divisions. This structure was based on Dr. Kobayashi's belief that the ultimate aim of research and development rests not with new products per se but with products that satisfy customers and make them want to buy.

With his future business vision, Dr. Kobayashi energetically pursued his corporate strategy to establish the corporate foundation for the new era of a highly information-oriented society. He sensed the importance of semiconductor and computer technology for the future as early as the advent of the new technology. He nurtured them as core businesses in addition to the traditional core business of NEC. This resulted in Dr. Kobayashi's concept of C&C (computers and communications). I clearly remember the days when he often assembled key members in a company clubhouse and discussed his idea again and again in the early part of the 1970s. In 1977 he disclosed his idea at the INTELCOM 77 exposition held in Atlanta, Georgia. His vision and strategic management helped NEC to grow nearly fortyfold from sales of 70 billion yen in 1964 when he became president to 2.8 trillion yen a quarter of a century later when he became chairman emeritus in 1988. He always dreamed of the days when anyone in the world could talk to anyone else, overcoming geographical and language barriers. He watched tenderly the basic research activity for an automatic interpretation telephone system in the central laboratories. He jokingly said to us that if we could bring the system about, world peace would be greatly advanced and NEC would be the greatest company in the world.

Dr. Kobayashi received many awards and medals from many countries for his technical and public contributions. He was elected a foreign associate of National Academy of Engineering in 1977 and devotedly worked to improve understanding between Japan and the United States during the 1980s when U.S.-Japan

trade frictions faced a crisis. He married Keiko Noda in 1935, and they were blessed with four children, a boy and three girls. Their son died in 1964 at the age of twenty-seven, and Keiko passed away after Dr. Kobayashi. A strong leader and a man of humanity, Dr. Kobayashi was loved and respected by many people.