CHEMICAL HERITAGE FOUNDATION

ROBERT T. JENKINS

Transcript of an Interview
Conducted by

David C. Brock and Hyungsub Choi

at

Los Altos and Discovery Bay, California

on

9 May and 24 July 2007

(With Subsequent Corrections and Additions)

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ROBERT T. JENKINS

Education

1965	B.S., California Institute of Technology
1966	M.S., California Institute of Technology

Professional Experience

Fairchild Semiconductor Research and Development Laboratories

1966-1967	Process Engineer

Intel Corporation

1968-1979	Variety of positions in Wafer Fabrication
1979	Manager, Microprocessor/Peripheral Manufacturing
1980-1985	General Manager, Peripheral Components Division
1986-1989	Vice President and General Manager, Memory Components Division
1990-1999	Vice President and Director, Corporate Licensing
1996-1999	Chairman, Government Affairs Committee

California State University, Sacramento

2000-present	Adjunct Professor, Communication Studies

Honors

Chairman, Board of the California Manufacturers and Technology Association
Member, Board of Directors, Skyler Technology, Inc.
Member, Board of the Information Technology Industry Council
Member, Board of the American Electronics Association
President, Alumni Association of California Institute of Technology
President, The Associates (California Institute of Technology support organization)
Member, Board of Trustees, California Institute of Technology

ABSTRACT

Robert T. Jenkins (Ted) grew up in Glendale, California, the suburb of Los Angeles in which his parents and grandparents had also grown up. His father was a welder, and Ted always liked to help him with his work. Together they built a swimming pool in their back yard. Jenkins also loved ham radio and cannot remember when he was not interested in electricity. He earned both his BS in engineering (there were no divisions within engineering at the time) and his MS from California Institute of Technology. While he was there he worked in the lab of Carver Mead, his advisor, and took a comprehensive business course from Horace Gilbert.

While Jenkins was in the lab Gordon Moore came to talk to Carver Mead, recruiting likely students for his company, Fairchild Semiconductor. He told Jenkins about his bipolar power transistor, and Ted became very interested. He went right from his master's degree to Fairchild, beginning in the process end of the linear integrated circuit group in Research and Development. All new employees were required to take a technology course at Fairchild, taught by Andrew Grove, Edward Snow, and Leslie Vadasz; Jenkins calls it "better than a PhD." At Fairchild, Jenkins and Garth Wilson developed and patented Schottky-barrier diode processes and devices. Half seriously, Carver Mead called the Schottky diode the Jenkins diode. Jenkins later used a Schottky diode in the design of Intel's first product, the i3101 64-bit TTL compatible RAM. Introduced in 1969, the device was nearly twice as fast as earlier TTL products.

When Jenkins had been at Fairchild for about two years, Robert Noyce and Gordon Moore left to found their own company, Noyce-Moore Electronics (or Moore-Noyce, which they thought sounded too much like "more noise," an inauspicious name for an electronics company), whose name they changed to Intel (INTegrated ELectronics) later that year. Moore recruited a number of others from Fairchild, including Jenkins, who came in originally to help develop blue LED. He held a number of positions, working on wafers, until he was made manager of peripherals manufacturing. Intel's first product used Jenkins' Schottky diode, which doubled the speed and reduced the power consumed. Soon thereafter Jenkins became general manager of the whole peripheral components division. From there he moved to become a vice president and the general manager of the memory components division. He selected the Folsom site, within a day's drive from Santa Clara, for new fabrication plants, and explains that the Oregon site was chosen because it was not on the San Andreas Fault line. He spent his last ten years at Intel as a vice president and as director of corporate licensing. After retiring from Intel he reentered the academic world, becoming an adjunct professor at California State University at Sacramento and joining the Board of Trustees of California Institute of Technology.

INTERVIEWERS

David C. Brock is a senior research fellow with the Center for Contemporary History and Policy of the Chemical Heritage Foundation. As an historian of science and technology, he specializes in oral history, the history of instrumentation, and the history of semiconductor science, technology, and industry. Brock has studied the philosophy, sociology, and history of science at Brown University, the University of Edinburgh, and Princeton University (respectively and chronologically). His most recent publication is *Understanding Moore's Law: Four Decades of Innovation* (Philadelphia: Chemical Heritage Press), 2006, which he edited and to which he contributed.

Hyungsub Choi is the manager for Electronics, Innovation, and Emerging Technology programs at CHF. Choi earned a Ph.D. from the Johns Hopkins University in the history of science and technology. He earned an M.S. in history of technology at Georgia Institute of Technology and a B.S. in engineering from Seoul National University. Choi took over the center's electronic materials program in November 2006. He has published extensively on such subjects as the history of electronic manufacturing in post–World War II Japan, RCA's transistor production, and solid-state innovations.

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Early and College Years 1

Lived in Glendale, California, ancestral home town. Helped his father, a welder, with any projects he was allowed to. Helped build swimming pool in back yard. Always liked physics and chemistry in school. Loved ham radio; mourned the demise of Morse code. Attended California Institute of Technology (Caltech) for both bachelor's and master's degrees. Worked in Carver Mead's laboratory. Decided against PhD, instead being recruited right into Fairchild Semiconductor by Gordon Moore.

Fairchild Semiconductor Years 6

Received equivalent of PhD education from technology course at Fairchild, course taught by Andrew Grove, and from practical experience. Patented applications of Schottky diode.

Starting at Intel 17

Recruited by Gordon Moore to Noyce-Moore Electronics, later called Intel; developed blue LED. Worked with IBM on early microprocessor chips. Microprocessor originally "good for traffic signals"; needed applications and software.

Fabrication Plants and Competition 40

In charge of three fabs. Selected Folsom site. Became general manager of memory division. Trade agreement with Japan kept Intel competitive. From DRAM to EPROM to flash memory. Out of flash memory into licensing.

Reflections on Grove, Moore, and Intel 85

Discussion of personalities of Andrew Grove and Gordon Moore. Discussion of Intel culture. Discussion of Intel's stock appreciation, number of patents.

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