

Claude Elwood Shannon

Born April 30, 1916, Gaylord, Mich.; inventor of information theory and first use of the word "bit."¹



Education: BS, University of Michigan, 1936; SM, MIT, 1940; PhD, mathematics, MIT, 1940.

Professional Experience: assistant, electrical engineering and mathematics, 1936-1939; National Research Council fellow, Princeton University, 1940; research mathematician, National Defense Research Committee, 1940-1941; research mathematician, Bell Telephone Laboratories, 1941-1957; MIT: Donner professor of science, 1958-1980, professor, electrical engineering, 1957-present; emeritus Donner professor of science, 1980-present.

Honors and Awards: Noble Prize, Institute of Electrical Engineers, 1939; Leibmann Prize, Institute of Radio Engineers, 1949; Ballantine Medal, Franklin Institute, 1955; MSc, Yale University, 1954; DSc, University of Michigan, 1961; Life Achievement Prize, Marquis Who's Who, 1984; Kyoto Prize, 1985; member, National Academy of Sciences; member, American Academy of Arts and Sciences.

Claude Shannon was a contemporary of the originators of computers such as John von Neumann, Howard Aiken, and Alan Turing, working in the field of communications at the Bell Telephone Laboratories during World War II. While Turing and von Neumann recognized the application of mathematical logic to computer design, it was the 1948 paper of Shannon that set the stage for the recognition of the basic theory of information which could be processed by the machines the other pioneers developed. As part of that theory, Shannon also considered the problems of information distortion, redundancy, and noise, thus providing a means for the measurement of information. This theory of communication was based on the identification of the bit as the fundamental unit of data, which coincidentally was the basic unit of computation. Thus, while aimed at explaining communication, Shannon's theory provided the bridge between communications and computers.

QUOTATION

“The best is yet to come. We've only scratched the surface. Computers can only do what we tell them now, but it will be different in the future. “

BIBLIOGRAPHY

Biographical

¹ See Tropp 1984.

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Significant Publications

Shannon, Claude E., "A Mathematical Theory of Communication," *Bell System Tech. J.*, Vol. 27, 1948, pp. 379-423, 623-656.

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Shannon, Claude, and John McCarthy, *Automata Studies: Annals of Mathematical Studies*, Princeton Univ. Press, Princeton, NJ., 1956.

UPDATES

Claude Shannon died February 24, 2001 (MRW, 2012)

Portrait added (MRW, 2013)