

# Norbert Wiener

*Born November 26, 1894, Columbus, Miss.; died March 18, 1964, while on tour in Stockholm, Sweden; logician, scholar, and consultant who invented the concept of cybernetics.*



*Education:* BA, mathematics, Tufts College, 1909; MA, Harvard University, 1912; PhD, Harvard University, 1913.

*Professional Experience:* docent, Harvard University, 1915-1918; “Computer,” Aberdeen Proving Ground, 1918-1919; MIT: professor, 1919-1960, Institute Professor Emeritus, 1960-1964.

“I became a scholar partly because it was my father's will but equally because it was my internal destiny.” Thus did Norbert Wiener in his autobiography sum up the forces that directed him to become the mathematical genius whose work achieved international reputation. He is noted for his contributions in the communications sciences, in the realm of nonlinear problems in random theory, in the analysis of brain waves, and in the evolution of cybernetics, where he explored the similarities between the human brain and the modern computing machine capable of memory association, choice, and decision making.

Norbert Wiener was born in Columbus, Mississippi, on November 26, 1894. Signs of his genius appeared early. He began to read at age 4, and by 7 his reading ranged from Darwin and Kingsley to the psychiatric writings of Charot and Janet. He entered Tufts College at age 11 and graduated at 14 with a BA in mathematics and considerable study in philosophy. He entered Harvard University and received his MA at age 17 and his PhD at 18. With a traveling fellowship from Harvard, he studied in England and Germany under, among others, Bertrand Russell and G.H. Hardy. Upon his return to the US in 1915, he studied philosophy under John Dewey at Columbia University and served as a docent at Harvard.

Poor eyesight prevented him from enlisting in World War I, but in 1918 he was accepted into the military and assigned to duty as a “computer” at Aberdeen Proving Ground. He began his career at MIT in 1919. During World War II, he worked with the Operational Research Laboratory at Columbia on antiaircraft predictors. After 42 years on the faculty he retired in 1960 as Institute Professor Emeritus. Following his retirement, he lectured around the world and died on March 18, 1964, while on tour in Stockholm.

Wiener coined the word *cybernetics* from the Greek *kybernetes* (“steersman”) and wrote *Cybernetics-Control and Communication in the Animal and the Machine* (1948) and *The Human Use of Human Beings* (1950). In cybernetics he sought to discover the degree to which the human nervous system is a mechanized process as it carries stimuli to the brain—in other words, how much in a human is unconsciously a machine. The question led him to considering automation and how like a human a machine could become—could a machine assume human intellectual capabilities, and when could it exceed and replace a human? In *The Human Use of Human Beings* he discussed the desirable features of automation—relief of repetitious drudgery such as assembly-line production, thus freeing people for pursuits that would make greater claim on their creative abilities.

Wiener's awareness of the economic and social dangers stimulated him repeatedly to warn of the necessity for planned control of automation's progress.<sup>1</sup>

## QUOTATIONS

“We are not the stuff that abides, but patterns that perpetuate themselves. A pattern is a message.... We are but whirlpools in a river of ever flowing water.”

“This piece of work is an example of the value and even necessity of combining the machine and the living organism, of combining control and communication too, into a unified subject. I've called it *cybernetics*.”

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Wiener, Norbert, *I am a Mathematician: The Later Life of a Prodigy*, Doubleday, Garden City, NY, 1956.<sup>2</sup>

### Significant Publications

Wiener, Norbert, “Cybernetics: New Field of Study Looks into Processes Common to Nervous Systems and Mathematical Machines,” *Scientific American*, Vol. 1979, Nov. 1948, pp. 14-19.

Wiener, Norbert, *Cybernetics*, 2nd ed., MIT Press, Cambridge, Mass., 1961. Wiener, Norbert, *God and Golem Inc.*, MIT Press, Cambridge, Mass., 1966. Wiener, Norbert, *The Human Use of Human Beings*, Avon Books, New York, 1969.

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<sup>1</sup>Extracted from Brown and Wiener 1955.

<sup>2</sup>The cover of this book explains that this is a “continuation of the account of his childhood in Ex-prodigy.”

## **UPDATES**

Portrait added (MRW, 2013)