

Walter A. Shewhart

Father of statistical quality control

"Shewhart simulated theoretical models by marking numbers on three different sets of metal-rimmed tags. Then he used an ordinary kitchen bowl – the Shewhart bowl – to hold each set of chips as different sized samples were drawn from his three different populations. There was a bowl, and it played a vital role in the development of ideas and formulation of methods culminating in the Shewhart control charts."

– Ellis R. Ott, *Tribute to Walter A. Shewhart*, 1967

The industrial age was easing into its second century when a young engineer named Walter A. Shewhart came along and altered the course of industrial history. Shewhart, ASQ's first Honorary member, successfully brought together the disciplines of statistics, engineering, and economics and became known as the father of modern quality control. The lasting and tangible evidence of that union for which he is most widely known is the control chart, a simple but highly effective tool that represented an initial step toward what Shewhart called "the formulation of a scientific basis for securing economic control."

Shewhart was concerned that statistical theory serve the needs of industry. He exhibited the restlessness of one looking for a better way. A man of science who patiently developed and tested his ideas and the ideas of others, he was an astute observer of developments in the world of science and technology. While the literature of the day discussed the stochastic nature of both biological and technical systems, and spoke of the possibility of applying statistical methodology to these systems, Shewhart actually showed how it was to be done; in that respect, the field of quality control can claim a genuine pioneer in Shewhart. His monumental work, *Economic Control of Quality of Manufactured Product*, published in 1931, is regarded as a complete and thorough exposition of the basic principles of quality control.

A strong background in the sciences and engineering prepared Shewhart for a life of accomplishments. He graduated from the University of Illinois with bachelor's and master's degrees, and he received a doctorate in physics from the University of California at Berkeley in 1917. He taught at the universities of Illinois and California, and he briefly headed the physics department at the Wisconsin Normal School in LaCrosse.

Most of Shewhart's professional career was spent as an engineer at Western Electric from 1918 to 1924, and at Bell Telephone Laboratories, where he served in several capacities as a member of the technical staff from 1925 until his retirement in 1956. He also lectured on quality control and applied statistics at the University of London, Stevens Institute of Technology, the graduate school of the U.S. Department of Agriculture, and in India. He was a member of the visiting committee at Harvard's Department of Social Relations, an honorary professor at Rutgers, and a member of the advisory committee of the Princeton mathematics department.

Called upon frequently as a consultant, Shewhart served the War Department, the United Nations, and the government of India, and he was active with the National Research Council and the International Statistical Institute. He was an honorary member of England's Royal Statistical Society and the Calcutta Statistical

Association. He was a fellow and officer of the Institute of Mathematical Statistics, the American Association for the Advancement of Science, and the American Statistical Association, and a fellow of the Econometric Society, the International Statistical Institute, and the New York Academy of Science. He served for more than 20 years as the first editor of the *Mathematical Statistics Series* published by John Wiley and Sons.

Shewhart wrote *Statistical Method from the Viewpoint of Quality Control* in 1939 and gained recognition in the statistical community. In addition, he published numerous articles in professional journals, and many of his writings were held internally at Bell Laboratories. One of these was the historic memorandum of May 16, 1924, in which he proposed the control chart to his superiors.

An element in Shewhart's success was his searching out other bright and knowledgeable individuals for their ideas, methodically cultivating these sources and drawing from them information and advice in a way that endeared him to all. In a series of tributes to Shewhart published in *Industrial Quality Control* in August 1967, the most striking comment from the contributors—many of whom were themselves important figures in the development of the quality control field—was their respect for Shewhart's gentlemanly approach and sincere interest in the work and concerns of others. His character is summed up in comments made by the chairman of the committee that awarded the first Shewhart Medal:

The act of awarding the medal focuses the spotlight of public attention on the recipient, revealing in clear light the qualities that have won for him the esteem of his peers. What are the qualities that lead us to so honor a man as to give him a medal? First of all, he must have intellectual ability, enabling him to clear away a little of the dark cloud of ignorance that always surrounds us. Second, he must have the generosity of spirit that leads him to so express and restate his pioneering ideas that other members of his profession may benefit from them. And finally, he must have that warmth of human feeling that marks the true educator, endearing him to his students or disciples, even those who learn from him only remotely. All of these qualities are eminently personified in Dr. Walter Shewhart. (*Industrial Quality Control*, May 1949, p.26)

Shewhart's influence on ASQ runs deep. Shortly before his death, he remarked to members that they "extended the field beyond my early visions and saw areas of service that pleased and amazed me. I hope that you continue."

Shewhart's legacy lives in mementos of him—a simple bowl and some numbered chips, a bronze medal, some books and writings—it lives in the succession of other prominent individuals he influenced, and it lives in the society of professionals who carry on the work he started.