

Harold Hotelling 1895-1973

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Harold Hotelling was a leading mathematical economist at a time when that subject was in its infancy; he also enjoyed a world-wide reputation as a mathematical statistician. In both fields he was renowned for his theoretical prowess and as a most effective and caring teacher. His wide influence upon the professions is felt not only through his publications (a large number of which are seminal contributions), but also through his students, among whom one can count many of the next generation's leading economists and statisticians.

Hotelling's career spans a most creative period in the disciplines of both mathematical economics and mathematical statistics, and few figures have displayed his originality and flair: fewer still have publication records that bear comparison. Most importantly, his published papers are today seen as the starting point of much contemporary research. Indeed, his name is familiar to a remarkably wide range of professionals, a range that runs from economists to statisticians but also includes educationalists and psychologists. In economics there is Hotelling's Lemma and Hotelling's Rule and in statistics he is particularly known through the Hotelling T^2 statistic.

In 1985 his widow donated the collection of Harold's correspondence and professional manuscripts to the Butler Library of Columbia University. It comprises a very large and impressive source of material for the historian of economic and statistical thought. This fascinating figure has never been the subject of any systematic study and the primary material at Columbia affords an exciting opportunity to examine the life and career of this most revered, distinguished and influential man.

Harold Hotelling was born on September 29, 1895 in Fulda, Minnesota, of ancestors long American but originally of English and Dutch extraction. When he was nine the family moved to Seattle. The Methodist Church became a focus of the lives of the newcomers, providing both a place of religious worship and a most hearty welcome. Hotelling records that he was stimulated as a very young man by "Methodist interest in social justice and race equality, and the family tradition of active concern with public problems." (This and other nonattributed quotations are from original

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papers in the Hotelling Collection held at the Butler Library, Columbia University). Although not a church-goer, this stimulus stayed with him for his whole life, though perhaps with less intensity than when, in his youth, he attempted to organize a ban on dancing in public! Throughout his life he remained a staunch teetotaller, and looked unfavorably upon the consumption of tobacco. He was an avid reader, and his inquisitive nature knew few bounds. The Seattle Public Library was a most important part of his formative years: the building stood on wooden stilts in a swamp and, to the tune of croaking frogs, he read *Scientific American* and all the books on electricity. Economically, these were very hard times. The depression of 1907 took its toll on Seattle and on the Hotellings: Harold's father lost on his investments and on his hay business, which was being made obsolete by the coming of the automobile. Having attended high school in Seattle, Harold did electrical wiring work and was employed on small newspapers while studying at the University of Washington. He spent a year, from the fall of 1915, working on the *Puyallup Herald*, and returned in 1916 to major in journalism at Washington.

His university studies were interrupted by World War I and he noted that, on being called to war service "Having studied mathematics, science and classics at school and college, was considered by [the] Army authorities competent to care for mules. The result was [that] a temperamental mule temporarily broke his leg and thereby saved his life, as the rest of the division was sent to France and [was] wiped out." (The mule's name was Dynamite.) Hotelling was never engaged in active service and, on being discharged from the Army on February 4, 1919, resumed his course in journalism. In a letter of 1962 he wrote: "I have a first degree in journalism from Washington but at the time the School of Journalism was badly disorganized because of the First World War and they let me substitute so much economics for journalism that the degree might just have well been in it. Anyhow, the journalism degree got me a job on the *Washington Standard* in Olympia. Its economic component, plus later studies of mathematics at Seattle, Chicago and Princeton gave enough color to the idea that I was an economist to give me a job as Professor of Economics at Columbia University. I actually did teach economics there, but it was economics so mathematical that no member of the distinguished