H. O. Hartley (1912–1980)

Revered and Remembered

by William B. Smith
ASA Executive Director

H. O. Hartley (born Herman Otto Hirschfeld, but widely know as HOH) was the 74th President of the ASA. He was a remarkable man. He had an interesting and productive life, from his early years in Germany during the rise of the Nazis to his most statistically productive years in the United States. I had the privilege of taking graduate classes from him; to have written my dissertation under R. R. Hocking, who is one of his students; and to be his faculty colleague and successor as head of the Statistics Department at Texas A&M University. For this article, I will use two sources that are still available in the ASA literature, namely, Hartley's presidential address that was published in *JASA* and his obituary in *The American Statistician*.

In his presidential address, Hartley spoke to issues of his day, but its outline is just as fresh today as it was 24 years ago. Namely, his topics were:

- Statistics as a science;
- The balance between theoretical and applied statistics;
- Cooperation between statistician and subject-matter specialists;
- Problems of data acquisition;
- The impact of computers on statistics;
- The identity of statistics as a profession.

Much progress and improvement have been made in each of the areas, but each area is still full of lively discussion—with some controversy and disagreement. As examples, the ASA now has a Section of statistical computa-tion, another on nonparametrics, and one on statistical consulting. Also, consulting classes exist in statistics graduate programs, data mining and its allied areas are more active than ever, and the identity of the profession and the respect of individuals within the profession are current topics of the ASA Board of Director's Task Force. I encourage everyone to read Hartley's paper (available on *JSTOR*, of course), as it is insightful and prophetic.

Born in 1912, Hartley immigrated to England from Germany in 1934 shortly after completing his PhD in mathematics. His career as a statistician began in earnest at about this time with several publications, including a paper on contingency tables that is now widely cited as providing the "mathematical origins of correspondence analysis," a multi-variate procedure widely used in Europe. It was in England that he did postgraduate work with John Wishart at Cambridge, resulting in a 1940 PhD in mathematical statistics.

During this period, he also took a post as statistician at the Harper Adams Agricultural College (now University), Shropshire, where he met and married Grace. There are other indications of his future in statistics at Adams, as Hartley was in charge of designing and analyzing poultry experiments at three agri-cultural experiment stations. He also lec-tured to agriculture students and published seven papers while there. His early research illustrated the innovative and very clever use of numerical techniques he was to produce throughout his career, as well as the begin-nings of substantive work in areas that are

'hot' topics in our profession today.

During the World War II years, Hartley was heavily engaged with the Scientific Computing Services, London, where he was associated with L. J. Comrie, a now-famous early computing scientist. Hartley's work, even with the primitive equipment available at the time, was notable. These activities included wartime surveys and military applications. His published works from this period were precursors to more substantive research into range-based methods that would come later and to providing extensive tables for the discipline. Hartley's academic appointments began with his acceptance of a position as lecturer in statistics at University College, London. The job brought him to know Egon Pearson, and their marriage of minds leaves the statistics discipline with the famous two-volume *Biometrika Tables for Statisticians.* Hartley's natural computational sense, sharpened with Comrie, served the statistics community well in this endeavor. Volume I appeared in 1954, and 18 years later, despite several continental separations, Pearson and Hartley were able to produce Volume II.

In 1953, Hartley took a one-year position in the United States as Visiting Research Professor in Statistics at Iowa State College. This position, extended after one year to include nine additional years, brought Hartley to the forefront of a major statistics program. During his time at Iowa State, Hartley was deeply involved in research and teaching, and directed 17 PhD and 11 master's theses, mainly in the areas of survey sampling and statistical computing. He was a stimulating teacher at all levels. His early computational talent enabled him to play a prominent part in computing both for scientific and administrative purposes at Iowa State. He was initially in charge of scientific computing consultation that gave the entire university, for the first time, service in data processing and numerical analysis. In addition, he was a remarkably active consultant on statistics to a wide variety of scientists on campus. While in Iowa, Hartley was elected Fellow of the American Statistical Association and member of the International Statistical Institute. He was previously elected Fellow of the Institute of Mathematical Statistics after a brief association with S. S. Wilks at Princeton University in 1948–1949.

Hartley left Iowa for Texas A&M University in September 1963 when he accepted an appointment as distinguished professor. He founded Texas A&M University's Institute of Statistics, becoming its first director. At that time, Texas A&M had 9,000 students, a limited graduate program, and no formal statistical effort. Hartley contributed mightily to the school's metamorphosis from a small college into a university with more than 45,000 students, a graduate enrollment exceeding 10,000 students, and a faculty with extensive research grant and contract activity. He built his initial faculty in the Institute of Statistics from four to 16 and students majoring in statistics from 10 to a maximum of 60. He attracted a considerable amount of research funds and directed more than 30 doctoral students in their research. Additionally, he published prolifically and with substance; there were more than 75 papers during that time. Major research included not only work on the foundations of sampling theory for which he is well known, but also successful ventures into mathematical optimization, estimation with incomplete data, estimation of variance components, and establishment of safe doses in carcinogenic experiments.

While at Texas A&M, he served as president of the *Eastern North American Region of the Biometric Society,* and during 1979, was president of the ASA. He was truly active in his profession and recognized and honored many times

Samuel S. Wilks Medal

for his national and international efforts. As an example, he was awarded the S. S. Wilks Medal in 1973 in recognition of his influence. After his mandatory retirement in 1977 as administrator of Texas A&M's Institute of Statistics, he continued to be extremely active in student direction and contract research until 1979. In late 1979, Hartley took a full-time professional position again, moving to Duke University and serving there until his death.

Hartley's career spanned the major areas of interest to statisticians: education, research and development of methods, and delivery of knowledge and advice to users. He had a deep commitment to our profession and its improvement through professional organizations. His contributions to the statistics literature will forever testify to his success.

Additionally, his personal influence on people in all walks of life will be revered and remembered by those of us who were privileged to know and love him. HOH brought out the best in people. He never flaunted his intelligence or made one feel uncomfortable in his presence. He would ask penetrating questions after a lecture or paper—often prefacing them by asking, "Can you hear me? Can you see me?"—thereby using his diminutive stature as an audience icebreaker.

He was deeply concerned with people as individuals. He and his wife knew when babies were born, when parents were ill, and when there were financial strains on students or faculty. HOH knew when to call someone in for a "pep talk" (to quote him). We never saw him truly angry. Even though he had the usual frustrations with deans, academic administrators, and federal bureaucrats, he never lost his composure and was never anything but a gentleman.

We are proud that HOH came our way—or more accurately; we came his way, for it was he who attracted us. We are proud that he became a U.S. citizen, and indeed became a Texan in the only way that a nonnative can—by buying a spread (ranch). Behind all his intellectual and educational achievements, Hartley was an inquisitive and warm human being—witty, perceptive, and thoughtful. He was a great mentor not only to his students, but also to his colleagues.

Hartley's legacy is still unfolding. At Texas A&M University, both an annual prize and a biannual series of lectures are given in his honor. The lecturers in the Hartley series have included Bradley Efron, David Cox, Terry Speed, Peter Hall, Adrian Raftery, and Wayne Fuller. The Applied Statistics and Economics Center at Humboldt-Universtät, Berlin, also has created the Herman Otto Hirschfeld Lecture with Paul Embrechts, Francis Diebold, Joel Horowitz, and Stephen Stigler delivering lectures.

The institutions he touched are thriving, the statistical methods are ever expanding, and conferences and celebrations are still being held in his honor. Hartley is an example of how discipline, hard work, and both a bit of genius and risk-taking can lead to a life that is admired and envied. He was a pleasure to know and a real challenge to keep up with. ∎
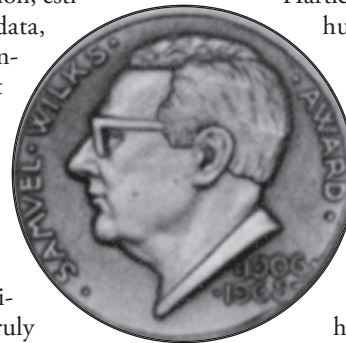
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