Comment

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History tends to emphasize and document the research accomplishments of an individual more than personal characteristics, and this has been the case with respect to Harold Hotelling. His name in the index of a book or in an encyclopedia of statistics will bring forth Hotelling's T^2, canonical correlations, principal components, transforms of the correlation coefficient, etc. Much less is known of Hotelling's role in the development of statistics as a profession. He was very much concerned with the training of statisticians, with the teaching of statistics, with the role of statisticians in cross-disciplinary research and with the general welfare of the statistical profession.

Hotelling's doctoral dissertation was in topology and was written under the direction of Oswald Veblen at Princeton. After receiving his doctorate in 1924 he accepted a position in the Food Research Institute at Stanford University. It is hard to imagine such a career sequence today. But Hotelling was always interested in applying mathematics to statistics and economics, and this position provided an opportunity to develop theory from practical problems. Hotelling's teaching load at Stanford reflects his background and interests; in 1927 he taught three courses—mathematical statistics, differential geometry and analysis situs (topology)!

Hotelling wrote a number of articles on statistics as a profession. An IMS committee on the teaching of statistics was established with Hotelling as chair. The other members of the committee were Walter Bartky, then Dean of Arts and Science, University of Chicago; W. Edwards Deming, then Director, Division of Statistical Standards, Bureau of the Budget; Milton Friedman, then Associate Professor of Statistics, School of Business, University of Chicago; and Paul Hoel, then Associate Professor of Mathematics, University of California, Los Angeles. The committee issued a report, published in *The Annals of Mathematical Statistics* **19** (1948) 95–115, that addressed a number of issues which still plague the profession, and offered a program for action in the future.

The committee conclusions addressed the following issues:

1. Who are the prospective students of statistics? (1a) college students, (1b) future consumers of statistics, (1c) future users of statistical methods, (1d) future producers and teachers of statistical methods.
2. What should they be taught?
3. Who should teach statistics?
4. How should the teaching of statistics be organized?
5. What should be done about adult education?

The second part of the report reflects Hotelling's views and provides a more intensive discussion of the general problem on the teaching of statistics. Much of this portion of the report is discussed in Hotelling's 1949 paper that is reproduced.

One of Hotelling's central themes is that the teacher of statistics must have a thorough knowledge of the subject. He may touch a raw nerve when he states "... the teaching of statistics cannot be appreciably better by mathematicians ignorant of the subject than by psychologists or agricultural experimenters ignorant of the subject." However, he does note that the mathematician has an advantage in more easily being able to study the field. It would be a serious mistake for us today to deny the mathematical roots of the statistical sciences, and indeed some areas of the field may be viewed as branches of the mathematical sciences. But by the same token it would be a serious mistake for us to deny that many of the fundamental aspects of the statistical sciences differ radically from mathematics. The description by John Tukey that statistics is part mathematics is most apt. Acceptance of this description has implications in the way that statistics is taught, in the choice of teachers of statistics and in the role of a statistics department in a university. But it also has implications for governmental and industrial organizations. For example, should statistics be part of a mathematical division, or part of a behavioral, social or economic sciences division. Perhaps statistics should not be relegated to any single division but should be part of every division. Is research in statistical methodology as applied to the social sciences, say, to be viewed as social science research or as statistical research? At one level it does not matter as long as the needed research is completed. However, there is a hidden difficulty in that the research may not be supported if statistical methodology as applied to the social sciences has the requirement of advancing the social sciences per se. Thus, many of Hotelling's concerns are as alive today as they were 40 years ago when he wrote these articles.

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