

Herbert Solomon - Nominee for the
S. S. Wilks Memorial Award

Herbert Solomon has been nominated as a candidate for the 1973 S. S. Wilks Memorial Award. The attached biography and bibliography are submitted for your consideration and the listings therein serve as a base for the discussion that follows.

In Solomon, we have the singular combination of important research contributions to statistics, innovative applications of statistics in a number of settings, and very successful development and promotion of statistics. All of these talents have been intertwined on many occasions with Department of Defense programs and it is to these abilities and their relationship with DOD that I will now go into some detail.

First, consider his contributions to statistical theory and methodology and then their association with DOD by referring to the articles listed in the bibliography. The subject of coverage received interesting and original treatments in Numbers 2, 5, and 19. This geometrical probability problem was motivated by inquiries into the relationship between target coverage and weapons systems and Solomon's work is used presently on a routine basis at a number of installations.

A second area is that of acceptance sampling. Here, Papers 7, 9, 11, and 20 presented new and important results on continuous sampling schemes and surveillance sampling schemes. Both are topics of great interest to DOD agencies and in fact, Solomon's work on continuous sampling led to publication of DOD manuals now in use by inspectors where continuous sampling is appropriate. His work on surveillance sampling stemmed from some Army problems and was singled out and published in a volume containing important papers published in Management Sciences in the period up to 1960. In addition, his Paper #36 continues developments in surveillance procedures.

Solomon made important contributions in the area of mathematics in social processes, specifically the question of group problem solving. Papers 4, 13, 15, and 21 provide results of interest and started a group of workers who continued his work in small group models. Curiously enough, these papers were initiated by Solomon, in connection with a specific problem suggested by the Air University at Maxwell Field, and in large measure were produced under a contract there.

The area of measurement of mental ability received much attention in Papers 8, 14, 16, 17, and 18. Important contributions were made to this subject in Volume 2 in the list of books also produced as a result of these efforts. The motivation for this was a specific set of problems raised by the Air Force School of Aviation Medicine and once again, a number of papers were produced under contract. It might be added here

that Paper #16, published in 1950 has served as a base for a number of papers recently on this subject. It is also related to papers in Electrical Engineering Journals, which now refer to it in connection with work on character and pattern recognition.

One area receiving a lot of attention at present is that of clustering and classification. These are important in multi-variate data analysis. Here again, Solomon was an initial contributor and developer. Papers 8, 24, and 30 are on this subject matter.

Another subject of theoretical, scientific and DOD interest, is that of random packing. On this topic, Solomon made original contributions in Papers 25 and 29.

Another set of papers that relate to a theme are Papers 23, 35, and 37. These papers are on measurement of evidence, reasonable doubt, and questions related to jury size. We can assume that they will serve as a basis for contributions by others in the near future.

There are other papers listed which make interesting contributions to statistics. For example, 32 provides an interesting merger of geometrical probability and traffic flow problems. All in all, we see a picture of statistics being introduced and developed in a wide variety of fields -- a large number of them directly related to DOD subject matter.

At this point, it is most appropriate to discuss Solomon's other accomplishments, especially in DOD. First, he has served as President of the Institute of Mathematical Statistics and President of the Western Division of the Operations Research Society. In university life, he has been Chairman of the Department of Statistics at Stanford and currently is Chairman at George Washington University. He was responsible for the growth and quality of the Stanford program. Solomon initiated and developed the Statistics Branch of the Office of Naval Research and laid down the philosophy for its operation. This has been a most successful program. While in that situation, he initiated and developed two Joint Service Committees which exist to this day. One is on Quality Control and Reliability and the other on Statistics and Applied Mathematics. These committees and the funding they are under from each of the services has provided a continuing flow of important ideas and reports under a large number of DOD applications for over twenty years.

For the past seven years, Solomon has been an important member of the Army Mathematics Steering Committee and a member of the Program Committee of the Army Design of Experiments Conference. He is the successor to the late Samuel S. Wilks in these two assignments.

BIOGRAPHY

Name: Herbert Solomon

Higher Education

1940 B.S., The City College (New York City)
1941 M.S., (Mathematics) Columbia University
1950 Ph.D., (Mathematical Statistics) Stanford University

Honors

John Simon Guggenheim Fellow, 1958
Fellow of the Institute of Mathematical Statistics, 1955
Fellow of the American Statistical Association, 1954
International Statistical Institute, 1972

Professional Societies

Offices

President, Institute of Mathematical Statistics, 1964-65
President, Operations Research Society - Western Section, 1966

Memberships

Operations Research Society of America
Institute of Management Sciences
Royal Statistical Society
Institute of Mathematical Statistics
American Statistical Association
Psychometric Society
American Psychological Association
Cosmos Club, Washington, D.C.

Professional Experience

University

Professor, Department of Statistics, Stanford University	1959 -
Executive Head, Dept. of Statistics, Stanford University	1959 - 64
Principal Investigator-Joint Services Contract with ONR	1959 -
Principal Investigator-Probability Models in Traffic Flow with Department of Transportation	1967 -
Professor, Teachers College and Dept. of Mathematical Statistics, Columbia University	1957 - 59
Associate Professor, Teachers College and Dept. of Mathematical Statistics, Columbia University	1952 - 57
Director, Mathematics in the Behavioral Sciences (Office of Naval Research Project), Bureau of Applied Social Research, Columbia University	1953 - 57
Director, Item Analysis and Classification Project (School of Aviation Medicine Project), Teachers College	1954 - 57
Director, Group Process and Group Efficiency in Problem Solving (Office of Naval Research Project), Bureau of Applied Social Research, Columbia University	1956 - 59
Acting Assistant Professor Statistics, Stanford University	1947
Research Statistician, Statistical Research Group, Division of War Research, Columbia University	1943 - 45

Government

Head, Statistics Branch, Office of Naval Research	1949 - 52
Chairman, Joint Services Advisory Committee for Applied Mathematics and Statistics	1950 - 52
Director, Joint Services Research in the Statistical Aspects of Quality Control	1950 - 52
Mathematical Statistician, Office of Naval Intelligence	1948
Operations Analyst - Hqs. U.S. Air Force	1946

Committees

Mathematical Sciences Research Evaluation Committee - Air Force Office of Scientific Research	1964 - 67
Army Mathematics Steering Committee - Headquarters, Office of Research and Development, U.S. Army	1967 -