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BOOK REVIEW

Glimpses of India's Statistical Heritage

(Edited by J.K. Ghosh, S.K. Mitra and K.R. Parthasarathy, Wiley Eastern Limited, 4835/24, Ansari Road, Daryaganj, New Delhi – 110 002, 1992, pp. ix+293.)

Statistics is one of those sciences in which Indian statisticians have won acclaim the world over. Quite a number of them moved to other countries, particularly the USA and enriched the science of statistics there by their enlightened contributions. The editors have aptly chosen ten of them to record their personal reminiscences covering their own struggle and views for the future of statistical research in India. Their contributions have indeed left an indelible mark in the history of statistics in India. There is however considerable variation in the style of the ten autobiographical articles.

First article — the shortest in the whole book — by R.R. Bahadur, deals with his scientific excursions with Persi Diaconis in the form of a letter on the 'transitivity' and 'sufficiency' arising out of a luncheon discussion. His letter gave the necessary stimulus to Diaconis to discover that transitivity was among the conditions Diaconis and Freedman had formulated for certain generalizations of de Finotti's representation theorem.

The second article by D. Basu is somewhat of an autobiographical type, tracing in particular, how Basu's encounter with Abraham Wald, when at the Indian Statistical Institute, Calcutta, led him to become a staunch Bayesian statistician. He provided numerous counter examples to quiz non-Bayesian statistical methods. Even he dared to quiz R.A. Fisher with his bounded parameter counter example.

The next article by V.S. Huzurbazar is strictly autobiographical. Giving vivid details, he describes the development of his career right from his student days, Ph.D. work in Britain, development of the Mathematics Department of Poona University and finally his efforts to settle down in USA in spite of all odds. His article is indeed valuable for students of statistics in learning how one's quest for research ideas leads him from one pillar to another. After being admitted as a student of Ph.D. degree in mathematics at the University of Cambridge, under the guidance of the renowned mathematician and geophysicist Sir Harold Jeffrey, Huzurbazar had to struggle hard to get brilliant ideas on the Bayesian inference properties of the exponential family distributions and the uniqueness of the likelihood equation.

"The Random Reflections" by G. Kallianpur describes the events and personalities which influenced him and gave a direction to his scientific career. Among the personalities, he mentions the names of R.A. Fisher, Yu.V. Linnik, Norbert Wiener, Albert Einstein, P.A.M. Dirac, John Von Neumann, Herbert Robbins, Paul Livy, and P.C. Mahalanobis. In particular, his work on non-linear filtering and prediction had its origin in Wiener's mind.

The contribution by D.B. Lahiri is in the form of an autobiographical letter which he wrote on 5 February, 1988 to S.K. Mitra, one of the editors of this volume, on reacting to his Presidential Address to the Statistics Section of the 75th Session of the the Indian Science Congress. He has given in detail how he received unexpected but pleasant attention from many not connected by blood during his long career. In particular, he expresses his indebtedness to P.C. Mahalanobis who showed him great favour not only to start with but throughout his fairly long career at the Indian Statistical Institute from where he retired as the Director of the Research and Training School in 1973. In addition, he enjoyed the support of eminent statisticians like R.C. Bose, S.N. Roy, C.R. Rao and J.M. Sengupta. He also makes due references to his first love viz. Number Theory, the well-known Lahiri's method of sampling with probability proportional to size, organisation of National Sample Survey and his several encounters with international bodies like ISI, IUSSP, ECAFE, FAO etc.

The article by P.R. Masani, a brilliant mathematician, is also aimed at expressing his deep sense of gratitude to his mentors D.D. Kosambi, George David, Garrett Birkhoff and Norbert Wiener who played important roles in his mathematical development. In particular, his several encounters at different places but at appropriate moments, with Norbert Wiener led to now famous Wiener-Masani theory of multivariate stationary stochastic processes.

The next article by K.R. Nair is indeed in an autobiographical style. He goes in quite some details on his long and varied life career right from his early education till his retirement and settling down in Bangalore. He also throws light on side details like the visit of Viceroy of India, the Marquess of Linlithgow in 1937, the controversy between the ICAR and ISI on crop-cut methodology, the independence day in August 1947 and the Air India flight with Shri Lal Bahadur Shastri, Prime Minister of India in 1965 etc. He experesses his gratitude, here and there, to his guru and mentor P.C. Mahalanobis besides mentioning numerous illuminaries in as well as off the field of statistics. He has also quoted verbatim from several published material in the journals, government records and several letters, citations etc. which signifies how meticulously he maintained records.

The contribution by C.R. Rao is the longest in length in the book and justifies it by giving a very balanced account of his career and related issues

spread over a period of 50 years. Incidently his article is of 61 pages, much above 27 pages the average length of the articles in the book. It is interesting to find that the distribution of the length of articles in the book is highly skewed, seven out of ten articles being much below the mean and the rest three much above the mean. He describes the circumstances which led him to choose a career in statistics as a last resort in 1941 and how he rose to become an international figure in the field of research and education in the discipline of statistics. Needless to add, the statistical profession would have been deficient, had he not chosen the career in statistics. He gives sufficient space to describing his researches done at the ISI (before going abroad and after returning) Cambridge and USA. He goes in some quite technical details which makes his article valuable to research scholars and students for reference purposes. One can find enough material here without going to the source of his original publications. Quite a number of them are landmarks in statistical literature like Cramer-Rao lower bound, Rao-Blackwell theorem, empirical Bayes estimation on simultaneous basis, first and second order efficiency, g-inverse, growth curves, MINUE, characterisation of probability distributions, unified theory of linear estimation, and several others.

Shrikhande's article is mainly concerned with the significant contributions which he made in the area of 'Combinatories'. He describes how his career was moulded by R.C. Bose at the University of North Carolina, Chapel Hill, USA. His greatest contribution on the disproof of the famous Euler's conjecture given in 1782 that there do not exist two mutually orthogonal latin squares of order (4n+2) for every n, made headlines in the Sunday Edition of New York Times of April 26, 1959. He devotes about half-a-page in describing it vividly.

The last autobiographical article in the book is that of P.V. Sukhatme on Statistics, Nutrition, Education and Social Change. Like the article of C.R. Rao, this is also the longest article in the book and carries 61 pages—the same as that of Rao's—a chance coincidence indeed. Sukhatme's article in the book is unique in the sense that not only it transcends statistical science but also that it gives a "meaning" to the statistical discipline in as much as it can become an instrument of societal change. How education can be built around social action and how nutritional concepts can be properly interpreted in terms of intra-individual variation are shown by him to be of utmost importance in alleviating poverty in this country. The imprint of statistics is seen all through his transcendental excursions to the disciplines of sociology, nutrition and genetics.

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