

Emerging Topics in Statistics and Biostatistics

Indranil Ghosh
N. Balakrishnan
Hon Keung Tony Ng *Editors*

Advances in Statistics -Theory and Applications

Honoring the Contributions of
Barry C. Arnold in Statistical Science

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Barry C. Arnold

Life and Works of Barry C. Arnold

Barry C. Arnold was born on December 6, 1939, in the London borough of Lewisham to Charles and Irene Arnold. He was the second child born to his parents with his sister, Nina Arnold, born earlier on January 24, 1938. After their house was bombed by the Germans, they were evacuated from London and then lived in Herne Bay, Barrie, and Blackpool before settling in Caterham, Surrey, a few miles south of London. In April 1952, the family emigrated to Canada. After attending St. Laurent High School, Barry joined the Engineering Program at McGill University in 1956. When the family moved to Hamilton in 1958, he transferred to McMaster University and graduated in 1961 with a Bachelor's degree in mathematics (statistics). Barry subsequently entered the graduate program in statistics at the Stanford University, the school that he selected because not only was it highly recommended but it also had some palm trees on campus. This was a good choice as Stanford had an all-star faculty that included Ted Anderson, Herman Chernoff, Kai Lai Chung, Shanti Gupta, M. V. Johns, Sam Karlin, Ingram Olkin, Rupert Miller, Lincoln Moses, Emmanuel Parzen, Charles Stein, Herbert Solomon, and Pat Suppes. His classmates here were a pretty impressive group, too, which included Norm Breslow, Morris Eaton, Brad Efron, Leon Gleser, Burt Holland, Myles Hollander, Jay Kadane, Carl Morris, Jim Press, Richard Royall, Steve Samuels, Galen Shorack, Muni Srivastava, David Sylwester, Grace Wahba, and Jim Zidek. Barry graduated from Stanford in 1965 after writing a doctoral dissertation under the guidance of Pat Suppes. Another event of importance that occurred while Barry was at Stanford was that he got married to Carole Revelle in September 1964. From Stanford, Barry went to the Iowa State University and joined the faculty with a joint appointment in the Departments of Mathematics and Statistics. There, he had good friends and plenty of intellectual stimulation from many statisticians of repute including Ted Bancroft, H. A. David, H. T. David, Wayne Fuller, Dick Groeneveld, Chien-Pai Han, Dean Isaacson, B. K. Kale, Oscar Kempthorne, Bill Kennedy, Glen Meeden, Ed Pollak, Joe Sedransk, and Vince Sposito. During 1968–1969, Barry was a visiting professor at the Colegio de Postgraduados in Chapingo, Mexico, lecturing in pretty bad Spanish. During 1974–1975, he went on an AID assignment, working with the Ministry of Agriculture in

Lima, Peru. Although he was not successful in selling sampling methods there, he did improve his Spanish! In 1979, Barry hung up his snow shovel, donated his winter coat to the Salvation Army, and moved to Riverside, California, to join Jim Press (whom he knew from Stanford) and his department there. He has been there since. He spent two years (1982–1984) back in Mexico as the Director of the University of California Education Abroad Program. Barry Arnold has served the Department of Statistics at the University of California, Riverside, as Chair for a number of years. In addition, he has provided distinguished service to the statistical community at large by his activities in various capacities for professional societies such as the American Statistical Association and the Institute of Mathematical Statistics. He has participated in numerous national and international conferences and delivered many invited and plenary lectures. He has provided valuable service to several research journals in various capacities including as associate editor of *Journal of Multivariate Analysis* and *Journal of the American Statistical Association* and *Communications in Statistics*, editor-in-chief of *Journal of Multivariate Analysis*, and managing editor of *The Annals of Statistics*. Barry Arnold has been elected a Fellow of the American Statistical Association and the Institute of Mathematical Statistics, and a member of the International Statistical Institute. He has had a long list of stimulating coworkers and coauthors. Particularly noteworthy are Enrique Castillo and Jose Maria Sarabia (both at the University of Cantabria, Santander, Spain), H. N. Nagaraja (The Ohio State University, Columbus, Ohio, USA), and N. Balakrishnan (McMaster University, Hamilton, Ontario, Canada). Numerous visits to Santander, Hamilton, and Texcoco, Mexico (where Barry has worked with Jose Villasenor and Humberto Vaquera) have provided him with many pleasant productive interludes. In addition, he has been a frequent visitor to India in particular to Kolkata working with Ashis Sengupta, but also, over the years, attending conferences in many other parts of the country. His passport documents several visits to Portugal (working with Carlos Coelho), to Taiwan (working with Su-Fen Yang), and to Chile (working with Hector Gomez and colleagues at the University of Antofagasta). He has never been to a foreign country he did not like, and so he rarely turns down any invitation! Over the past 55 years, Barry Arnold, through his tremendous research in many different areas of statistics, and especially in distribution theory and ordered data, has greatly influenced the trend of research in these areas and has provided inspiration and encouragement to many young researchers. It is our wish and sincere hope that he will continue his contributions to the field with added vigor, interest, and energy!

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Barry C. Arnold at the Ordered Data Analysis, Models and Health Research Methods—An International Conference in Honor of H.N. Nagaraja for His 60th Birthday held at the University of Texas at Dallas, March 7–9, 2014, Richardson, Texas, USA



From left to right: Barry C. Arnold, H.N. Nagaraja, Suvra Pal, N. Balakrishnan, Katherine Davies, and Adelchi Azzalini at the IISA Conference 2013 in Chennai, India. Thanks are due to Dr. Charitra Nagaraja (Fordham University, New York) for kindly providing this photograph



From left to right: Enrique Castillo, Jose Maria Sarabia, and Barry C. Arnold at the International Conference on Distribution Theory, Order Statistics and Inference in Honor of Barry C. Arnold, June 16–18, 2004, Spain. Thanks are due to Prof. José María Sarabia (University of Cantabria, Spain) for kindly providing this photograph



Barry C. Arnold at the International Conference on Order Statistics and Extreme Values: Theory and Applications held at the University of Mysore, December 16–18, 2000, India. Thanks are due to Dr. H.N. Nagaraja (The Ohio State University) for kindly providing this photograph

Preface

Barry C. Arnold, as many know well, has had an exemplary and distinguished academic career. He has an impressive list of journal publications and many books to his credit (the list presented later in the write-up about him will provide an ample testimony to this!). Over the years, Barry has interacted and collaborated with numerous researchers all over the world! We three (the Editors of this volume), and in fact many of the authors in this volume, have also been part of this band of researchers, for varying periods of time, of course! Needless to say, we have benefited from his wisdom and sound knowledge, his contagious enthusiasm for research, and the clever arguments that he provides during discussions. These have resulted in the form of many research articles and books (for one of us!).

A casual look through Barry's publications even his earliest work will reveal that, though he has very broad interests (NB: I remember him once telling me that any problem someone brings to him that perks his interest is worth spending time on!), he has spent considerable time and energy especially in the following areas of Statistics:

1. Ordered Data,
2. Distribution Theory: Univariate and Multivariate,
3. Characterization Problems,
4. Statistical Inference—Classical and Bayesian,
5. Inequalities and Majorization Problems,
6. Multivariate Analysis.

So, it is no wonder that a major part of his publications have also been on these areas. It is for this reason that, when we planned to bring out a volume for Barry on the occasion of his 80th birthday, we targeted these specific areas to attract articles from those with whom he has been associated with. We found it heartening that our initial invitations were enthusiastically accepted by almost all whom we approached and that, in our view, is a clear sign of how people view and respect Barry as an academic and as a friend!

We express our sincere thanks to all the authors for presenting their articles in a timely fashion and also for assisting us in the review work of articles of other

authors that are present in this volume. We also pass on our great appreciation to Ms. Laura Aileen Briskman, Editor, Statistics, from Springer who took great interest in this project when we approached them, and helped us all the way till the final production of the volume. Thanks are also due to the Department of Statistics at the UC Riverside for providing the colorful portrait of Barry that is present in the first page, and to Dr. H.N. Nagaraja, Dr. Chaitra Nagaraja, and Dr. Jose Maria Sarabia, for sharing with us some pictures of Barry at different points of his life and career. For posterity, we have presented these pictures at the end of our writing about Barry which, we hope, will put a smile on his face (and also force him to think about when and where each is from!).

With great pleasure, we have prepared this volume to honor our friend, collaborator, and mentor, Barry C. Arnold, and it is our sincere hope that he will enjoy going over this volume as much as we enjoyed putting it together!

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