

Professor Aloke Dey: A Tribute

Professor Aloke Dey, a fellow of the Indian National Science Academy (INSA) and the National Academy of Sciences, India, is a world leader in statistics for fundamental research in diverse areas, for excellent dissemination of ideas through elegantly written books, and for influential editorial work.

Right from the beginning, Professor Dey held a brilliant academic record. He received his masters degree from the Indian Agricultural Statistics Research Institute (IASRI) in 1966 with a first rank. This was preceded by a masters degree in mathematics in 1964 and followed by a Ph.D. degree, from IASRI, in 1969. His Ph.D. thesis on design of experiments is of significant relevance even today.

After a brief stint at the U.P. Agricultural University, Professor Dey joined IASRI in 1970 as a faculty and became a senior professor there in 1977 at the early age of thirty two years. Subsequently, in 1989, he joined the Indian Statistical Institute (ISI) as a professor and continued there till his formal retirement in 2007. He also held senior academic positions at institutions abroad, including those in USA, Canada and Taiwan. Currently, he is associated with ISI as a Senior Scientist of INSA.

Professor Dey's research, spread over the last four decades and encompassing multiple areas pertaining to not only statistics but also mathematics, reflects an amazing versatility and depth. The areas that have been particularly enriched through his work include design of experiments, survey sampling, combinatorial theory and linear algebra. He always restricts his attention only to the most challenging problems and comes up with ingenious solutions that enhance our understanding significantly. Given the breadth and depth of his research, it is impossible to give a full account of it in a limited space. So, I will concentrate only on a few examples.

In design of experiments alone, Professor Dey made path-breaking contributions to such diverse areas as factorial designs, varietal block

and row-column designs, weighing designs, response surface designs, crossover designs, designs for biological assays and diallel crosses, and so on. His research on orthogonal fractional factorial plans and related orthogonal arrays, with emphasis on the practically important but mathematically difficult asymmetric case, blends theoretical elegance with immediate applicability, notably in industrial experimentation and quality control. In recent years, he worked on the hard problem of obtaining fractional factorial plans when certain interactions are important and came up with an ingenious solution via the use of tools from finite projective geometry. Another recent finding of Professor Dey, on optimal main effect plans under nonorthogonal blocking, opened up a whole new area. His other contributions to experimental design include a new class of incomplete block designs with nested structure, which have been studied extensively by others, both from statistical and combinatorial angles. His work on universal optimality and nonoptimality of certain row-column designs is well-known for its counterintuitive findings, while his early results on optimal designs for biological assays and optimal weighing designs have now become classics in the respective fields.

Professor Dey also made very remarkable contributions to many other areas such as unequal probability sampling plans, characterization problems via conditional expectations, tactical configurations, diagonally range dominant matrices, and so on. His statistical proofs of some results in matrix algebra are of particular interest to the statistical community. Given the profound depth of his findings, it is no wonder that Professor Dey has published extensively in the very best journals of our discipline and that his papers have received numerous citations. No account of his work will, however, be complete without special mention of his books, which are real gems. I was privileged to be a co-author of one of his books on fractional factorial plans. At every stage of preparation of the book, I was fascinated by his depth of knowledge and incisive analytical skill. Very recently, Professor Dey co-authored a new book on the difficult but practically useful topic of crossover designs. I am sure that this book, like the previous ones, will be thoroughly applauded by the academic and research community.

Professor Dey also shouldered the responsibility of editing *Sankhya*, the Indian Journal of Statistics, during 2002-05. Under his eminent leadership and through his painstaking efforts, the journal attained

new heights.

While being a researcher par excellence, Professor Dey has always been mindful of his responsibilities as a teacher. Successive generations of students benefited themselves under the tutelage of the great teacher in him. Interestingly, one of the books co-authored by him aims at improving the understanding of mathematics among senior school students and first year college students.

As a person, Professor Dey embodies classical Indian values. His associates have always been charmed by not only his knowledge but also his rectitude and integrity. He is especially kind to younger colleagues and goes out of the way to help them out, a point that I can always uphold from my personal experience.

I wish Professor Dey a long, healthy and productive life.

Rahul Mukerjee
Indian Institute of Management Calcutta
Joka, Diamond Harbour Road
Kolkata 700 104, India
Email: rmuk1@hotmail.com; rmuk@iimcal.ac.in

