# The Sinha Brothers (Bimal and Bikas) – The Twin Statisticians

**BIMAL KUMAR SINHA**

**BIKAS KUMAR SINHA**

## 0. Early Days of Twin Brothers

The twins were born to Birendra Nath Sinha and Jogmaya Sinha on 16 March 1946 in Village Atgharia, District Pabna in Bengal Province of undivided India (now in Bangladesh). They were christened as Bimal and Bikas, with Bimal being elder of the twins.

They had their early education in village school before the Sinha Family migrated to Calcutta (now Kolkata) in 1958.

The twins were extremely notorious and gave hard time to their mother, elder sister and near relations with day-time harmful/destructive activities.

## 1. General Information About Twin Brothers

*Over to Kolkata in* 1958: Sinha Brothers got admission in Class VIII in a local school. They showed early promise and secured top positions in school exams. They passed School Final Exam [Class X] in 1961 and got admission into One-year Pre-University Course. In 1962, they got admission into 3-year Degree Course in Asutosh College, Calcutta under Calcutta University with Honours in Statistics, and Mathematics and Physics as combination subjects. They felt highly privileged to be under the tutelage of Late Professors S.B. Chaudhuri and K.K. Mukherjee. In 1965 they passed out with Statistics Honours in the Calcutta University Exam, holding First Class First and First Class Second positions. In 1967, they passed out in M.Sc. [Statistics] Exam under Calcutta University – again holding top two positions. Bimal is senior of the twin brothers and he held 1$^{st}$ position in both the exams! During 1968 - 1971, they carried out doctoral research under the guidance of [Late] Professor H.K. Nandi in the Department of Statistics, Calcutta University. *Bimal* worked in the area of *Bayesian Inference* and *Bikas* worked in the area of *Optimal Designs*. They were awarded Ph.D. Degree [Statistics] of Calcutta University in 1972-1973.

Soon Bimal was inducted as a Lecturer at the Research and Training School [RTS], Indian Statistical Institute, Calcutta on November 1, 1971. And, thereafter, Bikas was

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inducted as the youngest faculty member in Calcutta University Department of Statistics [CUDS] in early 1972. While they were together in the Department of Statistics engaged as research scholars, they worked on a problem in the area of Design of Experiments and this resulted in their first joint publication in 1969 in Calcutta Statistical Association Bulletin.

Subsequently, their work places were virtually different and they were together as faculty by 'choice' on only 1-2 occasions. They have worked together on a total of **8** more research papers – covering such topics as Sequential estimation / Linear regression / Multivariate power series distribution / Bivariate exponential models / Ranked set sampling and Multiple Criteria Decision Making. This list is compiled in Section 6.

## 2. Bimal K. Sinha [BMS]

Bimal [BMS] joined the Indian Statistical Institute (ISI) Kolkata in 1971 and stayed until 1974, and left for the University of Montreal (UM) in Canada for his post-doctoral research. After staying for one year (1974-1975) at UM, BMS joined the Department of Mathematics/Statistics at the University of Pittsburgh in the fall of 1975 and stayed there for about ten years (with a brief return to ISI/Kolkata for a couple of years: Fall, 1977- Summer, 1980). In 1985 BMS joined the University of Maryland Baltimore County (UMBC) as the Founder of Statistics Graduate Program.

BMS worked extensively on a number of research topics during the last fifty (50) years, published numerous original papers in many international journals, produced thirty (30) doctoral students and became IMS/ASA Fellow. Due to his singular contributions in statistics, UMBC honored him with the title: UMBC Presidential Research Professor. The University System of Maryland (USM) in recognition of BMS's tremendous contributions in statistics offered him the title: USM Research Professor.

BMS has been an ardent devotee of the discipline and uses every opportunity to promote it throughout the globe. His outreach and research collaboration is indeed global with collaborators from many countries: Australia, Canada, India, Thailand, Japan, Taiwan, Germany, Sweden, Portugal. Through an MOU with Mahidol University in Thailand, BMS jointly supervised five (5) doctoral dissertations.

At UMBC, under BMS's initiative/leadership, a series of highly successful annual statistics conferences have been ongoing for the last fifteen (15) years, covering many topics of contemporary relevance. Recently under BMS's pioneering leadership, a series of African International Conferences (AIC) took place in several African countries: Senegal, Cameroon, Ethiopia, Botswana, South Africa, Ghana. This unique initiative has been uniformly praised by the entire statistics community and, in particular, by ASA with commitment for funding.

BMS made pioneering contributions in a number of important topics in mathematical statistics: asymptotic theory (higher order efficiency), decision theory, multivariate analysis, ranked set sampling, statistical meta-analysis, advanced inference in linear models, risk analysis in environmental science, data analysis under confidentiality protection.

BMS is the coauthor of four books [Academic Press, John Wiley (2), Springer], and has written more than 130 original research papers with his national and international collaborators and students, including: Pranab Sen (Chapel Hill), Malay Ghosh (Univ. Florida), (Late) Jayanta Ghosh, Nitis Mukhopadhyay (UConn, Storrs), Anirban Dasgupta (Purdue), Martin Klein (Census Bureau / FDA), Takeaki Kariya (Japan), Jerzy Filar

(Australia), Wei-Shing Shen (Taiwan), Dietrich von Rosen (Sweden), Carloc Coelho (Portugal), Montip Tiensuwan (Thailand), Thomas Mathew / Neerchal Nagaraj (UMBC), Sanat Sarkar (Temple/USA), Zidong Bai / Zehua Chen / Rita Das (Singapore), Roman Zmyslony (Poland)). BMS is also extremely grateful to Dr. Barry Nussbaum [US EPA] and Dr. Tommy Wright [US Census Bureau] for their sincere friendship and research support for a long period of thirty years!

To top it all, BMS is thankful to his twin brother BKS for creating and sharing very rewarding and healthy research atmosphere in some university departments and for giving collaboration opportunities to the students with his rich and diverse research experience.

### 3. Bikas K. Sinha [BKS]

Bikas [BKS] joined CUDS in early 1972. BKS doctoral thesis was examined by two giants: Late Prof. Jack Kiefer and Prof. C.R. Rao. At the initiative of Prof. C.R. Rao, BKS got an opportunity and accepted a Visiting Faculty Position in one Brazilian University [1975-1979]. This gave him an Int'l exposure and an opportunity to master the Portuguese language.

At the personal initiative of Late Prof. J.K. Ghosh and upon recommendation from Prof. C.R. Rao and Late Prof. D. Basu, BKS was inducted in the Stat-Math Division, ISI, Kolkata, as an Associate Professor in September, 1979 upon his return from Brazil. BKS was promoted to Full Professor at ISI *w.e.f.* January 1, 1985. He retired from ISI on March 31, 2011.

Joining ISI opened up a 'vista' for BKS! At the initiative of Prof. P.K. Sen, BKS was invited as a Visiting Faculty at North Carolina State University, Raleigh, NC, for the academic year 1982 and then again, during July 1, 1985 – June 30, 1986.

Since then there was no looking back for BKS. He has comfortably collaborated with researchers in many different topics in statistical theory and applications and so far he has an impressive list of 105 collaborators worldwide and around 160 research papers/publications. Notable among the collaborators are : Pranab Sen [UNC-Chapel Hill], (Late) Jayanta Ghosh, Malay Ghosh [Univ. Florida, Gainesville], Samad Hedayat [UIC, Chicago], Kirti Shah [Univ. Waterloo, Canada], Erkki Liski [Tampere Univ., Finland], Talluri J Rao [ISI], Rahul Mukerjee [IIMC], (Late) Samin Sengupta [CUDS], Nitis Mukhopadhyay [Uconn., Storrs], Arup Bose [ISI], Montip Tiensuwan [Mahidol Univ., Thailand], Tapio Nummi [Tampere Univ., Finland], Nripes Mandal [CUDS], Friedrich Pukelsheim [Univ. Augsburg, Germany], Thomas Mathew [UMBC, USA], Siddani B Rao [ISI], Prasad Rao [ISI], Manisha Pal [CUDS], Jyoti Sarkar [IUPUI, USA] and Sobita Sapam [Manipur Univ., Imphal]..

Because of expertise in Portuguese language, BKS got an opportunity to serve the UN as an 'Expert on Mission' in the summer of 1991 in Guinea Bissau, West Africa for 3 weeks.

In India, BKS took every opportunity to organize / attend national / international conferences, workshops and he visited almost all corners within the country. This included: special courses structured, developed, organized and conducted in N-E States and there again BKS took a leading role. He visited all these N-E States with great enthusiasm and participated in such activities. He was instrumental to setting up of Tezpur Centre of ISI.

BKS was awarded PCM Gold Medal in 1980 by Sadharan Brahmo Samaj, Kolkata. He has been an Elected Member of Int'l Stat Inst. since 1985. He became Sectional President

(Statistics) in Indian Science Congress Association 89th Annual Meeting held at Lucknow University in 2002. BKS held the prestigious position of Member/Chairman, National Statistical Commission, GoI during the first term [2006-2009]. BKS was also awarded "Centenary Medal for Excellence" by the School of Tropical Medicine, Kolkata in 2014.

BKS continues to have a special bondage with IASRI, Pusa Institute since the time of [Late] Prof. M.N. Das in mid 1970's. He is closely attached to the Research Group in the area of DoE and has visited this institute any number of times as a Resource Person in workshops / conferences. He is a Founder-cum-Life Member of the Society of Statistics and Computer Applications (SSCA).

Special mention must be made of the soft corner BKS has expressed towards CUDS and the country of his origin. He has a great bondage with both the Department of Statistics, CU and Rajshahi University [RU], Bangladesh. Over there in RU, he has organized and participated in three Int'l Conferences with lot of enthusiasm and taking along a good number of Int'l participants in the category of Keynote Speakers / Plenary Speakers / Invited Speakers / Invited Discussants from within Kolkata / India and other foreign countries.

Needless to say, BMS has been instrumental to introducing BKS in a few Int'l Conferences to showcase his twin brother's presentation styles in topics not covered by him! BKS is proud of BMS, being his twin brother !!!

*Inherently and interestingly, Sinha Brothers have always maintained a healthy competition in the academic world and in the process, both of them have excelled beyond any bounds.*

## 4. Research Publications of Bimal K. Sinha

### 4.1. Books

1. Chen, Z., Bai, Z. and Sinha, Bimal K. (2003). *Ranked Set Sampling*: *Theory and Applications*. Springer-Verlag Lecture Notes in Statistics.
2. Hartung, J., Knapp, G. and Sinha, Bimal K. (2008). *Statistical Meta-Analysis with Applications*. John Wiley Series in Probability and Statistics.
3. Kariya, T. and Sinha, Bimal K. (1989). *Robustness of Statistical Tests*. Academic Press, Boston.
4. Khuri, A. I., Thomas, M. and Sinha, Bimal K. (1998). *Statistical Tests in Mixed Linear Models*. John Wiley Series in Probability and Statistics.

### 4.2. Edited Books

1. Sinha, Bimal K. (1993). *Probability and Statistics*, Volume I. (Joint Editor), Narosa Publishing House, New Delhi.
2. Sinha, Bimal K. (1996). *Probability and Statistics*, Volume II. (Joint Editor), Narosa Publishing House, New Delhi, India.
3. Sinha, Bimal K. (1998). *Applied Statistical Science* III. (Joint Editor), Nova Science Publishers, Inc.
4. Sinha, Bimal K. (2000). *Perspectives in Statistical Sciences*. (Joint Editor), Oxford University Press.

### 4.3. Research Articles in Journals


1. Ahmed, M., Giri, N. and Sinha, Bimal K. (1983). Estimation of mixing proportion of two known distributions. *Sankhya,* **A45**, 357–371.
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13. Das, R. and Sinha, Bimal K. (1986). Detection of outliers with dispersion slippage in elliptically contoured distributions. *Annals of Statistics*, **14**, 1619–1624.
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