Ashok Prasad Maitra (1938–2008)

Ashok Prasad Maitra, founder of the Indian school of descriptive set theory, a probabilist and game theorist, one of a rare breed of administrators with academic vision and above all, an ever helpful and kind human being, passed away on 11 November 2008 at his residence in Minneapolis, USA.

Ashok Maitra, popularly known as AM, was born on 5 May 1938. His father, Amiya Prasad Maitra was a practising lawyer. AM received his early education in Bombay, where his father was posted at that time. He passed I Sc from the Elphinstone College in 1955 and B Sc from the Institute of Sciences in 1957, securing first class in both. At these institutions, AM was awarded merit scholarships. He held the Dakshina Fellowship from the Department of Statistics, University of Bombay during 1957–59 while pursuing M Sc, in which he was placed first class first. While at the Institute of Sciences, he came under the influence of late P. R. Masani and decided to take up an academic career.

In 1959, AM joined the Department of Statistics, University of California at Berkeley as a graduate student. Working with David Blackwell, he obtained the doctoral degree in 1963 for his contributions to the then developing theory of dynamic programming for countable state Markov chains. After spending a year each at Copenhagen and Amsterdam for post-doctoral work, AM returned to India. He joined the faculty of the Indian Statistical Institute (ISI) at Kolkata in December 1965, becoming a full professor in 1972. In January 1987, he took lien to join the University of Minnesota at Minneapolis. Subsequently, in 1991 AM resigned from the services of the ISI. Apart from brief visits away, he stayed at Minneapolis for the rest of his life. He suffered a cerebral stroke in August 2006, from which he did not recover fully.

AM joined ISI at a time when there was a spate of resignations from the faculty. To a great extent it was he who had led the resurgence of the Institute. He, with a few colleagues, did indeed succeed in recovering much of the ground lost by the Institute. AM set an example by his deep commitment to academics. With his energy and dynamism, AM was able to gather young students around him and build, within a short span of time, an internationally recognized school of descriptive set theory at ISI.

According to AM, one of his greatest scientific achievements lay in the fact that he was able to initiate for the first time in India, research in descriptive set theory and to build an Indian school on the subject, ranked at that time with leading centres of research in descriptive set theory in the world.

AM contributed to diverse areas. He investigated the relation between the exponential nature of the underlying distributions and the existence of sufficient statistics. In a beautiful paper he related the notion of sufficiency and regular conditional probabilities to the integral representation of invariant measures in ergodic theory. He had also clarified properties of stable transformations in ergodic theory. He proved the existence of optimal policies in a class of dynamic programming problems.

His major contributions are in the two areas of descriptive set theory; stochastic games and gambling theory. In descriptive set theory, he investigated the existence of selections in a wide range of set-ups like multi-valued maps, partitions of Polish spaces and selections for sets in product spaces with large sections. Some of these investigations not only yielded new results, but also unified and clarified the underlying principles. The relations between winning strategies in certain games and the separation principles for analytic sets were explored. This was an extremely fruitful area that was earlier initiated by David Blackwell and has seeds of lasting connections between logic and set theory on the one hand, and the existence of winning strategies in certain games on the other. During the last two decades, AM and his co-workers contributed extensively to diverse aspects of game theory and gambling theory – two-person as well as n-person stochastic games; leavable (a player can quit playing) and non-leavable houses; with countable as well as Polish state spaces; and with continuous or measurable payoff functions. AM had brought in ideas from logic, specifically the theory of inductive definability, to discuss existence of values (or equilibria).

While still a graduate student, AM along with three co-students translated (under the supervision of Jerzy Neyman) from Russian, the classic two-volume book of Dynkin on Markov processes, a Springer publication (1965). This was a timely and valuable addition for the English-speaking mathematical literature. His monograph published by ISI (1967), on *Dynamic Programming in Markov Chains* is a neat and systematic exposition of the theory at that time. He co-authored with William D. Sudderth the 1996 Springer publication *Discrete Gambling and Stochastic Games*. This is a much-needed update of gambling theory, which is helpful to students and also researchers in the field.

Those who attended his courses know how well-organized and lucid his lectures were. Anecdotes, motivations and jokes would flow, like a symphony, throughout his lectures. The excitement of doing mathematics was also conveyed with equal ease throughout his inspiring lectures. He was caring towards his students and enjoyed teaching. Even while he was the Director of ISI, AM continued to teach and students had direct access to his office.

He guided twelve research students for doctoral degrees in diverse areas – descriptive set theory, game theory, ergodic theory and topology. He shared his ideas freely with his students and was averse to being competitive. He was also uncomfortable with official formalities and when he was in the company of students, one could easily mistake him for a senior student.

While at ISI, AM held several administrative posts with unsurpassed abilities and grace. He was the Head (official nomenclature was 'Member-Secretary') of the International Statistical Education Centre, during 1966–72; Dean of Studies during 1975–78; Professor-in-Charge of the Division of Theoretical Statistics and Mathematics for the term, 1982–84 and was the officiating Director for several months during 1978–79 and 1983–84. He was appointed Director of ISI, Kolkata for a five-year term in April 1984. AM took over at a difficult period when the academic atmosphere at the Institute was being affected. He spent considerable time and energy to ensure that academic matters remained the priority in the Institute. He took care that students were encouraged and remained an essential part of the programmes of the Institute. It caused immense pain to him to see that certain forces had already become strong and it was getting difficult for him to uphold his ideals and academic vision. An academic to the core, a perfect gentleman and not one to compromise on decency, AM felt that he had no choice but to leave the scene. This he did, by resigning his administrative post on 14 January 1987. He left with grace, dignity and integrity in tact. But his colleagues were sad and shocked at the turn of events and could not succeed in persuading him to return and continue to lead them.

AM was an erudite scholar. One could have a scholarly discussion on almost any topic with him. He had a phenomenal memory; he continuously updated himself on all matters. His favourite topics were sports, politics, literature, history and personalities. AM was an enthralling quiz master on various occasions at the Institute hostel functions. He liked watching football and was an expert player of badminton as well as carrom.

Awards and honours meant little to AM. He was a Fellow (elected 1986) of the Indian National Science Academy and elected member of the International Statistical Institute. He was Cullis Memorial Lecturer (1977) of the Calcutta Mathematical Society. AM visited, among others, the University of Copenhagen in Denmark; Mathematisch Centrum in Amsterdam; Polish Academy of Science in Warszawa; Santa Fe Institute in New Mexico; University of Maryland at Baltimore; University of California at Berkeley and University of Minnesota at Minneapolis.

Ashok Maitra is survived by his mother, brother, wife and daughter.

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