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## Mahalanobis — A Tribute

By Alladi Ramakrishnan, Director, Matscience, Madras

Indian Science has been associated for over half a century with the trinity of personalities — Sir C. V. Raman in Physics, P. C. Mahalanobis in Statistics and Homi Bhabha in mathematical sciences. They strode the Indian scene in isolated splendour and glory with almost no peers in their respective fields. They created and fostered "empires of intellect" not by pressure or force but by their intellectual prowess, indefatigable energy and their capacity to inspire loyalty amongst their colleagues and followers.

### GREAT INNOVATORS

These three scientists, unlike in temperament and personality, diverse in their scientific interests, had many features in common which account for their incredible success and influence in national effort and prestige in international science. Each was the native product of his own environment, yet, each was an innovator of revolutionary concepts.

They invested their energy and influence within India and their achievements had beneficial effects within the country though their academic prestige was world-wide. Those that followed them are today occupying positions of influence and power in the country carrying on the traditions of their teachers while doing estimable work on their own.

Prasantachandra Mahalanobis was born in 1893 in a family with the highest intellectual and cultural traditions of Bengal. His grandfather had migrated from a village in Bengal to Calcutta and embraced the Brahmo Samaj way of life. His father had attained prosperity and social status which gave young Prasantachandra opportunities not easily available to the less fortunate in a country where class and caste distinctions were well preserved under an alien rule. His education was characteristic of his social class. After a distinguished career at school and college



Mahalanobis left for England and joined the King's College at the Cambridge University, study in which was the intellectual ambition of the upper middle class in British India. He took mathematics in the first part of the trip and physics in the second part as he was hoping to do experimental physics under the then famous physicist C. T. R. Wilson. But on his return to India during the vacation he decided to stay and work in Bengal, the province of his birth. During his Cambridge days he met and moved with persons like Ramanujam and Bertrand Russell. In Calcutta he came into close contact with Rabindranath Tagore, the poet whose genius and influence were not only the pride of Bengal and India but soon became an international heritage. What more could a young Indian ask for in 1923 in British India than a Cambridge degree and close association with the leading intellectuals of that day!

### SWITCHED OVER TO STATISTICS

It is of course puzzling how within a few years, his research interests shifted to statistics and stayed there till the end of his eventful life. Just as Ramanujam's interest in mathematics was traced to Carr's synopsis, Prasantachandra's passion in statistics had its source in the volumes of the *Biometrika* he perused at Cambridge. With his background in mathematical sciences it is really odd that his first research paper should be on a 'down to earth topic' in statistics entitled 'Anthropological observations of the Anglo-Indians in Calcutta'. It required extreme boldness and courage, almost bordering on madness to apply analytic methods to social and economic problems in the conservative educational background of British India. Mahalanobis was invested with just those qualities of leadership necessary to be a pioneer in statistics in an Indian environment.

His research covered a wide range of

subjects — and what a range! here is a sample survey — anthropometric studies of Bengal castes, meteorological studies of upper air correlations, Statistical studies in medicine and zoology, reports on floods and famine, river waters and rainstorms, forecasting of rice and paddy harvests, diseases in cotton crops, rainfall and drainage in catchment areas, population problems, maternal deaths and still-births, relation of heights and weights of the Bengal women, tea habits of the middle class Indians; budget studies of Indian labour families, impressions of visits to various countries, biographical sketches of scientists and public men, documents relating to planning for national development, invited lectures at national and international conferences — the mere enumeration of which is enough to confound even a profound scholar and confuse a competent researcher.

By 1931 he had acquired considerable experience in the application of statistical methods and had made the right contacts with Government and business circles, that he was able to start the Indian Statistical Institute. In spite of all the support from Government, with all the social and cultural advantages, with his established academic status, the financial support to the Institute in those early years was modest but the talent that was drawn to this doyen of statistics was immodestly brilliant. Mahalanobis, despite his Cambridge tradition in mathematics and physics sought his problems for research from the soil and atmosphere of India. He was grappling real social and economic questions with the aid of mathematical methods rather than groping for dubious applications of abstruse mathematical techniques. In spite of his pragmatic approach he was able to attract the finest of mathematical talent to



his institution. Though he was not a creative mathematician he displayed great originality in application of mathematical methods and had great faith in mathematical excellence. Among his earlier students were R. C. Bose, S. N. Roy, and C. R. Rao who later excelled their master in their pure scientific contributions. Bose and Roy migrated to the United States and established an Indian tradition for statistics of international status in that country. C. R. Rao on the other hand was willing to pursue a course in the style and spirit of his master, travelling abroad frequently and participating in international Conferences and propagating the research work of the Indian Statistical Institute. The Institute, once established, never looked back. It is growing steadily upto the present time and its annual budget today is both the pride and despair of its sponsors.

#### FOUNDING OF SANKHYA

At the end of the war when India became free, the initiative and imagination of Mahalanobis found a haven in the Government of Jawaharlal Nehru, the chosen heir of a Gandhian India aspiring to take its rightful place in a modern world of science and technology. Power and influence were visited on Mahalanobis which he handled with finesse and effect aided by his brilliant protege, C. R. Rao. No single institution in India has contributed so much of trained talent not only for the development of our nation but for 'export' to highly developed countries. Wherever I travelled in the United States I found some one or other in the Statistics or Mathematics departments of the Universities who could trace his research interests to the Indian Statistical Institute.

There is a general feeling, perhaps, justifiable, in our country that the best work of a researcher should be published in journals outside India to attract the attention of the

scientific world. But Mahalanobis, true to his faith in indigenous effort, did not believe in this and published most of his papers in journals within India and presented them at local conferences. Of course he took every opportunity to travel abroad and participated in international gatherings where his work and contributions soon became widely known. In 1933 he founded the now famous journal "SANKHYA". Out of his three hundred and odd publications only a very small number were published in the journals of the Royal Society.

The rest appeared in his "SANKHYA", in reports submitted to the Government and in articles in Indian journals, proceedings of national scientific conferences. He not only believed in applying mathematical methods to actual problems but also in the dissemination of scientific knowledge to the public at large. He frequently organised and enjoyed scientific meetings in which eminent public men with power and affluence participated. This was only natural because of his exalted position not only in the scientific world but in official and business circles. Honours came to him in rapid succession, medals and prizes from various societies in India and abroad. With the award in 1945 of the fellowship of the Royal Society, so coveted and highly prized in India, he was invested with high authority by the Government of India. He became the honorary statistical adviser in the cabinet since 1949 during the Nehru regime. Chairmanships of various international conferences followed and he travelled in all the five continents through thirty nations and his friendship was valued by distinguished men like Sir Ronald Fisher in Cambridge and Jerzy Heyman in the U. S. His influence in Russia equalled that of his in the Western world. Spontaneous tributes poured forth from all over the world when he died in 1972, ripe in years and honours.



In every sense he was a complete human being with human feelings, tenderness, compassion and love. He was blessed with a partner in life who was 'patient in his impatience, humorous under his seriousness, cheering him when he was disturbed', making his home and life complete. While he entertained Nobel Prize winners and felt at home among eminent poets, scientists, saints, and diplomats, he was part and parcel of the soil of his beloved India. While his ranging intellect found fulfilment in international meetings, his tender heart would respond to the pleading eyes of a cow and calf, the living symbols of our ancient way of life. True to the tradition of the Indian intellectual, he revelled and regaled in apparently contradictory attitudes and ideals. He was a traditionalist and reformer, social worker and aristocrat, scientist and artist, learner and teacher, leader and conformist, rebel and disciplinarian, scholar and innovator. He was

as much interested in statistical influences from the bones of the prehistoric Dinosaur as with the vital problems of the teeming millions of his country. He was at home both in the sun-drenched fields of primitive villages as inside the luxurious salons of fashionable hotels. He was a many splendoured personality with varied flavours and colours hyper-charged with energy, endowed with charm which bound him to his associates who enjoyed their confinement to his strong and magnetic personality.

For me it is impossible to think of Mahalanobis except in comparison with Raman and Bhabha. We cannot however be complacent in the glory of the trinity of Indian science. Their spirit exhorts us in the endless quest for knowledge and the manifold possibilities of applying such knowledge for the benefit of mankind.



## A Lawyer's Lyric on Sanjay !

A lawyer turned author by the name Piare Lal Sharma has chosen to delve into the "psychography" of Sanjay's "cosmic mind". In his book "World's Wisest Wizard: Sanjay", he describes Mr Gandhi thus: "Sanjay is a man with broad shoulders. His waist is like that of a lion. What a broad chest! About 36" when empty. When full it takes a very good expansion-say three to four inches... His lips are naturally red. Roses are blooming on his round and smiling face. Sometimes he uses spectacles also. They enhance the beauty of his facial features. Sanjay's smiles are extremely sweet and they go on for miles and miles. They make everyone happy all the while. His eyes look like the shining petals of the lotus. His ears look like the pearl shells".

— The Statesman

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