V. B. Mehta (1946–2014)

Vikram Bhagvandas Mehta was one of the foremost Indian mathematicians of his generation. He was born on 15 August 1946, exactly a year before our first Independence Day. He passed away, after a brave battle with cancer, on 4 June 2014. He is survived by his wife, distinguished sociologist Indra Munshi.

Vikram graduated in Science from Bombay University in 1968. He then went to Berkeley, and was awarded a Ph D in 1976 at University of California for his work in Algebraic Geometry. On his return to India in 1977, he joined the School of Mathematics, Tata Institute of Fundamental Research (TIFR), Mumbai. After a spell there, he went to the University of Bombay in 1981, only to move back to TIFR two years later. He retired from TIFR as Senior Professor in 2011, and went to IIT-Bombay as Raja Ramanna Fellow. He was a Fellow of the Indian Academy of Sciences (Bangalore) as well as the Indian National Science Academy (New Delhi) and a recipient of the S. S. Bhatnagar Award in 1991.

Vikram's first major work was with C. S. Seshadri. In a fundamental paper, they generalized the Narasimhan–Seshadri theorem (on stable and unitary bundles on Riemann surfaces) to the case of punctured surfaces. In brief, they proved that irreducible unitary representations of the fundamental group correspond to stable parabolic bundles of (parabolic) degree zero, with parabolic structures at the punctures. This paper began Vikram's long engagement with vector bundles.

Soon afterwards, he joined A. Ramanathan in a very productive partnership that broke new ground in two entirely different directions.

Their first collaboration resulted in a theorem that is a cornerstone of the theory of semistable bundles on higher-dimensional varieties. In essence, they proved that restriction to a general hyper surface of high enough degree preserves semistability. Using this, they were able to extend results of Donaldson on surfaces to higher dimensions.

Their second collaboration resulted in a very elegant definition, that of a *Frobenius–split variety*. This is a concept that only makes sense for algebraic varieties defined over a field of positive characteristic. When a variety is Frobenius-split, very strong vanishing theorems hold, and these yield as easy corollaries deep facts about the singularities of many classical *complex algebraic* varieties – including Schubert varieties – facts that till then could only be proved by difficult methods or not at all.


Niels Lauritzen

Vikram had an extraordinary number of collaborators – thirty by my count. Apart from Ramanathan, he shared long innings with N. Lauritzen, V. Srinivas and S. Subramanian. I wrote two papers with him – one rather long and involved, the other short and sweet.

He had a very clear mind and could reduce a problem to its essentials – this made him a very good teacher and research partner. Work in characteristic p tends to be technical and difficult. By concentrating on concrete questions and deploying his deep knowledge of commutative algebra and algebraic geometry, he was able to make great progress in papers that were surprisingly accessible. Among my own favourites are the wonderful paper with Ramanathan on Frobenius-splitting and quite short notes written with W. van der Kallen and T. N. Venkataramana.

Vikram was also capable of returning to a question again and again. He was particularly fascinated by a circle of ideas in the characteristic p context that involves stable bundles and 'p-curvatures'. Among his last works was a project with Helene Esnault which brought to fruition a long quest. In a remarkable application of a model-theoretic result of E. Hrushovski, they proved that 'Simply connected projective manifolds in characteristic $p > 0$ have no nontrivial stratified bundles.'

He loved to discuss mathematics, and many a project began with Vikram walking into an office and explaining a question that had been bothering him for a while. He was rarely without his shoulder-bag that contained – in addition to a rather abused writing pad, a floppy hat, a pipe (that I never saw him smoke) and an inhaler – a rolled-up and dog-eared copy of a reprint or preprint that he would refer to constantly to illustrate a point or to raise a question.

Vikram was a keen chess-player and follower of cricket. He had certain stock-phrases and favourite quotations. He would often take his leave of me with the exhortation to 'keep cranking away!'. More eloquently, he would quote Newton regarding 'the subject of inquiry'. I looked up the full quotation recently, and it is appropriate to end with it:

'I keep the subject of my inquiry constantly before me, and wait till the first dawning opens gradually, by little and little, into a full and clear light.'

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