MICHEL MÉTIVIER, 1931–1988

Obituary: **MICHEL MÉTIVIER 1931–1988**

The sudden death of Michel Métivier in Paris on 10 October 1988 in his fifty-seventh year came as a great shock to the scientific community. Although he was known to be seriously ill with cancer, everyone had hoped for the best, including Michel himself whose deep religious faith and immense *joie de vivre* sustained him to the end.

Michel was a student at the Université de Rennes where he obtained his *doctorat d'état* in 1963. After spending a year as a visiting professor at Cornell University he returned to take up a professorship at Rennes. In 1969 he became head of the Department of Mathematics and Computer Science and in 1975, the first Director of the newly created Institut de Recherche en Informatique et Systèmes Aléatoires de Rennes. The founding of this Institute was the fulfilment of a dream he had had for many years; in parallel with his research work, Michel devoted an immense amount of energy to the organization of the teaching of probability theory and the development of computer science. Together with Joe Gani, he organized a seminar which involved the co-operation of the Universities of Sheffield and Manchester in England and the University of Rennes in France in the late 1960s.

In 1973 Métivier organized and directed a course in Probability Theory at the Ecole Polytechnique in Paris. Three years later, in 1976, he became a full professor and also President of the Department of Applied Mathematics at the Polytechnique, just as it was moving from the centre of Paris to the suburbs in Palaiseau. From 1977 to 1987 he was a member of its Board of Trustees, on which he played an important role, particularly in modifying the organization of teaching at the Polytechnique in order to place greater emphasis on interdisciplinary studies.

Among the many applications in which he became involved, were gas phase chromatography, crystallography, statistical mechanics, condensed matter physics and signal theory in electrical engineering. These applications led to the development of new theoretical tools used in several theses in probability theory by C. Léonard, S. Weinryb, C. Bouton and C. Graham, among others.

The creative atmosphere prevailing at the Ecole Polytechnique gave him ample opportunity to exercise his enquiring mind. The Polytechnique trains an elite group of about three hundred students per year, and is staffed by a small number of outstanding scholars in the main fields of science, as well as a few social scientists. Interaction between faculty members in different disciplines is encouraged, even by such minor factors as seating arrangements in the restaurant. Michel very quickly realized that he had an unusual opportunity to develop interdisciplinary research, and soon became the leader of a small but first-rate group of young probabilists.

He set up a weekly research seminar, one of whose goals was the development of applied probability in the genuine sense of solving problems which arose naturally in

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other scientific disciplines. Physicists and chemists gave talks in this seminar, and he himself would attend lectures in the other sciences. His participation in a seminar was always active: he would interrupt the speaker with comments and questions which brought the subject to life, creating a stimulating atmosphere and instilling confidence in the younger participants. Among the most faithful of these in his seminar were P. Cattiaux, F. Comets, J. P. Fouque, C. Kipnis, S. Méléard and S. Roelly-Coppoletta.

At the Ecole Polytechnique, unlike the universities, there are no graduate courses. So, from time to time, Métivier would take the opportunity to give such courses at the Universities of Paris Sud and Dauphine. For him, teaching was an essential part of the learning process, as well as a way to test new ideas. In fact he loved teaching and often accepted invitations to give 'mini-courses' abroad, in Germany, the USA, Japan, Italy, and Great Britain, among other countries. His illness prevented him from giving a series of lectures at the University of Alberta in Edmonton in 1988.

Frequently the material of the lecture series became a book: *Reelle und vektorwertige Quasimartingale und die Theorie des stochastischen Integration* (Lecture Notes in Mathematics **607**, Springer-Verlag, 1977), *Stochastic Integration*, with J. Pellaumail (Academic Press, 1980), *Semimartingales, A Course on Stochastic Processes* (de Gruyter, 1983) and most recently *Algorithmes Adaptatifs et Approximations Stochastiques* with A. Benvéniste and P. Priouret (Masson, 1987). At the time of his death, he was in the process of completing a book on stochastic partial differential equations and infinite-dimensional processes.

His initial interest in mathematics was measure theory and integration; his thesis was entitled 'Limites projectives de mesures. Martingales. Applications.' After devoting some time to ergodic theory, Métivier became interested in stochastic integration: his extension of the theory to Hilbert space-valued martingales was a significant contribution both to the theory and its applications. His first student, J. Pellaumail, wrote a thesis on this subject. From the mid-seventies until his death Michel was interested in stochastic differential equations; he made important contributions to the theory of non-linear stochastic evolution equations and more recently to theorems of existence and unicity for partial differential stochastic equations. He also made useful contributions to the theory of weak convergence for Hilbert space-valued stochastic processes, and popularized the use of Sobolev spaces among applied probabilists. Among his collaborators were G. Pistone, J. Jacod, J. Mémin, P. Priouret and S. Nakao. These investigations led to about fifty publications.

Michel Métivier was a member of the board of several scientific societies, an Associate Editor of the *Annals of Probability*, as well as of *Stochastic Processes and their Applications*, and a member of the editorial board of the *Annales de l'Institut Henri Poincaré, Section B: Probabilités et Statistique*. He organized many conferences. In the summer of 1987, although already ill, he was the 'Maître d'oeuvre' of the Colloque Paul Lévy. Many of us who participated in this colloquium remember it as an exceptionally well organized and successful event.

Outside probability, Michel showed the same enthusiasm and energy. His scientific activities were combined with an insatiable thirst for knowledge; he was a true humanist in the literal sense of the word. Classical music was one of his great passions. He regularly

sang in a choir, he played the violin and sometimes performed publicly in a chamber orchestra. His interests in literature and philosophy went far beyond his roots in French culture.

He married young, and his wife Renée and he had four boys, who gave him two grandsons of whom he was very proud. He was one of the kindest and most sensitive of men. He always tried to emphasize the positive characteristics of students and colleagues, as well as recognize their academic achievements.

His unshakeable faith in what life has to offer, his professional achievements combined with his personal qualities made him a great source of inspiration for all of us. He was among the best loved of the probabilists of his generation and will be deeply missed by all who knew him. He had done so much, he was so full of plans and there was so little time left ...

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