

David KENDALL: Father of British probability

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Professor D. G. Kendall FRS, first Professor of Mathematical Statistics at the University of Cambridge and the founding father and grand old man of British probability, has died aged 89.

David George Kendall was born in Ripon, Yorkshire on 15 January 1918. He attended Ripon Grammar School, where he became interested in astronomy. His mathematical talents were recognized early and encouraged - one teacher gave Kendall his Cambridge Part I lecture notes, and he was reading scholarship material in his early teens. He won a scholarship to Queen's College Oxford in 1936.

At Queen's, he was tutored by U. S. Haslam-Jones, encouraged in his astronomical interests by the astronomer Professor E. A. Milne, and taught analysis by Professor E. C. Titchmarsh. When he graduated in 1939, he won a scholarship for research in astronomy (he had already published his first paper in the field, in 1938), but with mixed feelings as he was deeply in love with mathematics, particularly analysis. As he put it, "I was still torn between the two subjects and couldn't see how the conflict would be resolved, but Hitler resolved it for me."

Like other brilliant young mathematicians of the time, Kendall soon became involved in war work. In March 1940, he began work with the Projectile Development Establishment, where he worked on rockets. As a result of the forced evacuations from Dunkirk and Norway, the British Army had had to abandon most of its heavy equipment, in particular artillery. Rocket development acquired a high priority to fill this gap, since less metal and heavy engineering is needed. But on the other hand, rockets are inherently less accurate than artillery shells, which are guided on their way by the gun barrel - just as a rifle is more accurate than a pistol. Study of the errors, or deviations from the intended trajectory, was crucially important, and as these errors are random, this made a study of the mathematics of randomness - probability and statistics - of prime importance. Kendall had to learn this material from scratch. These efforts led to the successful development of rockets used in massed batteries from assault ships at D Day, and the deadly deployment of rocket-firing Typhoon fighters as tank-busters in Normandy.

After the war, Kendall naturally wished to return to academia, and on the strength of his wartime work, still classified, he was appointed as Mathematics Tutor at Magdalene College Oxford in 1946, a post he filled happily

for sixteen years. His research, now and for the rest of his life firmly focussed on probability and statistics, flourished during this period. One highlight was his pioneering work of 1949 on stochastic (or random) processes for population growth. Another was his classic 1951 paper on queuing theory, which was motivated by the scheduling problems of aircraft and runways during the Berlin air lift of 1948-9. A third was a series of penetrating studies, with G. E. H. Reuter, of Markov processes (roughly, random processes without memory).

The University of Cambridge had had a Statistical Laboratory, *de facto* since 1947 and officially since 1953, and in the early sixties it was decided to appoint a Professor of Mathematical Statistics. Despite his being primarily a probabilist rather than a statistician, Kendall was appointed, in 1962, and became a fellow of the then still new Churchill College. He held the chair till his retirement in 1985, aged 67. During this time, the Stats Lab grew in both numbers and influence, as part of DPMMS, the Department of Pure Mathematics and Mathematical Statistics. Kendall worked, as usual for him, on a wide variety of problems, and encouraged others to do likewise; under his leadership, the Stats Lab developed into a wonderfully stimulating working environment. Some of Kendall's problems were very applied - such as his work on epidemics, on bird navigation and on archaeology, including problems on arranging ancient Egyptian graves in chronological order, based on the varying style of the artefacts they contained. One of his favourites was his study of parish records from Otmoor, near Oxford: he was able to reconstruct the relative positions of the parishes from data on inter-marriages between them. He also continued to work on pure probability: renewal, regeneration, random sets, Markov processes, factorization of probability laws. His last major interest was the theory of shape, much of it in collaboration with Huiling Le, culminating in his book (with Barden, Karne and Le) of 1999. Part of the original motivation for this was the question of whether the number of near-alignments of ancient standing stones, for example in Cornwall, could have arisen by chance alone.

While statistics has long been very strong in Britain, and probability has traditionally been strong in Russia and France, Kendall was the first British mathematician of the first rank to specialize in probability. He is widely regarded as the founding father of British probability, since so many British probabilists are his mathematical descendants. Two of his most brilliant pupils were Sir John Kingman, formerly Vice-Chancellor of Bristol University, and David Williams, who succeeded him in his Cambridge chair.

He enjoyed his retirement, and remained mathematically and physically active for a long time, though began to suffer from memory loss in his final years. He died of inoperable cancer after a brief illness.

Kendall was widely honoured. He was elected Fellow of the Royal Society in 1964, was President of the London Mathematical Society (1972-4), and received the Guy Medal in Silver (1955) and in Gold (1981) from the Royal Statistical Society and the Sylvester Medal of the Royal Society (1976), as well as several honorary degrees and other academic distinctions.

He married Diana Fletcher in 1952; they have two sons and four daughters. The elder son, Wilfrid, is a Professor of Statistics at Warwick, and has collaborated with his father. The eldest daughter is the BBC's diplomatic correspondent, Bridget Kendall. He died in Cambridge on 23 October. He is survived by Diana, six children and eight grandchildren.

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