OBITUARY: Peter Gavin Hall

1951–2016

ON 9 JANUARY 2016, in Melbourne, Australia, the statistics community lost one of its greatest statisticians. Peter Hall was born in Sydney, Australia, to William Hall and distinguished radio astronomer Ruby Payne-Scott. He earned his degrees from the University of Sydney, the Australian National University (ANU) and the University of Oxford, and he spent his career as an academic at the ANU (until 2006), the University of Melbourne (since 2006) and the University of California at Davis, where he had a fractional appointment since 2005. In 1977 Peter married Jeannie Hall, who held the high post of cabinet secretary for successive Australian Prime ministers.

Peter was a wonderful person. He was gentle, generous, passionate, enthusiastic, optimistic and very supportive. He had a massive impact on hundreds of statisticians, both junior and senior, all over the world. As a colleague (AD) and a regular visitor (RJC), we were able to observe how Peter worked with younger people, helping them solve problems they *thought* they wanted to solve, and, more importantly, advancing their careers while doing so. It was fascinating, and exciting, to watch how Peter operated. He first sorted out the problem that his younger visitors *actually* wanted to solve, framed it in a concrete way, and then, in a burst of energy beyond what any of us can do, simply solved it. His lunches were famous for wide-ranging discussions—including, surprisingly, aviation, where he regularly read blogs about aviation design, e.g. the Boeing 787 Dreamliner, and labor issues, e.g., pilot complaints.

Peter was extremely prolific. His work was deep and founded on unbelievably creative and beautiful ideas. He wrote more than 600 papers, most of which appeared in the top statistics or probability journals. As he was absolutely passionate about science and mathematics in general, the breadth of problems he tackled was very wide. He made extraordinary and enormously influential contributions to many areas of statistics, including: the bootstrap and Edgeworth expansions, rates of convergence in central limit theorems, deconvolution and inverse problems, spatial statistics problems, functional data analysis, smoothing methods, fractals, classification and clustering, and signal detection, extreme-value statistics, martingale theory and ranking techniques.

The diversity of topics that Peter studied originated from his passion for science. He was fascinated by all sorts of problems, ranging from the most applied biological or physical questions, to the most theoretical puzzles in number theory. Faced with a new challenge (something he particularly enjoyed) his typical approach was to gain insight by first exploring its fundamental theoretical properties. This is how he managed to unravel the most surprising and important characteristics of problems, and, from there, suggest highly innovative, ground-breaking and creative statistical methods. His constant search for understanding, and his sheer tenacity as a researcher, led him to develop some of the most difficult and most influential theory in modern statistics.

He received the most prestigious awards available throughout his career. Among other recognitions, he was a Fellow of the UK's Royal Society, of the Australian Academy of Science and of the Australian Academy of Social Sciences, a foreign associate of the US National Academy of Sciences, and an Officer of the Order of Australia. He also had honorary doctorates and numerous other distinguished awards, including the 1989 Committee of Presidents of Statistical Societies (COPSS) Presidents' Award.

Despite his stature, Peter had a gentle and

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unassuming nature. Regardless of how important you were, he always managed to make you feel included through the sheer warmth of his personality. He was loved and admired by many people around the world. He offered especially strong support to young scientists, and women in particular, and trained more than sixty young statisticians at the doctoral or post-doctoral level. All the visitors that we know of departed with a sense that they had been in the presence of genius, but genius with a kind face and one whose goal was to support their careers, instead of his own.

Peter was also strongly committed to his profession more generally, and the amount of service and support he provided to mathematics and science throughout his life, both in Australia and internationally, was also quite extraordinary. Among many other things, he served as President of the IMS, of the Bernoulli Society, and of the Australian Mathematical Society, and as Vice-President of the Australian Academy of Science; he served on innumerable committees and advisory boards, and was editor and associate editor of many journals. He was extremely active in supporting Australian Mathematics and Statistics, regularly interacting with cabinet ministers about how to appreciate the key role of Statistics and Mathematics in the age of data deluge.

Yellow-crested cockatoos gathered outside Peter's office window at the ANU

Outside academia, Peter had two great passions: steam trains and photography. He developed his love of trains as a young boy, fascinated by the impression of power and

Peter was an avid train photographer

invincibility that they gave. It was his love of trains that got him interested in photography, which he saw as a way of recording steam trains, although later he developed a genuine passion for photography more generally. He introduced photography to his sister, the distinguished Australian artist Fiona Hall, of whom he was very proud and whose work he admired. In a forthcoming interview of Peter in *Statistical Science*, he said of his sister, "Her eye for composition was just spectacular. I learned a lot just by watching her take photographs."

Peter also had a passion for animals. He was particularly fond of cats, but he had a special connection with yellow crested cockatoos, which he attracted by feeding them through his office window at the ANU. Amusingly, the cockatoos obtained their food in the early morning by knocking on Peter's window to get his attention.

Peter was someone really special. He was an extraordinary, kind, gentle and generous person, of the type most people do not even have the chance to meet once in their lifetime. He was an exceptional scientist who made many cutting-edge and influential contributions to statistics. He was an outstanding leader, one whose enthusiasm and passion for research has been a motivation and a great source inspiration for many. His absence will leave a huge hole in the hearts of many people all over the world.

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