



Obituaries

Brian John Day

16 January 1945 – 16 June 2012



Left to right: Michael Batanin, Brian Day and Ross Street, at Brian's 60th birthday celebration in 2005.

Brian John Day was the second child of David John (1910–2002) and Lillian Edna Day (née Hutchinson; 1912–1995) of Gladesville, Sydney. Brian's father worked at the Eveleigh Railway Yards as a fitter and turner until he joined the armed forces for the second World War. He served the RAAF as an aircraft engineer in Port Moresby until after the war, then transferred to Canberra. He was a technical officer with the Department of Supply until retirement. Brian's late brother Allan was professionally involved in Secondary and Higher Education in NSW.

Brian grew up in the family home in Gladesville attending Gladesville Public School and then Fort Street High School.

I met Brian Day in 1962 when we were first-year undergraduates at the University of Sydney. In 1965, as Pure Mathematics Honours students, we shared an office in the two-year-old Carslaw Building. We both enjoyed the Honours courses on category theory and general topology by Dr Max Kelly. So it is not surprising that we both started our postgraduate work under Max's supervision in 1966. While our projects were quite different, Brian and I then began the conversations about our research that went on until his death.

Brian completed his Masters thesis in 1968 at the University of Sydney. Actually, that thesis was already of PhD quality. Using categories, it explained the rationale between two existing convenient variants of the notion of topological space: compactly generated spaces and Spanier's quasi-topological spaces.

Max Kelly moved to the University of New South Wales and Brian completed his PhD thesis in 1970 at UNSW. This work is considered a categorical classic, introducing a powerful technique now known internationally as ‘Day Convolution’.

During that time, Brian and Max were working on many projects. Brian’s paper, joint with Max and appearing in the Proceedings of the Cambridge Philosophical Society in 1970, was a contribution to topology well ahead of its time. Its importance, even to category theory, was missed for many years. It is now recognised as another classic.

These early papers set the stage for ‘enriched category theory’ showing how far the ordinary theory could be powerfully extended. This subject is one of the areas for which Australian Category Theory is especially famous. Many of Brian’s early papers were published in *Bulletin AustMS* and *JAustMS*.

Brian spent the two academic years 1970–1972 as Instructor in Mathematics at the University of Chicago and the period December 1972–May 1973 as Lecturer in Mathematics at the University of Århus, Denmark.

While Brian did little driving in Australia, he did drive a car in the USA touring the country with a colleague Bill Mitchell from Chicago.

Starting as a Tutor in Mathematics at the University of Sydney during July 1973, Brian converted to a Lectureship in March 1974. His experience teaching both then and in Chicago demonstrated to him that he would be more effective with research than with teaching.

Max Kelly obtained one of the few early grants to mathematics from the Australian Research Committee and was able to employ Brian as a Postdoctoral Research Fellow for the full years 1976–1979.

Between 1981 and 2011 Brian became a Senior Research Assistant, Research Fellow and eventually Honorary Associate in Mathematics at Macquarie. Nevertheless, his attachment and contribution to the Macquarie category theory group CoACT goes back to the 1970s. Working mainly from home, he made significant contributions to CoACT’s ARC research projects, helped guide postgraduate students, and published papers in scholarly mathematical journals.

Not wishing to use email or computers, he preferred telephone as his main tool of communication. He would also send ordinary local and international letters, and occasionally speak at seminars. Within the last year, Mike Barr from McGill University (Canada) received an airmail letter from Brian. Mike said he could not remember the last time he had actually received a handwritten letter!

Some of Brian’s papers are written with international colleagues. I am pleased that our local collaborations led to joint papers, sometimes with graduate students. When we were working on a joint paper, we could exchange as many as ten telephone calls in one day.

Brian’s research contribution to mathematics, especially category theory, topology and topological algebra, was represented by more than 70 publications. His

influence has extended beyond that to areas such as theoretical computer science, homotopy theory and theoretical physics.

Brian was unable to make phone calls after mid-May 2012. That was profoundly frustrating for him. The category theorists at Macquarie are missing those calls, to hear his new ideas, and to test our own ideas with an expert.

Acknowledgement. Thanks to Brian's nephew Dr Robert Day for the family material.

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