

Donal Patrick O'Donovan 1945–2019

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Donal O'Donovan.

1. OVERVIEW

Donal O'Donovan was born in Dublin on the 31st of July 1945. He grew up in Mount Merrion in Dublin and attended St Mary's Boys National School on Haddington Road; he then moved to boarding school in Roscrea. He completed the B.Sc. in mathematics in UCD in 1966, and followed on to do the Master's in 1967. After a brief appointment as a research assistant in statistics in TCD in 1967, having received a National University of Ireland Traveling Studentship, he moved to the University of California, Berkeley to do a PhD in 1968 [18]. At Berkeley he worked with William Arveson on operator algebras, graduating in 1973 with a thesis titled *Weighted Shifts and Covariance Algebras*.

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While a student there, he acted as a teaching associate and instructor. After graduation, he went to Stony Brook University, New York as an instructor in 1973, before moving in 1974 to Dalhousie University, Canada. He returned to a temporary lecturing job in TCD in 1976 and secured a permanent position in 1979 in the Department of Pure Mathematics. This was around the time of Victor Graham formally finishing as a part-time lecturer in the department; Donal's arrival was between that of familiar names such as Richard Aron and Richard Timoney.

Those who met Donal know that he was approachable and friendly, and he conveyed that in lectures, sometimes sharing classic mathematical jokes such as "What's purple and commutes?" He had an interactive style of lecturing that was probably somewhat ahead of its time. For students in their first year in college, he made a point of helping them come to terms with university mathematics, in particular with the way in which its focus differs from that typically experienced in schools — a culture shock for students who chose the subject for the pleasure of doing exercises and solving problems rather than engaging with the theoretical aspects. At one point he resorted to offering bonus examination marks for first-years students to encourage them to engage in class discussions such as "What does $\mathbb{R}[X]/\langle x^2+1 \rangle$ look like?" He was also quite unflappable, and had no trouble dealing with larger (occasionally high-spirited) groups, such as the first year engineers.

Donal became a senior lecturer in 2002, and served as the School's director of teaching and learning from 2005 to 2007, getting involved with university-level initiatives such as the Working Group on Interdisciplinary and Service Teaching. He began a second term in the same role, but took up the position of Head of the School of Mathematics in 2008. While Head of School, he introduced a year-long module on Mathematics Education as an option for third- and fourth-year undergraduate mathematics students. A key aspect of the module design was that, after attending lectures in the first semester, the undergraduates would spend time in classrooms acting as assistants to teachers. Donal's vision was that the scheme would make a contribution to Irish society by helping to enhance the learning of mathematics, ideally or especially in areas of disadvantage, while also giving undergraduate students a chance to encounter classrooms "from the other side" and perhaps think about teaching as a career [8, 9]. He invited Elizabeth Oldham, who was on the verge of retirement, to teach the lecture course¹; initially, he himself arranged the classroom placements, though later many students were able to find convenient ones themselves. The classroom element broadened over the years, with some students helping in homework clubs, some working in the Maths Help Room, and some tutoring for the Trinity Access Programme, while a few have supported patients in hospital — all areas of interest and concern to Donal.

While dealing with the administrative jobs of the school, he was also happy to stay connected with the students. He took on the (ceremonial) position of President of the student Mathsoc. He also addressed the University Philosophical Society's "Liferaft Debate", to convince them that it would be worth bringing a mathematician on a liferaft to a new world. He argued that mathematics could use abstraction and rigour while also solving practical problems. This made it an indispensable tool, but also an art in its own right.

He remained Head of School for a little over one term, until retiring in 2012. He remained an adjunct member of the department after his retirement.

¹She undertook to do it on a one-off basis and is finally passing the baton to others after fourteen iterations, a measure of how enjoyable she found it.

2. TUTOR

The *tutor* role, for academic staff in TCD, involves being an advisor to students on their interactions with the college and helping with their general wellbeing. Donal's approachable and sympathetic nature made him a good tutor. Students remember him providing the right mix of support, encouragement and, where necessary, sceptical looks to help them get through their degrees. For example, Paul McNicholas (now at McMaster University), described his experience as follows.

Donal was a dedicated and generous tutor who routinely went the extra mile to ensure that his tutees were taken care of. I fondly remember the radio playing in his office when we would meet but, mostly, I remember his miraculous ability to provide hope in situations where there had seemed to be none. Through his deeds, he profoundly improved my life and I have no doubt that the same is true for many others. Donal was a champion for underprivileged students and had a passion to help them succeed. Although none of us will ever know the extent to which he helped students in need, his support for initiatives such as the Maths Help Room and the Trinity Access Programmes speaks volumes.

Another former student, Suzanne Wylde, also remembers Donal's support fondly.

Donal was my Tutor (and Lecturer) in TCD in the late 80s and he was amazing. He recognised, encouraged and personally connected with students who were incredibly talented *and* those who struggled academically and with our personal lives. He went out of his way to assist us in his quiet, unassuming, caring and positive way. For some of us, he was life changing. He put us on the path to success and happiness. I am forever grateful and indebted to him. I still think of him often. Thank you Donal, you truly were a special Tutor.

These are just two of many students that Donal helped negotiate the sometimes strange world of higher education.

3. RESEARCH

Donal's pure mathematical interests were around operator algebras, and C^* algebras in particular. Consequently, he was a supporter of Trevor West's *Thursday evening seminar*, with other regulars such as Richard Timoney, Mícheál Ó Searcóid and Robin Harte. Much of his work arose from finding clever embeddings to understand operators or giving explicit examples to help better understand more abstract work.

Maybe his best-known paper is *Weighted Shifts and Covariance Algebras* [10], where he considers the C^* algebra generated by a weighted shift on a Hilbert space, as a subalgebra of the bounded operators on that space. He shows that, under some conditions on the weighted shift, the subalgebra will be isomorphic to a covariance algebra. This allows results from the study of covariance algebras to be used to understand representations of the subalgebra.

His paper, *A Tale of Three C^* Algebras* [3] even came to the attention of the undergraduates, due to its clever title. It tells the story of good and bad C^* algebras and even gives a link between the algebras and continued fraction approximations to irrational numbers. It was not just the title of the paper that was clever, with George A. Elliott describing the embeddings used as ingenious.

As mentioned above, Donal also had a strong interest in education, publishing the results of a survey of graduates conducted with Richard Timoney [15]. Following on from his later introduction of the Mathematics Education module, with its component

of classroom experience, he published with Elizabeth and one of the students in this area [8, 9].

4. PERSONAL LIFE

Donal was very sociable. He enjoyed and was good at organising events, like dinners and concert trips, both at work and with friends and his family, Joan, Caoimhe and Róisín. He loved traveling, cooking, gardening, reading, listening to music, and going to concerts.

Donal passed away on November 9th 2019 in the Blackrock Clinic surrounded by his family. His funeral was at St. Mary's Church, Haddington Road and included an entertaining eulogy detailing some of Donal's many non-mathematical exploits.

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Robin Harte taught for twenty years at University College, Cork, and retired a long time ago, but somehow never goes away; his ghost can sometimes be seen at the TCD-UCD Analysis Seminar.

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