Citation for Dominic Welsh

James Anthony Dominic Welsh is Professor of Mathematics at the University of Oxford in England, and a Fellow of Merton College. “Emeritus” was added to these titles upon his retirement last fall. Before that, he was Chairman of Mathematics at Oxford for a five-year term, the culmination of a sequence of significant administrative posts.

Dominic Welsh is a leading contributor to combinatorial mathematics in several ways. In research, his significant contributions began with his doctoral thesis, “On stochastic processes, with special reference to percolation theory”. This was a basis for much further work, including the Russo-Seymour-Welsh theorem. He has made significant contributions to matroid theory, including a text with that title, which held centre stage in that discipline for fifteen years, until the spotlight shifted to a text by one of his former research students – James Oxley. Another significant paper describes how unavoidably complex it is to calculate Tutte polynomials for graphs, and Jones polynomials for knots. These are samples: in all, there are over eighty research articles, seven textbooks, thirty research students.

Dominic has secured the place of combinatorial mathematics at Oxford, and has promoted its prominence in English academic life. For instance, the conference he organised at Oxford in the summer of 1969 is now seen as the first of the biennial British Combinatorial Conferences, a fixture on the calendar of the Combinatorics research community.

Dominic’s students now hold senior faculty positions in Mathematics, Computer Science and Statistics departments in the best universities worldwide. His magic in dealing with students, colleagues and the public manifests his warmth, understanding, and striving for the best result.

Mr. Chancellor, in recognition of these contributions to Combinatorics and the Mathematical community, I request that you confer the degree Doctor of Mathematics, *honoris causa*, upon Dominic Welsh.

D. Welsh Convocation Address

16th June address
University of Waterloo

Mr. Chancellor, President Johnson, members of faculty, friends, family and particularly members of this graduating class, it is an enormous honour to be here today. I have great respect for the work done in this university and those who work here, but I have a personal link, too – one of my sons was born here while I was visiting way back in the 60s.

Your time here has probably gone very quickly, you have passed your exams and now look to the future. I do hope you have enjoyed your course, but I know only too well that Mathematics is a cruel subject

Having spent 50 years of my life since then on Mathematics I was recently asked, "Why?" For me, the answer has to be its 'beauty'. Everybody recognises the beauty of the Fibonacci sequence.

Concepts also can be beautiful. The idea that one 'infinity' can be bigger than another, leading to Cantor's proofs that there is an infinite hierarchy of infinities combines beauty with profundity.

However, it is not just its beauty that has made Mathematics so attractive. Thirty or so years ago, a philosopher friend of mine remarked rather dolefully, "I am afraid that Latin, the knowledge of which used to be the mark of a civilised person, will be replaced by Mathematics as the universally accepted mark of learning." This was probably the most prescient statement he ever made, as the importance of Mathematics is now recognised in fields as diverse as medicine, linguistics, and even literature.

Undoubtedly this has been accentuated by the advances in computing. In 1961 I was researching in Bell Labs, New Jersey, and programs were typed on cards which one carried around in large boxes. My career there nearly came to an abrupt end when I bumped into the chief scientist who dropped, and spilt, his large deck of precisely ordered cards.

Whether, by luck or good judgement, this growth in Mathematics, and particularly Discrete Mathematics, coincided with the early days of this university and the development of its mathematical reputation. It has now probably the strongest reputation in the world of Discrete Mathematics. A degree in Mathematics from Waterloo is universal currency, and you are fortunate indeed, or you showed good judgement, in studying here.
When the time came to prepare this address I nervously enquired what I should talk about. 'Humour and inspiration' was the general advice. Now, mathematics and humour are very strange bedfellows. Humour has its own truths, and only too often I have

discovered that, I quote, “A tragedy of Maths is a beautiful conjecture ruined by ugly fact.”

When I was Head of Department, (a terrible job) I had an experience which inspires and illuminates the universal appeal of the subject. I used to get lots of general mathematical enquiries. One I will never forget was from a long-distance lorry driver. As he sat in his cab he had been puzzling over the thought that while in an hour’s time he would have only half his journey to do, in a further 30 minutes he would have a quarter of the journey left and so on, and therefore however long he drove he would still have a little bit of journey left to do.

He knew that something was wrong, as he had done the journey before and knew that he would get there! But what was wrong with his argument? He apologised that he had little education and had left school at 15, and very kindly enclosed a stamped addressed envelope. I did my best to explain to him that he had discovered Zeno’s Paradox. It left me feeling humble and privileged.

Another example: for three years one of my undergraduates handed in work every week, but each time the paper varied in size, colour and texture and invariably had an air of scruffiness about it. My grumbles, (indeed offers to buy him some decent paper) were ignored, and it was not until he graduated that I learnt the explanation. During his vacations he worked as a garbage collector in his hometown. Any paper that he reckoned would do for me was rescued from the bins. Today, incidentally, he is a rather distinguished professor (not of Mathematics) at Harvard.

I would love to be able to send you off with an inspirational message that will be unforgettable. But I am a mathematician, not a wordsmith, so all I can say is: find something you enjoy. Hopefully it will be so interesting that it becomes more than a job, but also a hobby, a fascination and a source of delight, as teaching and researching Maths has been for me. Above all I would ask you to stick to your dream and be true to yourself.

Today is a very special day. I am honoured to be able to enjoy it with you.

Dominic Welsh