

**Anthony Unsworth
Chancellor's Medal
30 April 2018**

Tony Unsworth has had a long and distinguished career in bioengineering, studying the tribology of joints – this is the science of lubrication, friction and wear. In his doctoral work, on a Fellowship at Leeds, he investigated tribological reasons for the onset of osteoarthritis. After his PhD, he took a lectureship at Leeds jointly in Mechanical Engineering and Medicine. Four years later, he joined Durham University as a lecturer in Engineering.

42 years and over 300 papers later, we celebrate his career and his significant contributions in orthopaedics, studying the behaviour of human and artificial joints: hips, knees and fingers. A visitor to his laboratories would have seen an array of oscillating test rigs, from pin-on-plate rigs to investigate wear rates to sophisticated hip and knee joint simulators. He found the key to extending the life of joints to be the improvement of lubrication. His rigorous scientific methods, accurately measuring mass lost, led to landmark papers and commissions from manufacturers of artificial joints to test new products.

He later proposed artificial joints made from compliant materials used in artificial hearts, materials which offer low wear and friction. Prostheses based on his approach have gone to clinical trials; we have yet to hear the outcome, but the potential global impact is enormous.

He was elected a Fellow of the Royal Academy of Engineering. From the Institution of Mechanical Engineers he received the Tribology Silver Medal, the Donald Julius Groen Prize for Tribology, and the James Clayton Prize for Engineering Research. The Institution of Civil Engineers awarded him the Alfred James Ewing Gold Medal, in conjunction with the Royal Society. In 2011, he was awarded a Lifetime Achievement Award for Research by the International Society for Technology in Arthroplasty.

Within Durham he has made outstanding contributions: Head of Department for 11 years, Dean of the Faculty of Science for 3 years. He sat on University Council for 9 years and Senate for 17 years. Within his professional community, he served as President of the Engineering Professors' Council, Vice President of the Institution of Mechanical Engineers, and on multiple RAE and REF panels.

Tony continues to be seen in the Department of Engineering to this day, giving guest lectures, providing guidance on REF preparations, and always being one of the first to volunteer to help with Open Days. He has famously made musical contributions to the end-of-year revues held jointly by staff and graduating students. A verse of one song referred to a student, Marion, who used to knit in her lectures. [Here I add that in vector calculus we have three ways of looking at how quantities are varying, and we call these the div, grad and curl]. The verse went as follows:

Marion attends all my lectures / She sits in the very front seat / While I'm div, grad and curling / She's knitting and purling / That sweater must reach to her feet.

He also wrote a song which he sang for a former Vice Chancellor's Christmas party, containing the verse:

Sir Kenneth brought NHS methods / And made sure that nothing was missed / So if now and then / You need a meeting with Ken / You're on an 18-month long waiting list.

Chancellor, I present Tony Unsworth to receive the Chancellor's Medal.