

Graduation 2009

Oration for Honorary Graduand John Toland

Orator: Professor Peter Higgins

Chancellor, the Senate has resolved that the degree of Doctor of the University be conferred upon Professor John Toland

It is good to welcome John Toland back to Essex University, where he held his first Lectureship, in the Mathematics Dept, from 1973 to 1979. Here he worked with the reknowned fluid dynamicist Prof Brook Benjamin at the Fluid Mechanics Research Institute. John soon made his mark by using the tehcniques he had learnt during his time as a PhD student at Sussex to settle a conjecture of Stokes, a fellow Irish mathematician that had defied analysis for a century. Simply put this was the claim that a wave will start to break and show white caps once the angle of the wave face passes 30 degrees. Simple to state but not so easy to explain and prove, but that is what John managed to do.

During his time at Essex John met and married his wife Susan. Susan was an undergraduate at the time they first met and so through inviting John we can at the same time welcome Susan back to her old university.

John went on to work elsewhere, first at UCL in London but later he settled at Bath. His Chair is at Bath but he concurrently works as the Director for the International Centre for Mathematical Sciences in Edinburgh, for which he is the Scientific Director. Indeed John is both a Fellow of the Royal Society and a Fellow of the Royal Society of Edinburgh. The principle purpose of the ICMS itself is to foster mathematical workshops both in Britain and overseas.

Other distinguished honours that John has been awarded that I happen to know about include the Royal Society Wolfson-Merit Award and John was winner of the London Mathematical Society's Senior Berwick Prize in the year 2000, which is awarded for an outstanding piece of mathematical research published by the LMS. His work was on solutions of differential equations that arise from steady-wave dynamics. Indeed John went on to be elected president of the LMS itself for the period 2005-2007.

The biography given to me by the University states that 'Prof John Toland is a distinguished mathematical scientist whose work on analysis, differential equations, partial differential equations and hydrodynamics is an elegant balance between rigorous pure mathematical insight and substantial applications to real world questions.' John himself, in explaining to me what he does, summed up his direction by saying that he is only interested in proving things.

To outsiders, and I include myself under that heading, it is sometimes surprising how mathematicians have spent centuries studying two things: soap bubbles, and exactly what can happen when water starts sloshing around. However I do know enough to assure you that the kind of work John does lies at the very heart of modern mathematics and the International Mathematical Community regards it as among the toughest and most important topics that can be tackled. Indeed Britain, despite its high international reputation in mathematics, generally needs more people like John who work in the field of non-linear partial differential equations in order to uphold its reputation as a serious mathematical power house.

I should finish by explaining that while John has been personally prolific in his high quality publications, most of his papers are written jointly with a variety of mathematical collaborators. For

example, the work that earned him the Berwick Senior Prize was in part carried out jointly with the Australian mathematician E.N. Dancer and the maths that he is most proud of is relatively recent, that being a very substantial paper, joint with the Russian mathematician P.I. Plotnikov that finally showed the existence of proper periodic solutions to the standing wave problem on deep water.

Ladies and gentlemen you see before you in John Toland a truly eminent and really serious research mathematician and I am privileged to present him for an Honorary Degree at our university.

Chancellor, I present to you Professor John Toland.