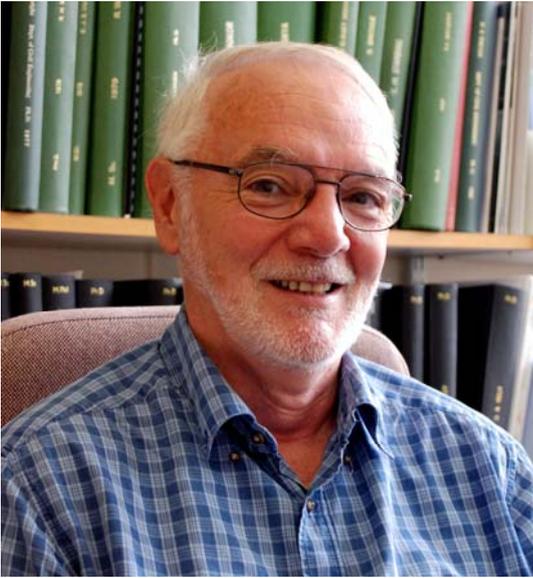


Professor John Arthur Swaffield Engineer and Academic



Professor John Swaffield, Professor Emeritus and Head of the School of the Built Environment at Heriot-Watt University between 2002 and 2008, was an engineer and an academic who firmly believed in enabling learning through the application of theory and technology. He pioneered the application of engineering and science in his chosen field of water conservation and drainage engineering, and he established a number of highly successful Building Services Engineering undergraduate and postgraduate teaching programmes. Many will also know that he held the role, between 2008 and 2009, of President of the Chartered Institution of Building Services Engineers (CIBSE).

Growing up in Aberystwyth, John soon recognised his talent for engineering, his love of aircraft and his desire to seek a career in a discipline defined by 'real-life' challenges. He studied Aeronautical Engineering at Bristol University, graduating in 1965, following which he undertook his PhD at The City University, London. It was during his time at Bristol, as an undergraduate, that he met and married Jean, then a trainee nurse, and together they became proud parents to Toni and Joanna, born in 1969 and 1970 respectively. Having secured his PhD, which focused on pressure surge propagation in aircraft fuel systems, John returned to Bristol, this time to Filton, where he led the Concorde fuel system test programme with the British Aircraft Corporation. These years marked a defining stage in John's career and one that he found both hugely exciting and rewarding.

However, a career in academia beckoned, and in 1972 John joined the Mechanical Engineering Department at London's Southbank Polytechnic. There he taught fluid mechanics to building services engineers before moving to Brunel University in 1974, where he set up the Building Services component of the Brunel Degree in Building Technology. He also initiated the Brunel MSc in Building Services in 1976. It was during his time at Brunel University that John first became involved in the application of theory and engineering principles within the field of water conservation, and he would subsequently recall the extensive laboratory test rigs housed at Brunel that he would come to own as part of his laboratory equipment at Heriot-Watt University. John also began to extend his research, through funding awarded by the World Bank, to underdeveloped regions worldwide. In addition, it was around this time that John first attended the annual symposium of the CIBW62 Working Group. Run by the International Council for Research and Innovation in Building and Construction, Working Group 62 addresses all aspects of water supply and drainage for buildings. John soon became a Scientific Committee member for this group and a stalwart of its annual meetings; indeed, he participated in the latest meeting held in Sydney, Australia in November 2010.

John joined Heriot-Watt in 1985, taking up the William Watson Chair of Building Engineering. Here he also introduced undergraduate and postgraduate Building Services Engineering programmes, and in 1988 became Head of the then Department of Building Engineering and Surveying; a post that he held again from 1995 to 2002. As Dean of Engineering between 1991 and 1993, John also had an impact on the wider University and, to many who worked with him, this cemented the view that when the University restructured in 2002, John was the perfect choice for the role of Head of the School of the Built Environment - a School that combined the Building Engineering and Surveying and Civil Engineering departments at Heriot-Watt and the School of Planning and Housing from the Edinburgh College of Art.

Securing continuous funding (1989–2011) from UK research councils and from government and industrial sources, John was able to firmly establish a research profile that became recognised

worldwide. He pioneered the use of both low-flow sanitary appliances and the application of numerical simulation techniques to assess the performance of building drainage and ventilation systems. Building on the use of the 'method of characteristics' technique, previously applied to large-scale pressure surge problems, John developed techniques to enable the simulation of pressure transients in building drainage ventilation systems and attenuating flows in drainage pipework. Subsequent analysis allowed the introduction of suppression and control strategies. Solutions included those developed in response to the SARS fatalities in Hong Kong in 2003 and a drainage and ventilation solution for the London O₂ Dome, as well as a remote non-invasive depleted trap seal detection system. John strongly believed that the support and guidance of industry colleagues was vital to success, and he established and maintained a number of long-standing stakeholder relationships. He published his research widely, and was recognised internationally as *the* expert in water conservation and drainage engineering.

John was also heavily involved in organisations outside Heriot-Watt. Particularly noteworthy was his significant contribution to Defra's Water Regulations Advisory Committee, a Committee he chaired between 1995 and 2003 and one that was responsible for legislation introduced in 1999 and 2001 that led to major water conservation progress. He was also a member of the Building Regulations Part H and G Working Groups and of the 2006 Office of Science and Innovation (OSI) Review of Science at the Department of Communities and Local Government (CLG). In addition, he was the CIBSE-nominated member of the UK's Research Assessment Exercise Panel for the Built Environment in 1996 and 2001. Within CIBSE, John participated in many committees, including the Education, Training and Membership Committee and the Research Committee. He also chaired the Institution's Accreditation Panel until 2008 and, from 1993 to 2008, the Editorial Panel of the *Building Services Engineering Research and Technology* journal. In addition, between 2002 and 2006, he chaired the editorial board of the *Building Services Journal*. He was delighted to be elected CIBSE President (2007–2008), a time during which he championed "*sound engineering thinking as the basis of all good solutions*". Given his background in water conservation, he was also a strong supporter of CIBSE's Society of Public Health Engineers.

John thoroughly enjoyed living in the city of Edinburgh, and took particular delight in the vibrant atmosphere of the city during the Edinburgh Jazz and Blues Festival; his interest for jazz sitting comfortably alongside that of political and military history and science fiction. His colleagues often commented in jest that he was an honorary Scot, and he was often mistaken by international colleagues as Scottish.

Throughout his academic career, John authored a number of books, many of which became the 'bible' for those working in field. In addition, *Fluid Mechanics* by Douglas, Gasiorek & Swaffield, now in its 6th edition, became hugely popular as an undergraduate standard. John retired from Heriot-Watt in 2008, but retained a part-time research contract, thus freeing up time to complete *Transient Airflow in Building Drainage Systems*, a textbook that drew heavily on the work of John's research group and that he had long sought to pen. John's retirement also allowed him more time to spend with his wife, Jean - time increasingly enjoyed in their cottage in Old Cambus in the Scottish borders.

John was, without doubt, a pioneer in the field of water conservation and the application of numerical modelling techniques to building drainage problems. This led to him being elected a Fellow of the Royal Society of Edinburgh in 2004, and he was appointed Convenor of the RSE's Engineering Sectional Committee from 2008. Throughout his career, one that saw him supervise 21 PhD students, he was generous in his praise of colleagues and never failed to recognise the contribution of those he worked with. He was a man of remarkable knowledge and integrity and was, without exception, much respected.

John is survived by his wife Jean, his daughter Joanna, and his grandchildren Lorenzo and Isabella. John was predeceased, in 2006, by his eldest daughter Toni.

Garry Pender

***John Arthur Swaffield BSc(Bristol), PhD, MPhil(City), MRAS, MCIBSE, FCIWEM, CEng.
Born 4 March 1943; elected FRSE 1 March 2004; died 21 February 2011.***