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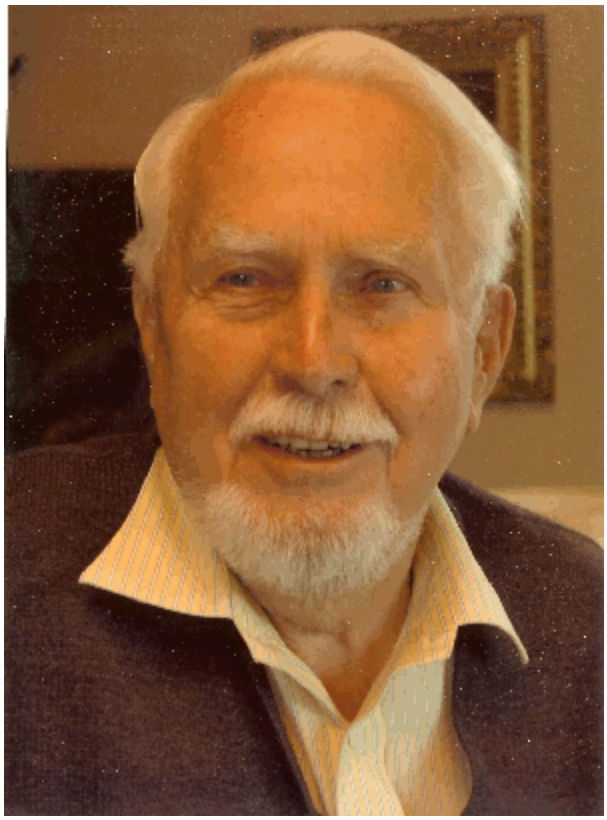
Professor Olgierd (Olek) Cecil Zienkiewicz

CBE, FRS, FREng, FIC, FICE

18th May 1921 - 2nd January 2009



Olek Zienkiewicz was internationally recognised as the leading founder of the Finite Element Method which is a computer based technique that has, since the 1960s, revolutionised design and analysis procedures in civil, mechanical, aerospace and other branches of engineering. Initially, the formulation of the method followed a traditional structural engineering approach but as the underlying mathematical basis became understood its application to other disciplines became possible. As a result, the first non-structural application was undertaken by Olek in the treatment of a groundwater flow problem. From that time the method become widely established and accepted in engineering design and the first industrial use of the technique was made by him for the stress analysis of the Clywedog dam in 1963. The methodology is still a flourishing research topic and its application has considerable potential in new scientific areas, including biomedical engineering and the life sciences.

He was awarded over 30 honorary degrees including ones from Portugal, Ireland,

Belgium, Norway, Sweden, China, Poland, Scotland, Germany, France, England, Italy, Hong Kong, Hungary and the United States. He also received numerous special honours and medals including the Prince Philip Medal of the Royal Academy of Engineering, the Carl Friedrich Gauss Medal of the German Academy of Science, the Nathan Newmark Medal of the American Society of Civil Engineers, the James Ewing Medal of the Institution of Civil Engineers, the Timoshenko Medal of the American Society of Mechanical Engineers and the Newton-Gauss Medal of the International Association for Computational Mechanics.

His series of textbooks, spanning The Finite Element Method in Structural Mechanics, 1967 to the sixth 3-volume edition of The Finite Element Method in 2005, remain the basic source reference books on the subject. He published over 600 scientific papers and in addition to founding the International Journal for Numerical Methods in Engineering, which is the premier journal in the field of finite elements, he was also on the editorial board of 28 other scientific journals.

Olek was born in Caterham, England, son of a Polish father and English mother. His school education took place in Poland, where his father was a judge of the Katowice District Court, and his university career was scheduled to commence at the Warsaw Polytechnic in September 1939. World War II intervened and Olek was involved in the defence of Warsaw. After its fall, he experienced a long and harrowing journey through occupied Europe to Italy which was not yet involved in the war, and then to France where his father joined the free Polish Government in Angers. On the fall of France in 1940, the family left by ship for England and he resumed his education at Imperial College, London where he received his B.Sc. in 1943. Subsequently, he undertook research at Imperial College in the field of finite differences and relaxation methods, under the direction of Sir Richard Southwell, which sparked his future enthusiasm for computational modelling. After receiving his Ph.D. for this work in 1945, he pursued his engineering career during 1945-1949 as senior engineer in Design and Dam Construction with consulting engineers Sir William Halcrow and Partners.

Olek spent the remainder of his career in academic life. Firstly, he became a lecturer at the Department of Engineering, University of Edinburgh (1949-1957) before becoming Professor of Structural and Civil Engineering at Northwestern University, Evanston, Illinois, USA (1957-1961). In 1961 he was appointed Professor and Head of the Department of Civil Engineering, University of Wales Swansea where he created the internationally renowned Institute for Numerical Methods in Engineering. He remained at Swansea until his retirement in 1988 and subsequently became Professor Emeritus of the University of Wales, as well as holding the UNESCO Chair of Numerical Methods in Engineering at the University of Technology of Catalunya, Barcelona for 15 years. He was active almost to the time of his death and was working on the seventh edition of his book.

Olek's stature in the field of finite elements is not only due to his scientific achievements but in no small measure a result of his extraordinary personality. As well as relishing academic debate with his peers, Olek was never happier than when discussing research

issues with younger colleagues. One of his significant strengths was the ability to synthesise a particular research topic, extract the essential theoretical and computational features and to describe the resulting solution algorithms to students in a concise and transparent manner. In this respect, he provided countless engineers and researchers with the incentive and enthusiasm to participate in the exciting field of computational modelling. Over his research career, he supervised some 70 Ph.D. students, many of whom today hold leading positions in academia and industry.

Olek's decision to spend his entire academic career at Swansea was undoubtedly influenced by his love of sailing. Students and research visitors to Swansea were frequently roped in to act as crew, but all competitive instincts during a race would be quickly abandoned if a particularly interesting finite element discussion arose. He was gastronomically adventurous, especially with regard to fungi where his Polish ancestry made him particularly bold, and many friends and colleagues can bear witness to his love of oysters which he consumed in large quantities at every conceivable opportunity. He had an extremely engaging nature and made countless friends during his extensive travels. A particular characteristic was his enquiring mind, which combined with his formidable intellect, ensured that late night discussions after dinner were far ranging and challenging. Olek will be greatly missed by all who had the privilege to know and work with him over his long career.

He is survived by his devoted wife Helen and children Andrew, David and Krysia of whom he was fiercely proud.