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Editorial

This Special Section of *Measurement* is devoted to the memory of Ludwik Finkelstein – a truly giant figure of the history of measurement science and technology – who died in 2011 in London, UK. This introduction is significantly longer than typical editorials for special sections published in *Measurement* in the past since it is important to set the scene for the scientific work described by Ludwik's colleagues with a brief biography of the man himself – his background, his influences, his life and his contributions in so many areas.

Ludwik Finkelstein was born on the 6th December 1929 in the town of Lwów (Poland) into a wealthy and educated Jewish family. After the outbreak of the Second World War, he and his mother were deported by the Soviet authorities to Siberia, and his father was imprisoned in a labour camp. They suffered from cold, hunger and disease, but survived. He used to say that the Siberian experience largely influenced him to become an engineer since as a young boy he had understood that the basic needs of humanity for food, water and shelter were of paramount importance and could not be satisfied without technical means.

In 1941, after the German invasion of the Soviet Union, an agreement was signed by the Polish Government-in-exile (based in London) with the Government of Soviet Union: Stalin agreed to release tens of thousands of Polish prisoners-of-war held in Soviet camps. According to that agreement, the Soviets granted “amnesty” to many Polish citizens, from whom a 75,000-strong army (the Polish II Corps) was formed under General Władysław Anders, and in 1942 – for political reasons – evacuated (in many cases with families) to the Middle East where it joined the British military forces. Ludwik and his mother were released from their place of deportation in 1941, and his father – being an officer of the reserve of the Polish army, joined the Polish II Corps. When the Corps was transferred from the Soviet Union to the Middle East, the Finkelstein family landed in Palestine. During their stay there, Ludwik's mother provided him with some home education, enabling him as a result to obtain a London Matriculation

Certificate. This period of self-study seems to be an important experience for developing an unusual skill to learn various languages. He spoke not only Polish and English, but also Russian, Modern Hebrew, German and French. What was always a pleasant surprise for Poles, after half a century spent in English milieus, he spoke Polish without an Anglo-Saxon accent.

After the war, the Finkelstein family were granted asylum in Great Britain and made their home there. Ludwik studied physics in the Northern Polytechnic, being then an institution of the University of London. He earned there a B.Sc. degree in Pure Mathematics, Applied Mathematics and Physics, and a B.Sc. degree in Physics – both in 1951. Immediately after graduation, he obtained employment as a technical assistant in Electronic Tubes Ltd. where – working on the production floor – he solved problems in the manufacture of electronic tubes. Since this appointment did not offer him sufficiently challenging technical work, he moved after a year to the Mining Research Establishment of the National Coal Board. He worked there first on instrumentation for non-destructive testing and then on the automation of mining machinery. In parallel, he took evening and day release courses in electrical engineering and masters courses on the modelling of transducers at the University of London.

In 1957 he married Mirjam Emma Wiener, the daughter of a well-known historian of Nazism. The young Finkelstein family followed the Jewish tradition, including the celebration of the Shabbat supper on each Friday night. Not only family members, but also colleagues and friends, regardless of their religion, were frequently invited to the Shabbat table. Those who experienced such a meeting with the Finkelstein family have for ever preserved a warm memory of this event. One of the reasons was the unusual personality of the host; as he explained in an interview, his principal leisure interests were always “books, conversation and Jewish studies”. Their three children – Anthony, Daniel, and Tamara – enlarged the Finkelstein family with eight grandchildren.



Ludwik and his wife Mirjam at an IMEKO Symposium in 2008

In 1959 Ludwik received an M.Sc. degree in Physics from University of London, and joined the Northampton College of Advanced Technology which had just initiated a university-level programme in instrumentation and control. As Lecturer and, next, Principal Lecturer in Instrument and Control Engineering, he started to bridge the gap between science and practice by developing measurement and instrumentation as an academic discipline – at that time not a feature of UK scientific or engineering education.

In 1966 the Northampton College of Advanced Technology achieved university status as City University London and, consequently, he seized the opportunity to undertake new research challenges. In 1967 Ludwik was appointed Reader (equivalent to Associate Professor) and was charged with the task of developing research in measurement and instrumentation; three years later he was appointed Professor of Measurement and Instrumentation. He continued to develop measurement and instrumentation as a systematic discipline, with a special emphasis on theory and its application in teaching and solving significant practical problems. The main ideas underlying his methodology were the following:

- to treat measurement as an information process and instruments as information machines,
- to apply to their analysis and design the advancing science of systems and control,
- to use systems engineering for the development of a design-oriented approach to measurement instrumentation.

The mathematical modelling of instruments and biological processes, with application in engineering and medicine, became a core area of his work. He collaborated extensively with other senior staff of City University London – Ewart R. Carson, Faruq Abdullah, Kenneth T.V. Grattan, and Sanowar Khan in particular – as well as with researchers from other academic institutions, such as Delft University of Technology (The Netherlands) or Imperial College (London); in the latter case also with his elder son Anthony Finkelstein. His research work resulted in nearly two hundred publications – including four books [1–4] – as well as in numerous direct industrial applications and scientific degrees awarded to students under his tutorship. In 1989 he received D.Sc. degree in measurement science and technology from City University London, having a few years previ-

ously, in 1985, been elected to the Fellowship of Engineering (now the Royal Academy of Engineering), the UK's national academy of senior engineers.

Much of Ludwik's work was devoted to engineering education in general and to academic management. He was appointed Head of the Department of Systems Science (1975–1980), Head of the Department of Physics (1980–1988), Foundation Dean of the School of Engineering (1988–1993) and Pro-Vice-Chancellor (1991–1994), the latter covering the celebrations of the Centenary of the foundation of the Northampton College (in 1994), the institution of higher education which became City University London in 1966.

Ludwik's organisational activities were not limited to academia. He served for two terms as Vice-President and then President (1980–1981) of the Institute of Measurement and Control – a learned and professional society, being a licenced member of Engineering Council UK, representing professionals engaged in science and the practice of measurement and control. For his extraordinary service to the Institute, he was elected an Honorary Fellow of the Institute, and over a number of years he received the President's Award, the Sir Harold Hartley Medal, and the Tallantire Award.

An important part of his service to the Institute of Measurement and Control was related to International Measurement Confederation (IMEKO), of which the Institute of Measurement and Control is the UK member organisation. Ludwik was, for many years, a member of the IMEKO General Council (1982–2000), Chairman of the IMEKO Technical Committee on Higher Education (1973–1986) and IMEKO Vice-President (1994–1997). He received the Distinguished Service Award of IMEKO for his contribution to the development of the organisation. It is important to note, however, that his contribution to the life and work of IMEKO was much greater than could simply be gathered from the list of his formal functions and roles in this organisation. An important mission of IMEKO before the breakdown of the Soviet bloc – and also sometime after this political transformation of Central and Eastern Europe – was to facilitate professional contacts between academics from that part of Europe with their colleagues in Western countries. Building on his personal history and his excellent interpersonal skills, Ludwik was undoubtedly ideally placed to fulfil this mission. Numerous researchers – mainly from Poland, Lithuania, Ukraine and Russia – benefited from his help in attending IMEKO events or visiting foreign institutions. It should be also mentioned here that John Milner and other colleagues from City University London assisted him in solving organisational problems related to accommodation and to unconvertible money that the guests from Central and Eastern European countries had. Ludwik helped them frequently not only through the material arrangements he made but also by encouragement and advice in their research work.

For nearly 20 years, Ludwik served as Editor-in-Chief of the IMEKO journal *Measurement* (1982–2000). During that time the journal underwent a metamorphosis from a small publication, supported “in-house” by the facilities of the Institute of Measurement and Control, to an internationally-recognised journal it is today. Ludwik fostered and

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