

ZOLTÁN ÉSIK (1951–2016)

IN MEMORIAM

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Our friend and colleague Zoltán Ésik passed away in Reykjavik, Iceland, on Wednesday, 25 May 2016. He was visiting us as he did with some regularity, compatibly with his many engagements throughout the world.

The day before his untimely death, Zoltán had delivered an ICE-TCS seminar entitled *Equational Logic of Fixed Point Operations* at Reykjavik University. At the start of his talk, he looked somewhat tired and out of breath. However, the more he was presenting a research topic that he loved and that has kept him busy for most of his research career, the more he seemed to be feeling at ease. After the talk, we spent some time making plans for mutual visits in the autumn of 2016 and we discussed some EATCS-related matters. His wife Zsuzsa and he were due to spend a few days travelling in the north of Iceland before their return to Szeged, but life had other ideas.

Zoltán was a scientist of the highest calibre and has left behind a large body of deep and seminal work that will keep researchers in theoretical computer science busy for a long time to come. The list of refereed publications available from his web site at <http://www.inf.u-szeged.hu/~ze/classified.pdf> includes two books, 32 edited volumes, 135 journal papers, four book chapters, 86 conference papers and seven papers in other edited volumes. However, impressive as they undoubtedly are, these numbers give only a very partial picture of Zoltán's scientific stature. Together with the late Stephen Bloom, Zoltán was the prime mover in the monumental development of Iteration Theories. As Stephen and Zoltán wrote in the preface of their massive book on the topic, which was published in 1993 by Springer:

Iteration plays a fundamental role in the theory of computation: for example, in the theory of automata, in formal language theory, in the study of formal power series, in the semantics of flowchart algorithms and programming languages, and in circular data type definitions. It is shown that in all structures that have been used as semantical models, the equational properties of the fixed point operation are captured

by the axioms describing iteration theories. These structures include ordered algebras, partial functions, relations, finitary and infinitary regular languages, trees, synchronization trees, 2-categories, and others.

It is truly remarkable that the equational laws satisfied by fixed point operations are essentially the same in a large number of structures used in computer science. Isolating those laws, and showing their applicability, has been one of the goals of Zoltán's scientific life and we trust that the members of our community will keep reading his work on iteration theories, which continued and went from strength to strength after Stephen and he published their 600-page research monograph in 1993. During his last talk in Reykjavik, we asked Zoltán whether he was planning to write a new edition of that book, and half-jokingly told him that it would probably be about 1,200 pages.

Zoltán's research output includes contributions to automata theory, category theory, concurrency theory, formal languages, fuzzy sets and fuzzy logic, graph theory, logic in computer science, logic programming, order theory, semiring theory and universal algebra, amongst others. The breadth of research areas to which he has contributed bears witness to his amazing mathematical powers and to his curiosity. Wherever he went and no matter how long he had travelled to get there, Zoltán's brain was always open.

Zoltán also contributed to the research community with his service work and received several awards. Here we will limit ourselves to mentioning that he was elected member of the Academy of Europe in 2010, was named Fellow of the EATCS in 2016, was a member of the council of the EATCS from 2003 to 2015, and of the Presburger Award Committee in 2015–2016. He represented the Hungarian theoretical computer science community in the International Federation for Information Processing (IFIP) as member of TC1 since 2000 and was one of the prime mover in the establishment of the IFIP WG 1.8, Working Group on Concurrency. He also received the Gy. Farkas Research Award and the K. Rényi Research Award of the János Bolyai Mathematical Society.

Zoltán's appetite for work was phenomenal, but he also liked to have fun, to spend time with friends eating good food and drinking excellent wine, and to travel. Indeed, Zoltán's lust for travel was amazing. We lost track of his visits to myriads of research institutions and universities all over the world. He attended conferences in the most remote locations and always made sure that he would reserve some time for enjoying the most beautiful and known sites. At times, we had the feeling that he had been everywhere in the world.

Despite being often on the move, Zoltán was very much a family man. He was very proud of his wife Zsuzsanna, their daughter Eszter and their son Robert. He always told us about the latest developments in their lives and was happy about

his four grandchildren. We had the pleasure of enjoying Zsuzsanna and Zoltán's exquisite hospitality both in Szeged and in their summer home on Lake Balaton.

Zoltán was very loyal to his friends and would make trips to see them wherever they were living. We were lucky to be amongst them and had the pleasure of hosting him in Aalborg, Florence and Reykjavik, where he visited us a few times and where the thread of his life was cut. We will miss the time we spent doing research or relaxing together, his sense of humour, his conviviality and his hospitality.