SPECIAL ISSUE DEDICATED TO IVAN KRAMOSIL

Editorial by Dagmar Harmancová and Radim Jiroušek

In this special issue, the authors of the contributions presented here would like to honour the memory of the late Ivan Kramosil, who passed away two years ago (June, 2013). He was a senior research fellow at the Academy of Sciences of the Czech Republic, first at the Institute of Information Theory and Automation and later at the Institute of Computer Science, and the President Emeritus of the Czech Society for Cybernetics and Informatics. The wide variety of papers included in this issue fully corresponds with the extent of Ivan's professional interests. As it can be seen from his abundant bibliography[1], he contributed to the development of several fields of mathematical informatics, especially to the theories for uncertainty processing, like probability, rough set, and possibility theories.

We are especially happy that we could also include the last paper by Ivan Kramosil in this issue, on *Several results on set-valued possibilistic distributions*, on which he was working in late spring 2013. In a way, the article, which was eventually finished by Milan Daniel, expresses Kramosil's interests of his later years. In this paper, he generalizes probability theory by considering non-numerical values of probability assigned to random events. It enables the users to describe uncertainties for which the classical conditions like additivity or linear ordering of values are too restrictive.

In fact, words like *generalizations* and *extensions* appear in quite a number of the titles of Kramosil's articles. For example, he wrote a couple of papers on the generalization of belief functions. This is why we are also pleased to include the paper by Jiří Vomlel entitled *Generalizations of the noisy-or model* in this issue. We do it, as not only would the concept of generalization be interesting for Ivan, but the paper also deals with logic-based models, and mathematical logic is the field into which Ivan Kramosil extended his research interests upon graduating from Charles University, Faculty of Mathematics and Physics in the field of probability theory and statistics (1965). The interest in probability logic also explains the connection of Ivan Kramosil and Gernot D. Kleiter, who contributed to this issue with an article on *Modeling biased information seeking with second order probability distributions*.

We recall that after his graduation Ivan Kramosil joined the Institute of Information Theory and Automation (at that time at the Czechoslovak Academy of Sciences), and

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[1]For Ivan Kramosil's complete bibliography see
http://www.ustavinformatiky.cz/?id_jazyk=cs&id_stranky=publikace

started his research, as he often used to say, strongly influenced by the research and results achieved by Antonín Špaček. Nevertheless, it would not be him if he did not look for other mathematical fields where he could employ his broad and deep mathematical education. As we said above, first it was logic, where he studied statistical approaches to theorem proving, probabilistic algorithms, or statistical estimates of deducibility in Polyadic algebras among others. The statistical and probabilistic stages of his scientific life are in this issue recollected by a paper *Thin and heavy tails in stochastic programming* by Vlasta Kaňková and Michal Houda, and by an article *On computations with causal compositional models* by Vladislav Bína a Radim Jiroušek, respectively. In the 1980s Ivan became fully engaged by new alternative theories of uncertainty like fuzzy approach, rough sets and possibility theory. He was a regular contributor to journals like *Fuzzy Sets and Systems*, *International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems*, *International Journal of General Systems*, and, naturally also to *Kybernetika*. Correspondingly, he also became a regular attendee to uncertainty conferences like IFSA, IPMU, WUPES, ESQUARU, and others.

The selection of the remaining papers appearing in this issue corresponds to the main orientation of Ivan Kramosil's papers in the last decade. Unfortunately, we do not have a paper on rough sets theory, but almost all other fields are covered by a representative. Cyril Klimeš and Jiří Bartoš deal with the fuzzy approach; they describe an application of a fuzzy system in their paper on *IT/IS security management with uncertain information*. The papers *On decision-making in possibility theory* by Jiřina Vejnarová and *Rationality principles for preferences on belief functions* by Giulianella Coletti, Davide Petturiti and Barbara Vantaggi express in their titles that they are included to recall that Ivan Kramosil also contributed to the development of possibility and belief function theories. And, finally, the inclusion of the paper *Choquet-like integrals with respect to level-dependent capacities and ϕ-ordinal sums of aggregation function* by Radko Mesiar and Peter Smrek stresses the fact that Ivan Kramosil was always interested in deep theoretical (and abstract) issues of the approaches studied.

There is no other way to conclude this editorial than to express our gratitude. First, not only do we want to thank all the contributors whose papers appear in this special issue, but also all the referee's, who considerably helped to increase their quality and legibility. And above all, we want to thank Ivan Kramosil for the privilege that we could spend such a long and fruitful cooperation with him, and that he was not only our colleague, but a real friend. Thank you Ivan.

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