Kybernetika

Lubomír Kubáček

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RNDr. Štefan Šujan, CSc., senior research scientist of the Institute of Measurement and Measuring Engineering of the Electro-Physical Research Centre of the Slovak Academy of Sciences, suddenly died on 19 January 1985 at the age of thirty seven. The mathematical community lost an outstanding worker, his colleagues a reliable friend.

Štefan Šujan was born in Bratislava on 11 May 1947 in the family of a railway official. After completing the required studies in the Czechoslovak school system in 1965, he entered the Faculty of Natural Science of Comenius University in Bratislava. He specialized in probability theory and mathematical statistics. His diploma thesis entitled "Nonparametric statistical inferences" was written at the Mathematical Institute of the Hungarian Academy of Sciences in Budapest under the direction of Prof. Dr. I. Vincze. After passing his final examinations at the Faculty of Natural Science of Comenius University in 1970 he began to study mathematical problems of measurement theory as a research assistant at the department of theoretical methods of the Institute of Measurement and Measuring Engineering. From 1971 to 1976 he was a part-time research student at the Institute of Information Theory and Automation of the Czechoslovak Academy of Sciences in Prague under the guidance of associate professor RNDr. K. Winkelbauer, DrSc., a leading scientific researcher of this Institute. During his studies in Prague he centered his interest on the study of information theory (i.e. mainly problems of coding) and ergodic theory. In 1974 he took the first degree Rerum naturalium doctor (RNDr.) at Comenius University. In 1977 he was awarded the Ph. D. (CSc.) degree at the Institute of Information Theory and Automation. The title of his dissertation was "Quantitative characteristics of additive information sources". In the same

year he won the first prize of the Slovak Mathematical Society in a competition of young mathematicians.

Up until his departure to the Joint Institute for Nuclear Research in Dubna, Soviet Union, in 1983, he performed research in information theory and mathematical biology taught courses at Comenius University (where he was untiring in helping the students in their various problems), prepared many research seminars and engaged in many other activities.

Dr. Šujan's outstanding research work has achieved high acknowledgement not only in Czechoslovakia, but also abroad. Professor John C. Kieffer from University of Missouri, Tolla, USA, has summarized his merits in the field of information theory as follows:

"Štefan Šujan's principal interest was coding theorems for abstract sources and channels, and related coding theorems of ergodic theory. There have been very few workers in this area, but several of them have been from Czechoslovakia (for example, Nedoma, Winkelbauer, and, more recently, Šujan). My initial interest in this area occurred as the result of reading papers, many by Czechoslovakian mathematicians, which appeared in the Transactions of some of the early Prague conferences on Information theory.

Although Dr. Šujan's life was tragically short, he was able to make several important contributions to this area, some of which I shall now mention. He obtained coding theorems for some types of channels with finitely many ergodic, asymptotically mean stationary components [1], [2], thereby extending results of Fontana, Gray, and Kieffer. He obtained a coding theorem for the transmission of a stationary, nonergodic information source over an infinite-alphabet weakly continuous channel, [3], [4], building upon work of Kieffer. He generalized the Ornstein isomorphism theorem from the case of a stationary, ergodic finitely determined process to the case of a stationary, nonergodic process with finitely determined ergodic components [4] (awarded from the Czech Fund for Literature as the best paper published

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in volume *17* (1982) of the journal Kybernetika) and he generalized the Thouvenot relative isomorphism theorem from the case of a stationary, ergodic relatively finitely determined pair process to the case of a stationary, non-ergodic pair process with relatively finitely determined ergodic components [5]. On the topic of generator theorems, he extended the Kolmogorov generator theorem from the case of a single measure-preserving transformation to the case of an Abelian group of measure-preserving transformations, [6], and he extended Krieger's generator theorem from the case of a single measure-preserving transformation to the case of an amenable group of measure-preserving transformations, [7].

Dr. Šujan had an abiding interest in making the beauties of his interesting research area better known among the mathematical community at large. His fine survey paper [8] is one effort in this regard. Also, at the time of his death, Dr. Šujan was working upon a monograph in the area".

Apart from everything else Štefan Šujan was also an enthusiastic sportsman. In the years 1972—73 he was even a member of the Czechoslovak national representation team in orientation running.

His fellow-workers liked him, as he was completely unselfish, always ready to offer quick and efficient help to anybody who needed it. He was a careful husband and father of his two children.

In spite of his youth he accomplished an impressive amount of work: More than thirty scientific papers, two monographs, six contributions to proceeding of various symposiums, five extensive technical reports and several not yet published manuscripts.

The full list of Dr. Šujan's papers will be published in the next volume of Kybernetika.

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[1] Š. Šujan: Channels with additive asymptotically mean stationary noise. Kybernetika *17* (1981), 1—15.
[2] Š. Šujan: On the capacity of asymptotically mean stationary channels. Kybernetika *17* (1981), 222—233.
[3] Š. Šujan: Continuity and quantization of channels with infinite alphabets. Kybernetika *17* (1981), 415—478.
[4] Š. Šujan: A local structure of stationary perfectly noiseless codes between stationary non-ergodic sources. Part I: General Considerations, Part II: Applications. Kybernetika *18* (1982), 361—375 (Part I), 465—484 (Part II).
[5] Š. Šujan: A local structure of stationary perfectly noiseless codes between stationary non-ergodic sources. Part III: Relative isomorphism of non-ergodic transformations. Kybernetika *21* (1985), 134—147.
[6] Š. Šujan: Generators of an Abelian group of invertible measure-preserving transformations. Monaths. für Math. *90* (1980), 67—79.
[7] Š. Šujan: Generators for amenable group actions. Monatsh. für Math. *95* (1983), 67—79.
[8] Š. Šujan: Ergodic theory, entropy, and coding problems of information theory. Kybernetika *19* (1983), 1—66.