BOOK REVIEW

Advances in Economics and Optimization: Collected Scientific Papers Dedicated to the Memory of L. V. Kantorovich

Editors: Leon A. Petrosyan, Joseph V. Romanovsky, and David Wing-kay Yeung (SRS Consortium, Hong Kong Shue Yan University, North Point, Hong Kong and others)

The book is devoted to the outstanding Soviet scientist Leonid Kantorovich (1912-1986) — well known Russian mathematician and economist. Nowadays he is known mainly by his works in application of mathematics to economics, started in 1939 and marked in 1975 by memorial Nobel prize in economics (together with American economist Tjalling Koopmans). But mathematicians of 1930-1950 knew Kantorovich well as a young mathematician who wrote many important articles and several books on functional analysis and numerical mathematics (just before the Age of Computers). A long time he lived in Leningrad, then in Academgorodok of Novosibirsk, and the last part of his life in Moscow where he made attempts to make the top management stuff of the country more competent.

The book contains an editorial paper "The Life and Science of Leonid V. Kantorovich (1912–2012)" with several small illustrations.

The research papers are arranged in several parts. The jubilee part contains review of some important research fields, Russian and international (mainly in applications of mathematics and economics)

Part I — the papers related with the centenary

Several papers are devoted to Kantorovich centenary. The general view to Kantorovich approach to optimization in Economics was described by V. Makarov, director of Central Econom.-Math. Institute of RAN. The chapters show the development of mathematical researches (A. Vershik) and practical applications (in the Soviet Union and Russia, V. Livchits et al) of the famous transportation problem, the Russian development of stock cutting problems (A. Filippova and Ju. Valiakhmedova, Ufa), The applications of Kantorovich ideas in a specific region of Karelia, mainly oriented to domestic need were presented by our colleagues from Petrozavodsk University (A. Voronin and V. Kuznetsov).

Part II -- Games and related topics

A significant part of the book is devoted to game theory, which is considered now as a valuable part of mathematical economics. New statements of game problems were described in the paper of F. Szidarovszky et al (Dynamic oligopolies and Time Delay) and D. Yeung and L. Petrosyan (Dynamic Game of Pollution Management). N. Naumova described her researches on axiomatic description of games schemes of fair division in game situations, including so-called principle of maximal weighted entropy. These researches started in Leningrad, USSR (now St. Petersburg, Russia) by L. Bregman. The paper by Bregman himself is devoted to column-generation method in some non-cooperative games. One more game-theoretic research is presented by T. Abramovskaya, who described the advances in search games on graphs, developed by her late teacher Nikolaj Petrov and his team. The paper by A. Prasolov "Supply Chain System based on Pareto Optimality" is connected with games by the Pareto principle.

Part III. Optimization Techniques

The remainder of the book consists of several researches in mathematical economics describing various new approaches to optimization problems. Thus V. Shmyrev developed for problems of economic equilibrium a new idea of polyhedral complementarity. V. Fedorov and L. Losin, who worked many years with problems of mathematical planning of city development, proposed "Pre-Network Level Planning of a Large City". N. Krivulin presented the state-of-art in the so called "Tropical Optimization Problems". J. Romanovsky proposed an idea of processes for partial enumeration of suboptimal solutions in discrete optimization problems. The remaining paper by G. Shepelev and V. Zhiyanov describes the last years of Kantorovich's works in the Moscow part of his life.

Auditorium of the Book

As it was said in the abstract of editors, "the volume is an advanced research source in the fields of economics, optimization methodology and their interface. Its intended readers include academics, researchers, post-graduate students, policy-makers and business planners."

Review provided by Vladimir Mazalov