Polysystem Analysis and Synthesis

The application in geography

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UDC 167:510:910
BBK 22.172 (Russian version)

Polysystem analysis and synthesis. The application in geography. / A.K. Cherkashin. Russian version of the book published by Nauka Publishing Enterprise at Siberian Branch of Russian Academy of Sciences, Novosibirsk. 1997.

ISBN 5-02-030607-X (in Russian)

The subject of the book is to develop a general methodology of a complex object (the Earth and peculiar to it phenomena and processes) exploration from various aspects (view points), in various system projections using the polysystem methodology, that arise from the contradiction analysis logic, the notions and the laws of General Theory of Systems in an author's interpretation, as well as from nowadays mathematical paradigm of multidimension fibered spaces [bundles]. For each scientific view [projection] an axiomatic theory is being developed. The theory describes in a special system language [and in a through way] natural, economic, social structures and their changes. About 20 theoretical directions were highlighted, which reflect various aspects of geographical phenomena investigation of various scales, structuring existing knowledge and allowing to obtain new explanation to [the] facts. A short analysis of the conceptual basis is presented for the directions, used mathematical formalism and tools are introduced, the arrived conclusions are illustrates by examples.

The book could be of interest to the researchers of various scientific fields, which are interested in exploration of theoretical knowledge formation foundations and development of a system methodology for concrete problem solving [investigation].

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The Russian version of the book was published with support of
Russian Foundation of Fundamental Research,
Grant No. 93-05-14076
"The theory and methods of polysystem analysis".
Grant No 96-05-64727
"Geoinformation processes: research and modeling".

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Preface

A peculiarity of the studies of the holistic picture of the nature had been elaborated as the logical foundation by XIX-th century (A. Humboldt (?), V. Dokuchaev and others): a whole visual identity of an uncertain [?unsystem?] form [corresponded] to a [representation] of natural objects as "many–in–one" had been used for interpretation the nature patterns [relation, relationships]. As the identities was visual, they were mapped; as they corresponded to concrete phenomena, they were interpreted [via] natural components and causalities. This contributed to sectoral [industrial] branches of geography. Expectations to determination and description of the universal relationship of the phenomena and their object subordination were entrusted to the theoretical basis if the classical landscape science ([beginning–middle] of XX–th century). The notions ontologisation started providing the integrity of perception, resulting in prompt establishment [formation] of the nowadays geography, in particular, the research method for new facts acquisition and scientific conclusions verification. This gave the concrete results characterizing natural and social–economic formations in a new fashion, for example, in the zonal concept. The advance realized the necessary foundation to shift major geographical interpretations from the intuitive ranks to the rank of more precise ones.

In recent years, thanks to a number of objective reasons geography promptly switched from visual observations and generalizations to scientifically organized research in controllable environments. It adopts and develops methodological approaches based on contemporary instruments and new technologies for solving complex geographical problems. Various structures of geographical objects are involved in effects. The essence of the involvements is to be understood. How they should be analyzed? — As different independent structures followed by their causalities studies, or as whole straight away. Overcoming inertia of intrageographical way of reasoning, a general scientific approach to theory and practice of the complex objects operations have to be developed. A trend is forming that imposes heavy demands to geography metatheory. It recognized disparity [contradictions] epistemological principles and new facts, that almost resulted in discrediting the naive epistemological foundation of classical geography. The known discontentment to its postulates and

the necessity perception of their replacement are the outcome of [the trend] as well.

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