Book Reviews

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Book Review Editor

KUZNETSOV, Vladimir. **The concept and its structures: a methodological analysis** (in Russian). Kiev : Institute of Philosophy, National Academy of Sciences of Ukraine, 1997. 237 p. ISBN 966-7234-05-3.

Among many important issues in the philosophy of language and cognition, some are essentially of an "iterated" (or "self-referential") character. A paradigmatic example of this kind of problem is that of "meaning of meaning" (see, e.g. [8], [9]). Another topic so representable can be identified by the phrase "concept of concept" [4]. The latter topic now constitutes a broad field of multidisciplinary research, with extensive studies from various standpoints. There is an immense literature dealing with the question: what is a concept?, and thus trying to provide the reader with a clear and intelligible concept of concept. Therefore, it is by no means unproblematic for any author approaching the topic to find his own perspective in this diversity of positions. It is a pleasure for this reviewer to observe that Kuznetsov succeeds both in presenting a careful and comprehensive overview of some of the most typical treatments of the problem of concept, and in developing his own highly original and promising approach to concept modelling, the "triplet approach".

The book consists of two parts, preceded by a short introduction which is nevertheless important for understanding the author's position. Kuznetsov explicates concept analysis as constituting the general subject matter of the philosophy and methodology of science. He thus reinforces the importance of an "abstract modelling" of concepts as the basic tool for their study. Kuznetsov describes briefly several models constructed by various authors (notably Achinstein, Thagard, Schock, Peterson, Wierzbicka, Dahlberg, and others) with the help of specific methods of logic, linguistics, computer science, etc. Having pointed out certain limitations of these models, he sets out on the ambitious task of elaborating a general meta-model of concept which should include all specific models as particular cases (p. 6). The rest of the book displays the author's attempt to complete this challenging task.

The first part of the book is theoretical. The author remarks that concepts have been considered by a variety of disciplines: philosophy, logic, general psychology, linguistics, informatics, conceptual analysis, classification theory, artificial intelligence and cognitive psychology. He distinguishes and characterizes briefly three general paradigms in multidisciplinary concept studies: the identificational, the process-based, and the regulative. Within every paradigm, he consequently discriminates between two major versions of it (holistic versus component) as well as between two of its main interpretations (static versus dynamic). Then, he gives a comparative review of various definitions of the term "concept" as they appear in the literature. This survey is rather impressive and might be of great use to a reader, accomplishing in effect an encyclopaedic purpose: more than 65 definitions from quite different sources — common knowledge, linguistics, informal and formal logic, mathematical logic, philosophy, psychology, cognitive psychology, informatics and AI — are collected and systematised here (p. 20-38). Unfortunately, the author does not clarify explicitly his criteria for selecting this or that definition; therefore, the selection will leave a slightly eclectic impression. Moreover, one can wonder why, in his references to the logical definitions of concept, the author does not mention Gottlob Frege whose groundbreaking papers 'Über Sinn und Bedeutung' [5] and 'Über Begriff und Gegenstand' [6] laid the foundations for the study of concepts in modern logic. Indeed, the author describes the definition of concept given by A. Church in his famous "Introduction" to *Introduction to Mathematical Logic* [3], not mentioning the fact that Church only reproduces and develops the Fregean theory. Remarkably, Kuznetsov does not propose his own

definition of the concept of concept; this is fully consistent with the methodological position adopted in the book. According to this position, the solution to the problem of defining and characterizing the concept of concept should be achieved not by way of introducing another definition, but by constructing the universal meta-model of the concept (see above). To introduce his reader to the basic ideas and principles of such construction, Kuznetsov first carefully describes his understanding of the model-theoretic approach, as well as what he calls "methodological tools of concept analysis". He points to the "model scheme of reasoning" as playing the most important role among these tools. Then, on pages 82-105, which constitute the core of the book, he formulates a quite general construction called the "triplet model of concept". For every concept **C**, its triplet model is a structure $< B(\mathbf{C}), L(\mathbf{C}), R(\mathbf{C}) >$, where $B(\mathbf{C})$ is the base of **C**, $R(\mathbf{C})$ is its representation, and $L(\mathbf{C})$ the linkage between the two. Roughly speaking, the base of a concept is the set of all entities that fall under the concept taken together with all the properties and relations associated with them. The representation of a concept always makes use of some language, thus being a system of some linguistic (in a broad sense) structures that represent (or express) the concept in the "consciousness of an agent" ("bearer of information"). The linkage is a collection of certain methodological procedures that somehow connect the base and the representation (it can be a naming relation, a convention, a measure, a calculation, etc.). Kuznetsov employs an advanced set-theoretic machinery to explicate the components of his model in a precise manner. Specifically, he invokes a theory of named sets and abstract properties (see, e.g. [1] and [2]), and this allows him to characterize the base and the representation in the triplet model as scales.

The proposed triplet model appears very promising. In the second, applied, part of the book, the author demonstrates potential uses of the triplet approach. He suggests detailed triplet descriptions of a mental and a communicative "hypostases" of concept. As a mental phenomenon, a concept includes entities given to an agent by sense organs (the base), mental "gestalts" and descriptions of these entities (the representation), and certain neuro-psychic structures acting as mediators between the base and the representation (the linkage). As a communicative structure, a concept can be explicated through its extension and intension (the base), as well as by specific reports, descriptions and interpretations (the representation) which turn out to be closely connected "by certain regular processes", the linkage (p. 126). Kuznetsov shows that the triplet model offers a unified approach to the classification of concepts by providing general criteria for such a classification. These criteria are subdivided into three major groups: one for the base, one for the representation, one for the linkage. Kuznetsov also explains how various specific concept models (logical, cognitive, psychological, informational and others) appear to be particular cases (specifications) of his triplet model. Because of that, he can argue that the triplet model can serve perfectly well as the required general meta-model of the concept (see above). The book concludes with a detailed historico-scientific reconstruction of the concept "Planet". This reconstruction is in itself an interesting example of the successful application of the triplet approach to the analysis of a particular concept with a long scientific history.

This work is without a doubt a valuable contribution to the interdisciplinary study of the concept of concept. It is clear in purpose, antecedents, and execution. The author uses a well-elaborated system of graphic and symbolic conventions which greatly facilitate the reading. To a large extent, the material is summarised in compact and observable tables. It is worth mentioning that some key ideas of this book were presented to English readers in Kuznetstov's article 'On the Triplet Frame for Concept Analysis' [7]. Nevertheless, it can only be recommended that this work be translated into English, so as to make its content accessible to the international scientific community.

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Saving the time of the library user through subject access innovation : Papers in honor of Pauline Atherton Cochrane. Ed. by William J. Wheeler. Champaign, IL : Graduate School of Library and Information Science, University of Illinois, 2000. 217 p. ISBN 0-87845-108-0 (pbk.)

Introduction

This collection of essays was published on the occasion of Pauline Atherton Cochrane's seventieth birthday, to celebrate her fifty years of dedication to the field of library and information science. The authors, Professor Cochrane's collaborators or former students, are among the most eminent in our field.

In his introduction, editor William J. Wheeler sets the tone for what will follow. His description of Pauline's contribution to the improvement of subject access to information through cataloguing, indexing and abstracting, is an admiring tribute to the different facets of an exceptional personality. Wheeler emphasizes her human, intellectual and pedagogical qualities, her ability to wed theory and practice, and to recognize in her teaching the enormous potentialities of computerization while respecting the human contribution. He notes her wealth of contacts, her implication in the work of committees dealing with the most current subjects, and of course her professionalism which she has impressed upon her students. Marcia J. Bates adds the testimony of a researcher who, at the beginning of her own career, found in Pauline a model and a mentor in the particularly un-welcoming male world of the time. Her testimony increases this touch of rather rare warm humanity in the world of academic publishing, and it predisposes the reader to an attentive reading.

The eight authors are, in order of appearance of their text: Robert Fugmann, Bjorn Tel, Donald King, Raya Fidel, Linda Smith, Karen Drabenstott, Vinh-The Lam and Eric H. Johnson. Each one of them obviously enjoys this opportunity to quote from Pauline Atherton Cochrane's seminal works. Professor Cochrane's curriculum vitae, which appears just before the index compiled by Sandra Roe, allows the reader to measure the diversity and wealth of her realizations.

Analysis

The following review is structured around this reviewer's personal favourites, associations of ideas, and own interests.

Robert Fugmann's text, by its density, the length of its bibliography, and the depth of its reflections on the absolute importance of quality in an indexing language and of rigour in its use by indexers, would deserve its own critical review. In "Obstacles to progress in mechanized subject access and the necessity of a paradigm change", Fugmann describes at length the obstacles that need to be overcome if quality access to documents is to be provided: the dominance of the positivist perspective in information science, as illustrated by experiments of the Cranfield type, the false law of an inverse relation between recall and precision, the inadequacy of the criteria of consistency and multiplicity of access points (which should be replaced by that of predictability of concept representation), and the reluctance to consider the evolutionary character of information systems. Fugmann summarizes faults which he has denounced several times already: the lack of categorization and structure in the vocabulary, the absence of notation for non lexicalized concepts, and the syntactical gaps present in most documentary languages (a lot could be learned from the practice of back-of-the- book indexing). While he recognizes the importance of involving users in system design and maintenance, he warns against some of their evaluations and of their preferences. His scepticism with regard to the mechanization of cognitive