176

Knowl. Org. 26(1999)No.3
Book Reviews

introduced as language-oriented structures of a logic designed for knowledge representation and processing) are mathematized where the concepts of conceptual graphs (formal judgments) are made precise as formal concepts of formal contexts. In this way, concept graphs are obtained as mathematical entities based on formal contexts with additional relations on their object sets. The theory presented defines first a syntax which allows the introduction of concept graphs as syntactical constructs of a formal language formed by object names, concept names, and relation names. Semantically, these constructs are interpreted in formal contexts by assigning the object names to objects, the concepts names to formal concepts and the relation names to relations of the formal chosen context. In this way, it is possible to define when a concept graph (formal judgment) is valid in a contextual model.

The semantic entailment, which is not sufficiently developed in Sowa=s Theory of Conceptual Graphs, can now be described satisfactorily: a concept graph entails another concept graph if the second graph is valid in any contextual model whenever the first graph is valid in this model. For the entailment between concept graphs, the following theorem is basic: a concept graph entails another concept graph if and only if the second graph is valid in the standard model of the first concept graph (the standard model is introduced for each concept graph). Such reasoning with standard models is the main aid for proving the completeness theorem for simple concept graphs with respect to a calculus of syntactical deduction which is taken from the Theory of Conceptual Graphs in an improved form. Soundness and completeness are also demonstrated for existential and nested concept graphs; this covers to a large extent Chapters 4 and 5 of Part II.

Besides many further theorems, which enrich and consolidate the theory of concept graphs as a useful mathematization of the doctrine of judgments, the dissertation achieves sound and theoretically fruitful formalizations suitable for a stimulating foundation of a theory of formal judgments. For instance, existential quantifiers are appropriately introduced as equivalence classes of generic markers following the ideas of J. Sowa, who adapted for his approach the theory of existential graphs of Ch. S. Peirce. The dissertation also yields a convincing solution to the difficult problem of mathematizing (positive) nested conceptual graphs, which even leads to a completeness theorem. For the solution, ideas of situation semantics of J. Barwise and K. Devlin are activated.

In the concluding Part III, the developed theory of concept graphs is discussed and assessed with respect to the aim of supporting knowledge processing by the presented formalization of the doctrine of judgments. The critical summary is very helpful for an integrated understanding of the created theory in its connections to the aims and the pragmatic-philosophical background. The discussion of the theory of concept graphs as a basis for knowledge processing (with an outlook to further research) makes it especially clear that the ambitious goal of the dissertation to restructure mathematical logic, by developing a contextual judgment logic based on concept graphs for supporting knowledge processing, has been impressively fulfilled.

Rudolph Wille

Prof. Dr. Rudolph Wille, Fachbereich Mathematik, Arbeitsgruppe 1, Schlobgartenstrabe 7, 64289 Darmstadt, Germany, e-mail: wille@mathematik.tu-darmstadt.de

Subject headings for children : a list of subject headings used by the Library of Congress, with abridged Dewey numbers added. Edited by Lois Winkel. 2nd ed. Albany. N.Y. : Forest Press/OCLC, 1998. 2 v. (xiii, 179p., VIII. 416 p; contents: v.1 List of headings - v.2 Keyword index. ISBN 0 - 910608-58-X set (Pbk).

Subject cataloguing of children's material is an interesting and dynamically growing and changing area, and this is mostly due to the work of the Library of Congress (LC). A special list of subject headings for children's literature was developed by LC. In 1965, LC initiated the Annotated Card (AC) Programme for children's materials with the purpose of providing more appropriate and extensive subject headings for juvenile books through modifications of the scope and wording of existing headings. Of course, more headings were added. This separate list entitled *Subject Headings for Children Literature* was first published in 1969. On the suggestion of the Cataloguing of Children's Materials Committee of the ALA, many of the headings from *Subject Headings for Children's Literature* (Library of Congress) have been incorporated into the *Sears List of Subject headings* since its 13th edition (1986). The *Sears List* is thus now suitable both for juvenile literature as well as for small libraries.

The work under review is another worthwhile effort. Its second edition speaks of its usefulness as well as of the growing nature of the field. Lois Winkel's work provides an augmented and separate list based on literary warrant. The list was prepared by searching the OCLC union catalogue *WorldCat* for subject headings used in the LC Annotated Card Programme (AC) and *Subject Headings for Children's Literature* (MARC field 6xx, Second indicator set to one). The list thus obtained was rigorously reviewed and reduced by deleting many headings falling out of the chosen criteria of currency and literary warrant. More headings were also added. In this edition, the

Knowl. Org. 26(1999)No.3
Book Reviews

177

total number of headings is over 20 000, 5 000 more than in the previous edition (1994).

Volume One provides a simple alphabetical list of subject headings printed in boldface. A few headings such as „Art, modern" remain inverted, but most of them are in direct, natural order. There are no „see" or „see also" references to be made for the public catalogue as these could make catalogues complex for use by children. It is unfortunate, however, that no relationships have been established between headings for the benefit of the cataloguer; for example, „Dolphins" and „River dolphins" are not connected in any way in this list. There is no separate section grouping common subdivisions: all headings, with or without subdivisions, are listed. Headings are divided on the basis of their bibliographic form, literary form, topic, geographic place and by time period:

    Criminal investigation – Dictionaries
    Historical geography – Maps
    Vocational guidance for the handicapped – Bibliography
    Handicraft – History
    Handicraft – India
    Jungle animals – Fiction.
    Jungle animals – Poetry
    Art, Modern —17th century
    Art, Modern – 18th century
    Iran-Iraq War, 1980-1988.

Abridged DDC-13 (1997) class numbers have been added to the headings, as most children libraries use this edition of the Dewey Decimal Classification. Fiction has been given a non numerical locator „Fic", and the biographies have been given a locator „B" in addition to two other class numbers:

Grief	152.4
Grief- Fiction	Fic
Shipwrecks – Fiction	Fic
Navy. Calyn	510.92; B; 92

The class numbers for literary works are for American literature:

Fairies – Poetry	811
Cats – Drama	812
Cats – Fiction	Fic

Volume Two is a keyword index. It enumerates all keywords as well as the lead terms in phrasal or subdivided headings. Under keyword "Equations", we find:

    Chemical equations – Software
    Equations – Software

The first heading „Chemical equations – Software" is also accessible under „Chemical" in the same index. The index is the only device available to collocate related headings, and it must be consulted first. In the index, keywords are printed in boldface. The alphabetical arrangement in both volumes follows ALA word-by-word filing rules.

The list is simple and up-to-date. The work is heavily „American", and voluntarily so. Yet, other countries can use it as a model, adapt it, and integrate subject headings appropriate to their literature and culture. In a future edition, the addition of a list of some key/model headings for the use of other than American users should be considered. It is also suggested that the main list in Volume One be arranged in some other systematic or classified fashion, as Volume Two provides comprehensive and augmented alphabetical access.

M.P. Satija

M.P. Satija, GND University, Amritsar, 143 005, India, email: dcse_gndu@yahoo.com