

Knowledge Organization

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Devoted to Concept Theory, Classification, Indexing, and Knowledge Representation

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Contents pages

Mazzocchi, Fulvio, Tiberi, Melissa, De Santis, Barbara, and Plini, Paolo. **Relational Semantics in Thesauri: An Overview and Some Remarks at Theoretical and Practical Levels.** *Knowledge Organization*, 34(4), 196-213. 39 references.

ABSTRACT: A thesaurus is a controlled vocabulary designed to allow for effective information retrieval. It consists of different kinds of semantic relationships, with the aim of guiding users to the choice of the most suitable index and search terms for expressing a certain concept. The relational semantics of a thesaurus deal with methods to connect terms with related meanings and are intended to enhance information recall capabilities. In this paper, focused on hierarchical relations, different aspects of the relational semantics of thesauri, and among them the possibility of developing richer structures, are analyzed. Thesauri are viewed as semantic tools providing, for operational purposes, the representation of the meaning of the terms. The paper stresses how theories of semantics, holding different perspectives about the nature of meaning and how it is represented, affect the design of the relational semantics of thesauri. The need for tools capable of representing the complexity of knowledge and of the semantics of terms as it occurs in the literature of their respective subject fields is advocated. It is underlined how this would contribute to improving the retrieval of information. To achieve this goal, even though in a preliminary manner, we explore the possibility of setting against the framework of thesaurus design the notions of language games and hermeneutic horizon.

Trentin, Guglielmo. **Graphic Tools for Knowledge Representation and Informal Problem-Based Learning in Professional Online Communities.** *Knowledge Organization*, 34(4), 215-226. 24 references.

ABSTRACT: The use of graphical representations is very common in information technology and engineering. Although these same tools could be applied effectively in other areas, they are not used because they are hardly known or are completely unheard of. This article aims to discuss the results of the experimentation carried out on graphical approaches to knowledge representation during research, analysis and problem-solving in the health care sector. The experimentation was carried out on conceptual

mapping and Petri Nets, developed collaboratively online with the aid of the CMapTool and WoPeD graphic applications. Two distinct professional communities have been involved in the research, both pertaining to the Local Health Units in Tuscany. One community is made up of head physicians and health care managers whilst the other is formed by technical staff from the Department of Nutrition and Food Hygiene. It emerged from the experimentation that concept maps are considered more effective in analyzing knowledge domain related to the problem to be faced (description of what it is). On the other hand, Petri Nets are more effective in studying and formalizing its possible solutions (description of what to do to). For the same reason, those involved in the experimentation have proposed the complementary rather than alternative use of the two knowledge representation methods as a support for professional problem-solving.

DeRidder, Jody L. **The Immediate Prospects for the Application of Ontologies in Digital Libraries.** *Knowledge Organization*, 34(4), 227-246. 53 references.

ABSTRACT: The purpose, scope, usage, methodology, cross-mapping and encoding of ontologies is summarized. A snapshot of current research and development includes available tools, ontologies, and query engines, with their applications. Benefits, problems, and costs are discussed, and the feasibility and usefulness of ontologies is weighed with respect to potential and current digital library arenas. The author concludes that ontology application potentially has a huge impact within knowledge management, enterprise integration, e-commerce, and possibly education. Outside of heavily funded domains, feasibility depends on assessment of various evolving factors, including the current tools and systems, level of adoption in the field, time and expertise available, and cost barriers.

Golub, Koraljka, Hamon, Thierry, and Ardö, Anders. **Automated classification of textual documents based on a controlled vocabulary in engineering.** *Knowledge Organization*, 34(4), 247-263. 33 references.

ABSTRACT. Automated subject classification has been a challenging research issue for many years now, receiving particular attention in the past decade due to rapid increase

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of digital documents. The most frequent approach to automated classification is machine learning. It, however, requires training documents and performs well on new documents only if these are similar enough to the former. We explore a string-matching algorithm based on a controlled vocabulary, which does not require training documents—instead it reuses the intellectual work put into creating the controlled vocabulary. Terms from the Engineering Information thesaurus and classification scheme were matched against title and abstract of engineering papers from the Compendex database. Simple string-matching was enhanced by several methods such as term weighting schemes and cut-offs, exclusion of certain terms, and en-

richment of the controlled vocabulary with automatically extracted terms. The best results are 76% recall when the controlled vocabulary is enriched with new terms, and 79% precision when certain terms are excluded. Precision of individual classes is up to 98%. These results are comparable to state-of-the-art machine-learning algorithms.

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Founded under the title *International Classification* in 1974 by Dr. Ingetraut Dahlberg, the founding president of ISKO. Dr. Dahlberg served as the journal's editor from 1974 to 1997, and as its publisher (Indeks Verlag of Frankfurt) from 1981 to 1997.

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A separate title page should include the article title and the author's name, postal address, and E-mail address, if available. Only the title of the article should appear on the first page of the text. To protect anonymity, the author's name *should not* appear on the manuscript, and all references in the body of the text and in footnotes that might identify the author to the reviewer should be removed and cited on a separate page. Articles that do not conform to these specifications will be returned to authors.

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Howarth, Lynne C. 2003. Designing a common namespace for searching metadata-enabled knowledge repositories: an international perspective. *Cataloging & classification quarterly* 37n1/2: 173-85.

Pogorelec, Andrej and Šauperl, Alenka. 2006. The alternative model of classification of belles-lettres in libraries. *Knowledge organization* 33: 204-14.

Schallier, Wouter. 2004. On the razor's edge: between local and overall needs in knowledge organization. In McIlwaine, Ia C. ed., *Knowledge organization and the global information society: Proceedings of the Eighth International ISKO Conference 13-16 July 2004 London, UK*. Advances in knowledge organization 9. Würzburg: Ergon Verlag, pp. 269-74.

Smiraglia, Richard P. 2001. *The nature of 'a work': implications for the organization of knowledge*. Lanham, Md.: Scarecrow.

Smiraglia, Richard P. 2005. Instantiation: Toward a theory. In Vaughan, Liwen, ed. *Data, information, and knowledge in a networked world; Annual conference of the Canadian Association for Information Science ... London, Ontario, June 2-4 2005*. Available <http://www.cais-acsi.ca/2005proceedings.htm>.

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Scope

The more scientific data is generated in the impetuous present times, the more ordering energy needs to be expended to control these data in a retrievable fashion. With the abundance of knowledge now available the questions of new solutions to the ordering problem and thus of improved classification systems, methods and procedures have acquired unforeseen significance. For many years now they have been the focus of interest of information scientists the world over.

Until recently, the special literature relevant to classification was published in piecemeal fashion, scattered over the numerous technical journals serving the experts of the various fields such as:

philosophy and science of science
science policy and science organization
mathematics, statistics and computer science
library and information science
archivistics and museology
journalism and communication science
industrial products and commodity science
terminology, lexicography and linguistics

Beginning in 1974, KNOWLEDGE ORGANIZATION (formerly INTERNATIONAL CLASSIFICATION) has been serving as a common platform for the discussion of both theoretical background questions and practical application problems in many areas of concern. In each issue experts from many countries comment on questions of an adequate structuring and construction of ordering systems and on the problems of their use in opening the information contents of new literature, of data collections and survey, of tabular works and of other objects of scientific interest. Their contributions have been concerned with

- (1) clarifying the theoretical foundations (general ordering theory/science, theoretical bases of classification, data analysis and reduction)
- (2) describing practical operations connected with indexing/classification, as well as applications of classification systems and thesauri, manual and machine indexing
- (3) tracing the history of classification knowledge and methodology
- (4) discussing questions of education and training in classification
- (5) concerning themselves with the problems of terminology in general and with respect to special fields.

Aims

Thus, KNOWLEDGE ORGANIZATION is a forum for all those interested in the organization of knowledge on a universal or a domain-specific scale, using concept-analytical or concept-synthetical approaches, as well as quantitative and qualitative methodologies. KNOWLEDGE ORGANIZATION also addresses the intellectual and automatic compilation and use of classification systems and thesauri in all fields of knowledge, with special attention being given to the problems of terminology.

KNOWLEDGE ORGANIZATION publishes original articles, reports on conferences and similar communications, as well as book reviews, letters to the editor, and an extensive annotated bibliography of recent classification and indexing literature.

KNOWLEDGE ORGANIZATION should therefore be available at every university and research library of every country, at every information center, at colleges and schools of library and information science, in the hands of everybody interested in the fields mentioned above and thus also at every office for updating information on any topic related to the problems of order in our information-flooded times.

KNOWLEDGE ORGANIZATION was founded in 1973 by an international group of scholars with a consulting board of editors representing the world's regions, the special classification fields, and the subject areas involved. From 1974-1980 it was published by K.G. Saur Verlag, München. Back issues of 1978-1992 are available from ERGON-Verlag, too.

As of 1989, KNOWLEDGE ORGANIZATION has become the official organ of the INTERNATIONAL SOCIETY FOR KNOWLEDGE ORGANIZATION (ISKO) and is included for every ISKO-member, personal or institutional in the membership fee (US \$ 55/US \$ 110).

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