



KNOWLEDGE ORGANIZATION

INTERNATIONAL CLASSIFICATION

erly

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

Order in Chaos: The Prime Numbers
Parameters for the Design of an Intermediate
Language for Multilingual Thesauri
Towards Designing an Expert System to Map
Mathematics Classificatory Structures
Sociology Schedule in the DDC: Filiatory Structure,
Terminology, Categorization and Concept
Representation
The Regensburg Classification Scheme:
Users and Partners
A Frame-based Knowledge Representation Paradigm
for Automating POPSI

INDEKS Verlag, Frankfurt
ISSN 0943 - 7444 Knowl.Org.
Vol. 22 (1995) No. 3/4

Contents

Editorial

Knowledge Organization and Numbers	127
--	-----

Articles

Plichta, P.: Order in chaos: the prime numbers	129
Schubert, K.: Parameters for the design of an intermediate language for multilingual thesauri	136
Iyer, H., Giguere, M.: Towards designing an expert system to map mathematics classificatory structures	141
Pathak, L.P.: Sociology schedule in the DDC: Filiatory structure, terminology, categorization and concept representation	148
Lorenz, B.: The Regensburg Classification Scheme: Users and partners	158
Aptagiri, D.V., Gopinath, M.A., Prasad, A.R.D.: A frame-based knowledge representation paradigm for automating POPSI	162

Reports and Communications

Infoterm in Danger (168) – Infoterm - The International Information Centre for Terminology (168) – International Cooperation in the Field of Terminology (169) – Building Linguistic Pluralism: What Initiatives for Europe? (170) – IUFRO to Establish SylvaTerm (171) – The Cataloging & Classification Quarterly (CCQ) to Establish a Home Page on the World Wide Web (171) – TEI, The ACH/ACL/ALLC Text Encoding Initiative (172) – Lexicographical Symbols and Typographical Conventions for Use in Terminography (172) – Conceptual Knowledge Processing (172) – IFCS-96: Data Science, Classification and Related Methods (172) – The Society of Indexers' Conference 1996 (172) – Complex Problem Solving (C.P.S.) (172) – Call for Papers, TKE '96 (128)

ISKO News 22

Knowledge Organization and Change, 4th International ISKO Conference, Washington, DC (173) – Research Seminar on Compatibility at Warsaw (174) – Wissensorganisation '95, 4th Annual Conference, German ISKO Chapter (174) Recommendations of the Research Seminar on Compatibility and Integration of Order Systems – (174)

FID/CR News 39

Ranganathan Award in Classification Research (176) – FID/CR Programme, Graz, Austria, 1996 (176) – CoLIS 2: Call for Papers (176) – IFLA Section on Classification and Indexing in Istanbul (176) – DDC on the INTERNET (177)

Book Reviews

Müller-Dreier, A.: Unified Classification (Einheitsklassifikation) (B.Lorenz)	178
Marcella, R., Newton, R.: A New Manual of Classification (M.P.Satija)	178
NISO: Guidelines for the Construction, Format, and Management of Monolingual Thesauri: ANSI/NISO Z39.19-1993 (M. Hudon)	180
Arnopoulos, P.: Sociophysics: Chaos and Cosmos in Nature and Culture (N.P.Smith)	181
Ruge, G.: Word Meaning and Term Association (Wortbedeutung und Termassoziation) (in German) (M.Th.Rolland)	182
Union of International Associations: Actions – Strategies – Solutions. Encyclopedia of World Problems and Human Potential, Vol.3 (I.Dahlberg)	184

KNOWLEDGE ORGANIZATION

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

The journal is the organ of the INTERNATIONAL SOCIETY FOR KNOWLEDGE ORGANIZATION (General Secretariat: Woogstr. 36a, D-60431 Frankfurt)

Editors

Dr. Ingetraut DAHLBERG (Editor-in-Chief), Woogstr. 36a, D-60431 Frankfurt

Dr. Robert FUGMANN, Alte Poststr. 13, D-65510 Idstein

Prof. Jean M. PERREAULT, The Library, Univ. of Alabama at Huntsville, P.O. Box 2600, Huntsville, AL 35899, USA

Dr. M.P. SATIJA (Book Review Editor), Guru Nanak Dev University, School of Library and Information Science, Amritsar-143 005, India

Consulting Editors

Prof. Kenneth G.B. BAKWELL, 9, Greenacre Road, Liverpool, L25 0LD, U.K.

Prof. Pauline A. COCHRANE, GSLIS, University of Illinois, 410 David Kinley Hall, 1407 West Gregory Drive, Urbana, IL 61801-3680, USA

Prof. Dr. Emilia CURRAS, Universidad Autonoma de Madrid, Dept. de Doc. Cient. Fac. de Ciencias, Canto Blanco, Madrid 34, Spain

Mr. Jens B. FRIIS-HANSEN, Hoesterkøbevej 7, DK-2970 Høersholm, Denmark

Mr. Christian GALINSKI, INFOTERM, Heinestr. 38, A-1021 Vienna

Mr. Alan GILCHRIST, 38 Ship Street, Brighton BN1 1AB, U.K.

Prof. Wilfried GÖDDERT, FHBD, Claudiusstr. 1, D-50678 Köln

Dr. M.A. GOPINATH, DRTC, Indian Statistical Inst., 8th Mile, Mysore Road, R.V. College P.O., Bangalore-560059, India

Prof. Eric de GROlier, ISSC, 1, rue Miollis, F-75015 Paris, France

Prof. Dr. Roland HJERPPE, Linköping University, Dept. of Computer and Information Science, S-58183 Linköping

Prof. Krishan KUMAR, Dept. of Libr. & Inform. Sci., Univ. of Delhi, Delhi-110 007, India

Ms. Joan MITCHELL, Editor DDC, Library of Congress, Decimal Classification Division, Washington, DC 20540-4330, USA

Prof. Yukio NAKAMURA, 14-8, Nisikata-1, Bunkyo-ku, Tokyo 113, Japan

Dr. Giliola NEGRINI, Consiglio Nazionale delle Ricerche, ISIRIS, Via Cesare de Lollis 12, I-00185 Roma, Italy

Prof. Dr. Roy RADA, Dept. of Computer Science, University of Washington State, Seattle, WA, USA

Prof. Dr. Winfried SCHMITZ-ESSER, Odcfelderstr. 13, D-20149 Hamburg

Prof. Dr. Eugeniusz SCIŚBOR, IINTE, Broniewskiego 83-157, PL-01-876 Warszawa, Poland

Dr. Otto SECHSER, In der Ey 37, CH-8047 Zürich

Prof. Dr. Dagobert SOERGEL, College of Libr. & Inform. Serv., University of Maryland, College Park, MD, 20742, USA

Dr. Eduard SUKIASYAN, Russian State Library, Vozdvizhenka, 3, Moskva 10100, Russia

Dipl. Ing. Rudolf UNGVARY, N yul u. 14, H-1026 Budapest, Hungary

Editors: Dr.I.Dahlberg, Frankfurt; Dr.R.Fugmann, Idstein, Prof.J.M.Perreault, Huntsville, AL, USA.

Editorial Office: c/o Dr.I.Dahlberg, Woogstr. 36a, D-60431 Frankfurt. Tel.069-52 36 90, FAX: 069-52 05 66

Issue frequency: 4x/ann. *Annual subscription rates:* Institutions per volume DM 128.-, Individuals per volume 20% less, if directly ordered from INDEKS Verlag. Single issues: DM 32.- Back issues available, ask for special offer. Subscription included in membership fee for members of the International Society for Knowledge Organization (ISKO). MwSt and postage are included; no Air Mail delivery possible. *Advertising rates:* Advertising rate card No.3. Advertising fact sheet with details of mechanical requirements and closing date available upon request.

Publisher: INDEKS Verlag, Woogstr.36a, D-60431 Frankfurt, Tel.069-52 36 90; FAX 069-52 05 66.

Bank Account Nos: INDEKS Verlag, Postgiro-Konto Frankfurt No.151208-608 (BLZ 500 100 60). Frankfurter Sparkasse No. 852082 (BLZ 500 502 01)

All Rights reserved. Printed in the Federal Republic of Germany 1995 by Druckerei H. Guntrum II KG. PF 180, D-36 110 Schlitz/Hessen.

Contents page

Vol.22(1995)No.3/4

Plichta, P.: **Order in chaos: The prime numbers.**

Knowl.Org. 22(1995)No.3/4, p.129-135, 5 refs

Explanation of how prime numbers can be derived from the numbers 1, 2 and 3 and how they can be visualized on eight rays by introducing a cyclic way of presentation according to the model of an atom and its shells for the prime numbers of the form $6n+1$. Also it is shown how prime numbers are coded in the Pascal Triangle. From its implications it is concluded that prime numbers form the background of the material world and that four-dimensional space around a point is a decimal prime-number space. (KO)

Schubert, K.: **Parameters for the design of an intermediate language for multilingual thesauri.**

Knowl.Org. 22(1995)No.3/4, p. 136-140, 9 refs

The architecture of multilingual software systems is sometimes centred around an intermediate language. The question is analyzed to what extent this approach can be useful for multilingual thesauri, in particular regarding the functionality the thesaurus is designed to fulfil. Both the runtime use, and the construction and maintenance of the system is taken into consideration. Using the perspective of general language technology enables to draw on experience from a broader range of fields beyond thesaurus design itself as well as to consider the possibility of using a thesaurus as a knowledge module in various systems which process natural language. Therefore the features which thesauri and other natural-language processing systems have in common are emphasized, especially at the level of systems design and their core functionality. (Author)

Lorenz, B.: **The Regensburg Classification Scheme: Users and partners**

Knowl.Org. 22(1995)No.3/4, p. 158-161, 5 refs.

Description of the history and development of the home-made Regensburg Classification Scheme since 1964 and its notation which has been built according to the one of the Library of Congress. Although not intended in the beginning, the Scheme has become the common tool for a number of Bavarian libraries since 1970 and also of libraries in Switzerland (since 1986) and the so-called new German states (after 1990). The individual schedules are listed and also the classification aids published with the Scheme's progressing. Concludingly future plans are outlined. (KO)

Iyer, H., Giguere, M.: **Towards designing an expert system to map mathematics classificatory structures.**

Knowl.Org. 22(1995)No.3/4, p.141-147, 9 refs

The convertibility of ordering systems such as thesauri and classification schemes have been investigated for many years. The focus has so far been more on thesauri than on classification schemes. Classification schemes too could differ from one another in several ways. These incompatibilities make multiple catalog search difficult for the users. An interface that enables mathematicians to access library collections organized with the Dewey Decimal Classification, using the AMS scheme as an interface will certainly be useful. This paper suggests a prototype expert system interface to map the AMS scheme on to the mathematics (510 schedule of DDC20) and presents the work done so far towards this end. (Authors)

Pathak, L.P.: **Sociology Schedule in the DDC: Filiatory Structure, Terminology, Categorization and Concept Representation**

Knowl.Org.22(1995)No.3/4, p. 148-158, 16 refs

Attention is drawn to the inadequacies of the existing classification schemes as pointed out by individuals and groups concerned with classification research. The article is based on an earlier study by the author, which identified and arranged in a filiatory way the main concepts of sociology and determined their relative significance as headings in a classification scheme. The sociology schedule in the Dewey Decimal Classification was examined on the basis of nine evaluation criteria. It was found that a large number of the main concepts of sociology are either not represented in the schedule or mentioned in the scope note only along with the main headings. The study suggests that the DDC needs serious reconsideration with regard to the main headings/categories provided as class headings, terminology used for the concepts, the filiatory structure adopted, and the representation of the main concepts of sociology. (Author)

Aptagiri, D.V., Gopinath, M.A., Prasad, A.R.D.: **A frame-based knowledge representation paradigm for automating POPSI**

Knowl.Org. 22(1995)No.3/4, p.162-167, 11 refs.

This paper is based on the project work carried out by the authors at Documentation Research and Training Centre. Knowledge representation models are used in building intelligent systems for problem solving. The paper discusses, a frame based knowledge representation model built for automatic indexing. The system assigns POPSI indicators and produces subject strings for titles. The results are given in appendices. (Authors)

Scope

The more scientific data are 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 in 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 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 numerical taxonomy/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.

Instructions for Authors

Manuscripts may be submitted in either English, German or French to the editor-in-chief in two sets (the original and one copy) typed in double space, comprising between 1500 to 3000 words. They should be accompanied by an English indicative abstract of 100-200 words. The contributions are refereed.

Criteria for acceptance will be appropriateness to the field of the journal (see Scope and Aims) taking into account the merit of the content and its presentation. Papers are accepted with the understanding that they have not been published, submitted or accepted for publication elsewhere and that, if the work received official sponsorship, it has been duly released for publication. Authors will usually be notified within 6 to 10 weeks. Unless specifically requested, manuscripts or illustrations will not be returned.

The text of the contribution should be structured by subheadings; it should contain (a) an introduction, stating the purpose, (b) a description of materials and methods in sufficient detail, (c) information on results or systems developed, and (d) a conclusion on and/or summarization.

References should be listed at the end of the paper with the numbers in brackets referring to such numbers in brackets within the text part.

Additional notes should be indicated in the text by lifted single numbers behind a word and equally collected with their texts at the end of the paper under the heading *Notes*.

Journal References should contain the names and initials of all authors, full titles of the publication, abbreviation of the journal according to the ISO Standard 4, volume number, year of

Aims

Thus, KNOWLEDGE ORGANIZATION is meant to be a programme for the improvement of classification methods and processes, a forum for discussion for all those interested in the organization of knowledge on a universal or a subject-field scale, using concept analytical and/or concept-synthetical approaches as well as numerical procedures and comprising also 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, the Newsletters of the International Society for Knowledge Organization (ISKO News) and the Committee on Classification Research of the International Federation for Information and Documentation (FID/CR News) as well as book reviews, letters to the editor, and an extensive annotated bibliography of recent classification and indexing literature, covering now some 500 items in each issue.

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 IC was published by K.G.Saur Verlag, München. Back issues of 1978-1990 are available from INDEKS Verlag, too. (The 14 volumes of 1978-1991 are offered now at the highly reduced price of DM 400.-).

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 (DM 60.-/DM 120.-).

Rates: From 1990 on for 4 issues/ann. (including indexes) DM 120.-. No air mail delivery any longer. Membership rates see above. - INDEKS Verlag, Woogstr.36a, D-60431 Frankfurt.

publication in brackets, issue number and first and last page numbers. *Monograph References* should give the name(s) of the author(s), full title, edition, place of publication, publisher, year and the number of pages.

Examples: Brandhorst, J.P.J.: Quantifiability in iconography. *Knowl.Org.* 20(1993)No.1, p.12-19, 11 refs.

Hunter, E.J.: Classification made simple. Aldershot, GB: Gower 1988. 115p.

Illustrations should be restricted to the necessary minimum.

Graphs and diagrams should be supplied as black and white drawings suitable to reproduction. *Half-tone illustrations* should be sharp, well-contrasted glossy prints. Illustrations should be numbered lightly with a soft pencil on the back. Numbered legends should be attached on a separate sheet.

Tables should be typed double-spaced on a separate sheet, contain a number and a title at the top and be cited in the text. Each column should have a heading.

Authors shall receive 25 *reprints* of their papers free of charge. Additional reprints may be ordered.

Corrections in galley proof exceeding 10% of the typesetting costs will be charged to the author.

Contributions on micro flexible discs are welcome if delivered in DOS compatible standard software such as Word (DOS or Windows), WordStar, WordPerfect, Euroscript, Multimate, In*vision, DCA/RFT-files or plain ASCII code - our standard is Word/DOS (Word/Windows 2.0/6.0) and PageMaker 5.