

The Navigational Index



Fugmann, R.: **The Navigational Index.**

Int. Classif. 18(1991) No. 2, p. 122-132, 6 refs.

Description of a set of indexes - called Navigational Index - to the volumes 1 and 2 of "Tools for Knowledge Organization and the Human Interface" (Frankfurt: Indeks Verlag 1990/91). This index is intended to provide advanced subject access. In its Basic Index part the *immediate* hierarchical environment of each descriptor is displayed, whereas the systematic part displays the *extended* hierarchical embedment of each descriptor. Together with the Alphabetical Subject Index, included in proceedings vol.2, they facilitate "navigation" in the vocabulary, which is conducive to reliable indexing and appropriate query phrasing. The Systematic Index has been added in full length to the article. The Basic Index is only available on diskette.

(Author)

1. Introduction

In this article it is intended to demonstrate some of the capabilities of computer generated printed subject indexes using as an object the Proceedings of the First International ISKO Conference, held at Darmstadt, Germany, on August 14-17, 1990. This subject index constitutes a complement to the Name Index in the Proceedings Volume No. 2, compiled by I. Dahlberg.

Indexing was done and the corresponding thesaurus constructed according to the technique described in the paper presented at the Thesaurus Software Seminar, August 14, 1991 in Darmstadt (1). A second perusal of the papers as recommended there had to be dispensed with so as not to cause further delay in the appearance of the Proceedings Volumes.

It is also intended to provide a kind of subject access which exceeds the capabilities of any printed index by supplying the index on disk. The location of a subject heading or descriptor in a hierachic arrangement is uncertain in cases of terminological vagueness. Furthermore, a subject of interest to an individual searcher may still be scattered in the vocabulary. For example, in the index described in the following, the phenomenon of conceptual transparency is encountered in descriptors such as "Concept relations, transparency of", "Indexing, transparency of", "Knowledge representation, transparency of", "Search results, transparency of", "Software transparency" etc. In these cases the possibility of undertaking a computer search for the fragment "transparency" will be welcomed.

In the following, the three individual parts of this subject index are described, and the experience gathered during their compilation as well as some of the discrepancies existing between some of the papers of the conference are reported on. The type of printed subject index as described is believed to be particularly conducive to an orientation in the vocabulary both for effective indexing and query phrasing; therefore, as well as for the reasons mentioned in the preface to Volume 2, it is called "navigational".

2. The Navigational Index

The navigational index consists of three parts, namely

- . the conventional *Alphabetical Subject Index*,
- . the *Basic Index*
- . the *Systematic Subject Index*

The three parts were mechanically generated from one single data base which was formed during the perusal of the individual papers, accompanied by simultaneous subject heading assignment. All subject headings are contained as descriptors in a thesaurus, which was interactively generated during the indexing procedure, using the LIDOS^R software. Some final editing of the indexes was done using the text processing software WORD^R.

Descriptors were assigned to text passages independent of the mode of expression used by the author of a paper. Often, not only identical meanings but also closely related ones were collated under one descriptor. Minor differences in shades of meaning were ignored, often because of terminology vagueness.

2.1 The Alphabetical Subject Index

A search in the conventional alphabetical subject index is started with any promising descriptor that comes to mind. This approach is preferred by those searchers who want fast and simple access and content themselves with the limited search capabilities that are typical of this kind of display.

Whenever a capital letter occurs at the end of a descriptor, this is meant to show that there is at least one other descriptor which should be taken into consideration for searching (and also for indexing). A quotation

mark at the end of a descriptor indicates that - in the opinion of the indexer - this descriptor was used in an unusual meaning by the author of the cited paper. Examples are given in chapter 3.1 (Essence recognition). The Alphabetical Subject Index has been published in the second proceedings volume.

2.2 The Basic Index

The conventional basic index (often also called "entry vocabulary") comprises all descriptors and non-descriptors in alphabetical arrangement. It shows for each descriptor or accepted non-descriptor

- . the corresponding *superordinate* descriptor (marked "+"),
- . the preferred term for each non-descriptor (marked "use", indented)
- . all *subordinate* descriptors of a descriptor (marked "-", indented).

The basic index displays the *immediate* hierarchical vicinity of each descriptor used in indexing, thus assisting in extending the search to closely related concepts. It constitutes the "lead-in" or "entry" vocabulary and enables the searcher to trace those immediately related descriptors of whose existence he was made aware through the capital end letter in the alphabetical index. A specimen of the basic index is depicted in Figure 2 on page 269 of Volume 2 of the Proceedings. There, the appertaining co-ordinate descriptors for each entry descriptor are likewise presented, marked by a preceding "/". Because of space limitations the BasicIndex has not been appended to this article. It is available on the diskette which includes all parts of the Navigational Index (see Note 4).

2.3 The Systematic Subject Index

The *systematic* subject index displays the *extended* hierarchical vicinity of the descriptor under consideration. The "-" characters in front of a descriptor indicate its level in the (generic or partitive) hierarchy. This systematic part of the navigational subject index displays at the same time the appertaining citations. Thus, it provides a lucid overview of even extended concept relations and shows how heavily the corresponding descriptors were used in indexing. It saves the user the trouble of looking up all related descriptors that should be taken into consideration for searching (or for indexing) in the alphabetical subject index. It is therefore most helpful for the phrasing of a comprehensive query in which all promising descriptors are included and all those excluded which cannot provide any citations at all.

In this respect the systematic part resembles Ranganathan's Classified Catalogue and its variations. It differs from them in that no notations were used. True, notations would have improved access to the hierarchy when one starts from the alphabetical or the basic index, but this holds true only for the professional searcher who

is not deterred by systematic notations. For better orientation the systematic index is preceded by an overview of the top levels of the hierarchy of the thesaurus.

At the same time the hierarchical structure is effective in computer searches in the index diskette for mechanized descriptor grouping in upward and downward searches, if appropriate search software is available.

The hierarchy was constructed specifically for the concepts occurring in the conference papers and according to the meaning of terms and phrases assumed by the present author. It is not claimed that this hierarchy constitutes a comprehensive systematic arrangement of all information science concepts.

The arrangement of the subordinate descriptors is as follows: First, the generically related descriptors are listed for each descriptor, followed by the partitively related ones. Then, all associatively related descriptors follow, introduced by a descriptor of the format Related to < >, where the space between the arrows is filled by the corresponding superordinate descriptor. This kind of descriptors resembles the "false link" in the terminology of the Indian school (see p. 261 (Vol. 1)).

For the purposes of this index, the variations of associative relations are not distinguished from each other and specified, although this might be done according to the following model (1):

- Indexing
- - Related to Indexing by device
 - -- Index languageS
 - -- Indexing software
 - -- Etc.
- - Related to Indexing by results
 - -- Indexing quality
 - -- Indexes
 - -- Etc.

Any systematic arrangement of concepts is inherently subjective from various angles of view. Subjectivity is, for example, involved in the decision which degree of specificity is to be represented in the hierarchies (see chapter 3.2.2, "Representational fidelity"). It must also be decided under which and under how many superordinate descriptors a specific descriptor should be located (polyhierarchy). For example, the Colon Classification was located both under universal and under analytico-synthetic classifications.

The meaning of natural language terms is often vague or ambiguous, though this often becomes apparent only after discussion or in looking them up. Their embedment into the hierarchies will become equally uncertain, crucially depending as it is on their (often subjectively selected) definition on which any hierarchical embedment of a descriptor is based. In cases of terminological and, hence, hierarchical vagueness of a descriptor, the basic index provides secure access to its hierarchical location.

3. Some discrepancies observed in the conference papers

During the indexing of the two Proceedings Volumes, some discrepancies between terminologies and the views of the contributors became apparent. In the following some of them are discussed. We base these considerations on a definition according to which indexing is

- . the recognition of the essence of documents which is to be made retrievable, and
- . the representation of this essence to a sufficient degree of predictability and fidelity^{1, 2}.

3.1 Essence recognition

Essence recognition includes *meaning* recognition. In natural language texts the meaning of words, phrases and paraphrases is highly context dependent. For example,

the meaning of “*management*” in “information management” (as often encountered in the papers) is quite different from the meaning of “*management*” in “Information needs of business management” on p. 2:194.

“*Order*” in the meaning of a demand for a certain commodity (p. 2:194) is quite different from “*order*” as understood as a meaningful arrangement (e.g. pp. 2:114, 2:229).

The meaning of “*category*” varies widely in the conference papers, extending from the meaning of semantic, fundamental, or elemental category to the meaning of a merely more or less well defined group of objects (cf. e.g. pp. 207, 209, 2:60)

The “*matrix*” on p. 234 is quite different from the matrix on p. 23.

“*Subject access*” on p. 2:239 is the mere matching of uncontrolled query words with uncontrolled text words. This is quite different from the subject access meant by the other authors (cf. pp. 11, 35, 2:9, 2:151), who base their work at least on an intellectual subject analysis as reflected in classification notations, and it is also quite different from what is commonly understood by subject access (see also chapter 3.2., Essence representation).

The “*hits*” on p. 2:245 of the same paper reveal themselves as the number of uncontrolled text words recurring in an index, some of which *may* only under certain circumstances give rise to a hit in its classical meaning of a *real* response to a query (cf. e.g. 2:157, see also chapter 3.2.1 Representational predictability).

It has sometimes been said that in a homogeneous field of knowledge polysemy does not constitute a serious problem. This is refuted by the examples in the foregoing, which are only a small selection from those encountered even in such a homogeneous corpus of knowledge as that of the topics of one and the same conference.

Hence, if text words are merely extracted and, thus, isolated from their interpretative context, as is done in

the PARADOKS approach described on p. 2:239, neither will their meaning be preserved nor will the role be expressed that is played by the corresponding referent (cf. 2:239, 2:234).

Essence recognition also includes a decision as to what is essential and worthwhile for being stored for retrieval. Concepts in only marginal context have to be omitted in order not to overload the searcher with useless citations. For example, a definition merely reprinted from a common textbook and constituting basic knowledge or a commonplace statement required for the introduction into a topic should not be included in an index. The mere existence of the descriptor “*thinking*”, as an other example, should not cause the indexer to assign this descriptor to a passage beginning with “She was thinking even at that time that...” (2:168).

The framework of the eight facets, however, which constitute the supreme level in the thesaurus hierarchy, provides some certainty for the searcher as to which sort of concepts are available as search parameters and which ones, on the other hand, should be omitted from a query to avoid a blank sort.

3.2 Essence representation

Here again discrepancies become apparent concerning the opinions on the usefulness of uncontrolled natural language as opposed to that of controlled terminology. The Axiom of Representational Predictability (4, p. 121), however, presents the key to an unravelling analysis of this problem.

3.2.1 Representational Predictability

General concepts (as opposed to *individual* ones) and topics are expressed either

* in a *lexical unit* (i.e. a linear string of characters specifically agreed upon to denote a concept or statement, blanks included (4, p.127) such as a word or a word phrase

or

* in a non-lexical, paraphrasing manner, e.g. by definitions, anaphora (cf. e.g.(5)), etc.

An author as well as an inquirer has an entirely free hand as to his choice of the expression for his concepts or topics. This holds true especially for general concepts. Often, and for good reasons, the non-lexical expression is preferred.

The multitude of markedly different, *conceivable* paraphrases for a general concept or topic, among which an author has an entirely free choice, is unlimitedly large. Often, sentences or parts of sentences quite distant from each other in a paper combine to make up a clear description of what is meant. Therefore, this process of expressing ideas is a markedly *indeterminate* one in Mater’s view (p. 47), one whose course and outcome

cannot be predicted and which is therefore not amenable to programming which requires *a priori* commitments as to the decisions which the algorithm should make.

Hence, if uncontrolled natural language expressions are permitted to enter the search file and if these very expressions constitute the material to be searched, the searcher is confronted with an unpredictable, unlimitedly large variety of expressions for (general) concepts or topics. Each of these expressions would have to be made effective as a search parameter. This would have to be done *in advance*, i.e. without knowing the wording of relevant texts beforehand. Since this is inherently impossible *in practice*, the searcher must content himself with *some* of those expressions which come to his mind, expressions which have happened to occur in some texts he encountered recently or which were compiled *a priori* for processing by the program, inevitably more or less incompletely so. Information loss to an undeterminable and unforeseeable extent is the inherent consequence. In the following, some examples for unpredictable variations of paraphrases encountered in the Proceedings Volumes for the phenomenon of prevailing or lacking *transparency* in information systems are submitted.

- "...reducing the complexity of design making it more intelligible..."
- "... the reader may get lost in hyperspace in such a network..."
- "...Browsing through nonlinear networks often leaves people with a feeling of disorientation..."
- "...Our knowledge... for better overview... should be clearly arranged..."
- "... offers good possibilities for browsing and navigating..."
- "... the possibility to visualize the network becomes more and more important..." (lest) "...a tendency to be lost..." (prevails).
- "... could also profit from transparent machine assisted access..."
- "... forms a very complex network of relations which is probably impossible to envision in its entirety..."
- "...inconsistencies become obvious...since the structure might be clearly displayed to the user..."

"Polyhierarchy", as one of many other examples, occurs as "multiple inheritance" which is also expressed as the phenomenon that "a class inherits" .. ("characteristic attributes and operations") ... "of other classes in a lattice of multiple parents" (2:138).

Even in one and the same paper both non-lexical expressions and the corresponding lexical expression for one and the same concept are encountered. "Serendipity" is an example:

- "Non-linear, multidirectional, flexible..." "serendipitous" browsing" (p. 2:12)
- "... the "exploratory paradigm" to describe unfocussed

information seeking..." (p. 2:11)

It is evident that the compilation of all these expressions for their utilization as search parameters is by no means merely a matter of expert knowledge which can be expected of the questioner (as stated in the above-mentioned paper on p. 2:244) or of merely looking up synonyms in appropriate dictionaries or glossaries. Much more it is a matter of guesswork, contingency and (fading) memory to compile all these expressions and many others, too. It is only in artificial experimental situations that the deficiencies of such memory- and contingency-based approaches will not yet come into effect or be latent, and only under these restricted and premature conditions will mere word access, where subject access is needed, appear satisfactory.

All this corroborates the statement that "it is insufficient just to extract words from the initial users statement." (p.225) and that "there is good reason to believe that availability of verbal access points only is not sufficient for an effective retrieval" (p. 2:157) and "that retrieval only for free text elements is suitable only to a limited extent" (2:158) and "The ideal information language is a classification which can be used for searching as a thesaurus" (2:110).

This consideration does not exclude uncontrolled natural language text as a valuable *complement* to intellectual indexing, as is recommended, for example, in the "hybrid" approach on p 2:61.

3.2.2 Representational fidelity

Sufficient representational fidelity (cf. 4, p.123) counteracts noise in retrieval and helps to avoid false or insufficiently precise references in an index. In the navigational index the desirable degree of representational fidelity has not always been achieved, as is apparent from the occurrence of some overly posted descriptors. Here, subdivision into more specific descriptors would be desirable.

In this index to the conference Proceedings Volumes highly specific descriptors have also been avoided. For example, we contented ourselves with the descriptor "citation" and, here, we collected also all the "co-citation" references. Various mutually closely related concepts were also collated under a more comprehensive or even slightly different descriptor. Thus, "transparency" was not distinguished from its antonym "conceptual complexity". Homonyms, homographs, and polysemes are still collected under "polysemes". The degree of specificity chosen for concepts like these might not suffice for another community of users and for more extended files.

The compilation of an index of this kind requires continuous consultation of textbooks and of colleagues and the incessant utilization and acquisition of new background knowledge in an *unforeseeable* manner and extent. Indexing is thus likewise revealed as a markedly

indeterminate process, whose course and result cannot be predicted and, hence, not satisfactorily be programmed. Many decisions are possible only *a posteriori* and are markedly subjective in their goal of achieving the best possible adaptation to the *assumed* requirements of the majority of the later users.

There is no indication that one day a similar level of subject access can be obtained by those purely *a priori* decisions, that are always necessary in programming. Claims to the contrary which pretend to achieve genuine and equivalent or even superior *subject access* in a simple and cheap mechanical way, for example by merely selecting textwords and offering them for match with natural language query words in retrieval, are highly destructive because they jeopardize what exists and fail to provide a workable substitute. They merely provide *word access* rather than *subject access*. The ethical perspective of this problem is discussed by Wellisch³.

The three parts of the navigational index are available from the ISKO secretariat⁴ as reprint or as MS-DOS diskette in the formats of WORD^R or LIDOS^R.

Notes

1 By "indexing" is meant the description of the essential contents of a document, by extraction and/or assignment of significant terms with or without syntactical relationships with a sufficient degree of fidelity and predictability for retrieval demands. (see (2))

2 "Indexing is the translation of the essence of a document into an indexing-lingual mode of expression" and "the task of an indexing language is to represent concepts and statements with a sufficient degree of predictability and fidelity" (see 3)

3 The ethical perspective of this issue is discussed in (6, p.11).

4 ISKO Secretariat, Woogstr. 36a, D-6000 Frankfurt 50, Germany. (Prize for copy of diskette DM 25.-)

References

- (1) Fugmann, R.: An interactive classaurus on the PC. Int.Classif.17(1990)No.3/4, p.133-136
- (2) FID/CR Terms of Reference. Int.Classif. 8(1981)No.2, p.96
- (3) Fugmann, R.: Toward a Theory of Information Supply and Indexing. Treatise VI on Retrieval System Theory. Int.Classif. 6(1979)No.1, p.3-15 (here p.14)
- (4) Fugmann, R.: The Five Axiom Theory of Indexing and Information Supply. JAmer.Soc.Inform.Sci. 36(1985)No.2, p.116-129
- (5) Liddy, E., Bonzi, S., Katzer, J., Oddy, E.: A study of discourse anaphora in scientific abstracts. J. Amer. Soc. Inform. Sci. 38(1987)p.255-261
- (6) Wellisch, H.: The literature on indexing. In: Weinberg, B.H.(Ed.): Indexing - The State of Our Knowledge and the State of Our Ignorance. Medford,NJ: Learned Inform.1989.

Systematic Subject Index to the papers presented on the First International ISKO-Conference Darmstadt, Aug.14-17, 1990

Overview of the Subject Index Hierarchy

KNOWLEDGE ORGANIZATION

Epistemological issues

SemioticS

- TerminologY
- Specific semiological conceptS
- LinguisticS

Knowledge representation, audio- visual

Information science

- Semiotic trianglE
- Objects
- DesignationS
- ConceptS
- Meaning recognitioN
- Information storage and retrieval
- Storage procedureS
- IndexinG

- - Related to IndexinG
- - Index languageS
- - Index language vocabularY
- - - Classification systemS
- - - ThesaurI
- - - Free text vocabularieS
- - Index language grammar
- - Search procedureS
- - Data base selectioN
- - Search request maturatioN
- - Subject search
- - Fact search
- - Searching by expertS
- - End user search
- - Free text search
- - Search, interactiVE
- - Query phrasinG
- - ISAR data baseS

Data bases of special fieldS

- Information technologY**
- Information softwarE
- Information hardwarE

- Telecommunication

Artificial intelligencE

- Machine learning
- Expert systemS
- Connectionist systemS
- Computer linguistiS
- Decision making, algorithmic
- Pattern recognitioN

IndividualitieS

- ProjectS
- Institutions for knowledge organizatioN
- Countries and languages, reported oN

Quotation marks ("") are assigned to those descriptors which had been used by the author of the corresponding paper in an unusual meaning.

A capital letter at the word ending informs the user of the alphabetical subject index that at least one other related descriptor should be taken into consideration for subject search.

Epistemological viewpoints in knowledge organization

.....2:28 2:32ff

- **ThinkinG** 2:26 2:282:30
2:32ff 2:35 2:62

-- **Related to thinkinG**

-- Brain capabilitY 99 165
2:26 2:28 2:33

-- Intelligence, human 2:34

- **CognitioN** 79 2:25

-- **Analogy recognition** 2:64

-- **Problem solving** 79

-- **Related to cognitioN**

-- Creativity 79 2:62

-- Scientific theorY

-- - See also Theory, lack of

-- - See also Information theory

- **Knowledge**

-- **Knowledge units** 222 226
2:70

-- **Background knowledge**

used for Extratextual knowledge

-- Related to Background knowledge

-- - Background knowledge,
utilization of

-- - See also Searching by expertS

-- - See also Indexing by experts

-- **Related to knowledgE**

-- **Knowledge generation**

2:10 2:219ff

-- **Knowledge, definition of**
2:332:32

- **LearninG** 2:231

-- **Human learninG** 222 2:228

-- **Human learning, machine**
assisteD 221

-- - Related to Human learning,
machine assisteD

-- - See also Machine learning

- **Perception** 2:25 2:30

- **Hermeneutic viewpoints in knowledge organization** 2:79

-- Related to Hermeneutic view-
points in knowledge organizatioN

-- - See also Search request
maturation

SemioticS 76 2:70

- **TerminologY** 98 101 107 131 154
244 250 256 2:31
2:35 2:70 2:118

-- **Data processing terminology** 48

-- **NominatioN** 99ff

-- Related to NominatioN

-- - Nomenclatures 131 175 2:119

-- - Term ambiguitY 112 2:50
2:55 2:74 2:79
2:118

-- - Related to Term ambiguitY

-- - See also Polysemes

-- - See also Polyseme
disambiguation

-- - See also Hierarchy climbing

-- **Definition principleS** 75 112
2:71 2:76 2:78ff
2:80

-- Definition, generic 2:80

-- Definition, functional 2:80
-- Definition, partitive 2:80
-- Related to definition
principleS
-- - Concept definition language
2:73
-- - See also Relations between
conceptS
-- - See also Antonym relation
-- - See also Relation,
associative
-- - See also Relation,
hierarchical
-- - See also Related to
relations between
concepts
-- **Relations between termS** 15 58
61 108

-- Phonetic similarity of
terms 13 50 85 270 2:50
2:57ff

-- **Synonymy** 88ff 92 108 112
227 243 250 258
2:792:139
-- Related to terminologY
-- **Terminology problems** 2:78
2:111 2:118
2:122

- **Specific semiological conceptS**

-- **Polysemes** 99ff 102 108 112
2:154
-- Notations, homonymous 255
-- **TropeS** 99ff
-- **Hypallage** 99ff
-- **Metaphors** 99ff 102

- **LinguisticS** 2:149
-- **Etymology** 2:93
-- **ParaphraseS** 99ff 107 2:113
-- See also Paraphrase
processing

-- **Prepositions** 2:154

-- **Related to linguisticS**

-- Linguistic viewpoints in
knowledge organization 98
101 108 2:170
-- See also Computer linguisticS

- **Related to SemioticS**

-- See also Semiotic triangle

Knowledge representation, audio-visual 15 2:29

- **Knowledge representation, textual** 2:62

-- **Documents**

-- Titles of documents 244 248
274

-- **MacrodocumentS** 133 2:86
2:142

-- **BookS**

-- - Tables of contents 2:235
2:240ff

-- **MicrodocumentS** 133 2:86

-- - **AbstractS** 171 274 2:169
2:240

-- - **Abstracts, controlled**
2:172

-- - Related to AbstractS
-- - See also Essence recog-
nition, intellectual

-- **Cyclopedia** 2:77
-- **Encyclopædia** 1072:70 2:75
2:223

-- **Dictionaries** 268 270 2:70

2:75 2:223

-- **LexicA** 1072:21 227

-- **Brockhaus** 2:99

-- **Glossaries** 99 2:93 2:96

-- **Roget's International**
Thesaurus 206ff 2:30 2:93

-- **Pioneering literature** 238
2:239

-- **Survey literature** 2:239ff

-- **Machine readable text** 13 2:50
2:1682:210 2:217

-- **Tables** 227

- **Knowledge representation,**
graphicaL 5379 146 184 2:62
2:122 2:249

-- **Lattices** 972:94ff 2:249

-- **Knowledge representation,**
pictoriaL 184 2:63

-- **IconS** 2:185 2:188 2:192

-- - Related to IconS

-- - See also Data bases,
pictorial

-- **Knowledge representation,**
video 184 189

-- **Trees** 2:94

- **Knowledge representation,**
auditive 184

- **Multimedia** 183

- **Related to knowledge**
representation, audio-visual

-- **Knowledge representation,**
transparency of 79 2:62ff

Information science

228 2:120

- **Determinate vs. indeterminate**
processes 47 166

- **Semiotic triangle** 98 2:71

-- **Objects** 2:71ff

-- **DesignationS** 2:71

-- **Propositions** 2:71ff

-- Related to DesignationS

-- See also Linguistics

-- **ConceptS** 107261 2:302:71

-- Themes 2:72

-- Concepts, general 65 2:32

-- - Categories, semantic 15 19
65ff 97 132 154
224 226 2:92ff

-- - Categories, fundamental
54ff 76 241 2:160
2:223

-- Categories, general 2:96

-- Concepts, superordinate:
2:140

-- Concepts, subordinate
2:140

-- Concepts, individual 49ff 54
272 2:51 2:56ff
2:122 2:233

-- Concepts, elementary 276 2:93
2:195 2:234

-- Conceptual features 2:73

2:80 2:82
 -- Related to conceptS
 --- Abstraction 47 131 2:25
 2:29 2:120 2:223
 --- Concept, definition of 2:28ff
 2:197ff
 --- Concept records 2:149
 -- Relations between conceptS
 15 179 183 225
 267ff 270ff 2:35
 2:63 2:79 2:222
 2:233
 --- Relation, associativE 15
 268ff 271 2:74ff
 2:81 2:139 2:149
 2:159 2:222
 2:233ff
 --- Means- ends- relation
 2:179
 --- Antonym relation 267 272
 --- Relation, hierarchicaL 58
 267 2:139 2:159
 2:222
 --- Relation, generiC 15 131
 156 274 2:80ff
 2:118 2:120:122
 2:140
 ---- Related to relation,
 generiC
 ---- Concept subdivisioN
 71 2:114
 ---- Concept subdivision,
 types of 2:120
 ---- Hierarchies, various
 uses of 15 2:95 2:221
 ---- Hierarchy problemS
 161 250ff 252
 254ff 2:116
 2:119ff 2:122
 2:156ff 2:213
 ---- Concept relations,
 subjectivity of 268
 2:27
 ---- Concept relation
 ambiguity 2:234
 ---- Concept relation
 fuzziness 2:119
 ---- Concept relations,
 transparency of 70ff
 7679 146 195 211
 230 2:221 2:237
 ---- IS-A- criterion 272
 -- Relation, partitive 15
 156 268 271ff 274
 2:81 2:169 2:119
 2:139 2:234
 -- Relation, possessive
 2:74
 -- Relation,
 polyhierarchical 2:117
 -- Related to Relations
 between ConceptS
 -- Concept relation recogni-
 tion, intellectual 271
 -- Classification systems
 14 16ff 19 167
 206ff 225 2:79
 -- See also Hierarchy
 problems
 - **Meaning recognitioN**
 -- Meaning disambiguation 16ff
 1961 8790 225
 243 2:32 2:56
 2:792:154 2:220
 2:233
 -- Meaning recognition,
 intellectual 248 269 2:172
 2:171
 -- Meaning recognition,
 algorithmiC 76 85 88 90 96
 104 224 270
 2:171ff
 -- Paraphrase processing,
 algorithmiC 75 85ff
 -- See also Paraphrases
 -- Word meaning recognition,
 algorithmiC 211 224ff
 -- Hierarchy climbing 16ff
 - **Information storage and
 retrievaL** 238 2:239
 -- Storage procedureS: 1921
 -- IndexinG (classing included)
 13 161 163 190
 -- Indexing, intellectuaL
 65 67 239248
 2:47 2:1682:171
 2:235
 -- Indexing, controlleD 48
 59 68 70 158 166ff
 172 216 232 239
 241 244 261 2:110
 2:152 2:202ff
 -- Descriptor selection in
 controlled indexinG 16ff
 68
 -- Browsing in indexing
 vocabulary 11 16 65 70
 122 183210218
 271 2:9 2:12ff
 2:109ff 2:141
 2:235 2:237 2:251
 -- Related to indexing,
 controlleD
 -- Controlled vocabu-
 aries 122 2:12 2:17
 2:41 2:152ff
 2:1582:181
 -- MESH 273
 -- See also Classification
 systems
 -- Cutter's rule of the
 most specific heading
 70 241
 -- Free indexinG 49ff 59 76
 239244 248 2:158
 -- Indexing, extractivE 70
 261 2:240
 -- Word indexinG
 -- Subject access" 2:239
 -- Indexing by experts 263
 2:171ff
 -- Essence recognition,
 intellectuaL 47 65 67 259
 261ff 2:181 2:237
 -- Related to essence recogni-
 tion, intellectuaL
 -- Essence recognition,
 consistency of 261
 -- Essence description,
 intellectuaL 259 261
 -- Concept analysis 19 30
 48 109 240 258 276 2:220
 2:224
 -- Concept synthesiS
 -- Precoordination 19
 108ff 167 225
 243 276 2:152
 2:154ff 2:169
 2:220
 -- Concept analytico-
 synthesis 74
 -- Related to concept
 synthesiS
 -- See also Index
 language grammar
 -- Related to essence
 descriptioN
 -- Essence description,
 consistency of 261
 -- Up-posting 263
 -- Indexing, computer assisteD
 220 276 2:210ff
 2:236 2:248
 -- Related to Indexing,
 computer assisteD
 -- See also Indexing
 software
 -- Related to Indexing,
 interactiE
 -- See also Indexing
 software
 -- Indexing, algorithmiC 65
 218
 -- Statistical indexinG 56 88
 2:237 2:250
 -- Indexing, probabilistic
 2:250
 -- Co-occurrence statisticS
 88ff 94 267 271
 -- Related to co-
 occurrence statisticS
 -- Tanimoto measure 93
 -- Related to statistical
 indexinG
 -- Statistical indexing,
 limitations of 2:236
 -- Essence recognition,
 algorithmiC 47 65 96ff
 -- Related to essence
 recognition, algorithmiC
 -- Essence recognition,
 algorithmic, limit-
 ations of 2:55
 -- Related to indexing,
 algorithmiC
 -- Subject area inference,
 algorithmic 16
 -- See also Indexing
 software
 -- Hybrid indexing 13 2:50
 2:61 2:2272:248
 -- Re- indexing 2:90
 -- Related to IndexinG
 -- Index languageS 98 101 107
 161 2:220
 -- Index language vocabularY
 23 30 2:221
 -- Classification systemS
 14 16ff 19 167
 206ff 225 2:79
 -- Classifications,
 analytico- synthetiC
 74 133ff 162 171
 241 2:86 2:96
 2:982:159 2:168ff
 2:219 2:221 2:223
 -- Concept analytico--
 synthesis 74
 -- Colon classification
 135 138 144 2:86 2:96

2:98 2:124 2:160 2:223
 - - - - See also POPSi
 - - - - Classifications, enumerativE 35 52 56
 113ff 122 134ff
 137 144 241 2:85
 2:88 2:97ff 2:109
 2:210
 - - - - National Library of Medicine Classification 16 135ff 273
 2:211
 - - - - Systematik des Sachkatalogs der Universitätsbibliothek Düsseldorf 135 139
 - - - - Harmonized system 175 178
 - - - - IBM Share scheme 51
 - - - - See also Dewey Decimal Classification
 - - - - Classifications, facetedD 50 55 58 122
 133ff 162 230 276
 2:34ff 2:109
 2:112 2:186 2:219
 2:223 2:233
 - - - - Related to classifications, facetedD
 - - - - Facets 15ff 76 154
 224 2:64 2:97
 2:159 2:197
 2:233ff
 - - - - Faceted classifications, definition of 134
 - - - - Faceted query phrasing 2:159 2:161
 - - - - Related to Faceted query phrasinG
 - - - - Concept analytico-synthesis 74
 - - - - See also Concept analytico-synthesis
 - - - - Classifications, unified 113 116 133 2:85
 2:88
 - - - - Classifications, universal 133 2:86ff
 2:982:210
 - - - - BBK/LBc 114 2:86
 - - - - Bliss Bibliographic Classification 2:86
 2:89 2:96ff 2:99
 2:211 2:249
 - - - - BNb 241ff 250
 - - - - Colon classificatioN
 135 138 144 2:86 2:96
 2:98 2:124 2:160 2:223
 - - - - Main classeS 242
 2462:160
 - - - - Related to Main classeS
 - - - - See also Data bases of special fields
 - - - - Qualifiers 2:160
 - - - - Dutch Basic Classification 163
 - - - - Dewey Decimal Classification 26 36ff 39
 40 42 135ff 240
 242 250 255 276
 2:85ff 2:96 2:98
 2:124ff 2:210ff
 2:216 2:244 2:249
 - - - - ETHICs 216 2:202ff
 - - - - Einheitsklassifikation 2:86 2:88
 2:99
 - - - - POPSi 239ff 240 242ff
 248
 - - - - PRECIs 53 124 239ff
 242ff 248 2:153
 2:168ff 2:171ff
 - - - - Library of Congress Classification 26
 148 220 276 2:9
 2:15 2:86 2:88
 2:99 2:147 2:153
 2:210ff 2:249
 - - - - RSWK 2:153
 - - - - Systematik des Sachkatalogs der Universitätsbibliothek Düsseldorf 135 139
 - - - - UDC 35 113ff 122 135
 137 144 218 263
 2:85 2:88 2:98
 2:109 2:124
 2:156 2:210ff
 2:249
 - - - - Related to UDC
 - - - - AUDACIOUS 35 2:210
 - - - - Related to Classifications, universal
 - - - - See also OPACs
 - - - - NotationS 177 191 251
 254 2562:97
 2:156 2:213
 - - - - Notations, telescoping 254
 - - - - Notations, homonymouS 255
 - - - - See also Polysemes
 - - - - Related to notationsS
 - - - - Notations, hospitality of 178
 - - - - Individual classification systemS
 - - - - AMP classification scheme 2:180
 - - - - Related to classification systemS
 - - - - Classification design 2:211
 - - - - Classification maintenance 2:214
 - - - - Classification problemS 13 2:57
 2:111 2:214
 - - - - Classification systems, ignorance of 11 2:18 2:239
 - - - - Classification systems, inconsistencies 195
 - - - - Classifications, usefulness of 11
 2:111 2:157 2:167
 2:192
 - - - - Classifications, usability of 195 200
 - - - - See also Relations between conceptS
 - - - - See also Antonym relation
 - - - - See also Relation, associative
 - - - - See also Relation, hierarchicaL
 - - - - See also Related to relations between concepts
 - - - - ThesaurI 15 58 98 122
 225 230 274 2:109
 2:172 2:233ff
 - - - - Thesauri, multilingual 108 145 2:134
 - - - - Superthesaurus 145 2:134
 - - - - Related to thesaurI
 - - - - Thesaurus, definition of 2:140 2:138 2:142
 - - - - Thesaurus display, graphical- topolog-ical 148 2:249
 - - - - Thesaurus generation, intellectual 2:235 2:134ff
 - - - - Thesaurus generation, algorithmic 270 2:145
 - - - - Thesaurus generation, semi- algorithmic 19 48 154 2:145 2:148
 - - - - Thesaurus maintenance 2:145
 - - - - See also Index language vocabulary, maintenance of
 - - - - Free text vocabulary 232ff 2:110 2:144 2:234 2:249
 - - - - Stopword list 2:58
 - - - - Related to index language vocabularyY
 - - - - Index language vocabulary, contents of 67
 - - - - Index language vocabulary, maintenance of 2:236 2:233 2:145 220
 - - - - See also Thesaurus maintenance
 - - - - Index language grammAR
 - - - - Case grammar 171 2:170 2:172
 - - - - SyntaX 53 74 76 81 89 91 99 120 126 166 243ff 268 270 2:155 2:163 2:168 2:170 2:223
 - - - - Citation order 53 243 2502:97 2:159
 - - - - Index string syntax 202
 - - - - PRECIS grammAR 171 239ff 242ff 248 2:155
 - - - - Operators 2:234
 - - - - Role indicators 2:154
 - - - - Links 2:154 2:154
 - - - - Topological syntax 82 85 146
 - - - - Related to index languageS
 - - - - Processes in index languageS

- --- Comparison of index languages 30
- --- Index languages, changes in 29 33
- --- Vocabulary and grammar, task division between 72 203 2:96 2:172
- --- Indexing psychologY
- ---- Index language acceptance 123
- --- Encoding of relations between documentS
- --- Citation indexinG
- --- Related to citation indexinG
- --- CitationS 2:145ff
- --- Related to CitationS
- --- - Citation identi- fication module 2:147
- --- - See also Citation indexes
- -- HypermediA 183 185ff 190 203
- -- HypertextT 183 190 206ff 221ff 229 2:226 2:231 2:174
- -- Hyperdoc 226
- -- NoteCards 188 191 197
- -- SuperCard 203
- -- INTERMEDIA 188
- -- Related to HypermediA
- -- Limitations of hyper- media 186
- -- Related to Encoding of relations between documentS
- -- Relations between documents, encoded, transparency of 186ff 189ff 197 2:231
- -- Indexer environment 259 265
- -- Indexing qualitY
- -- Indexing coherence 264ff
- -- - See also Representa- tional predictability
- -- Indexing completeness 259 264ff
- -- Indexing consistency 259ff 262ff
- -- Indexing deficiencies 265
- -- Indexing noise 259 265
- -- Representational fidel- ity 67 2:153 2:155
- -- Representational pre- dictabilitY 13 65 67ff 76 112 263 265 2:57
- -- - See also Indexing coherence
- -- Indexing, subjectivity of 2:229 2:240
- -- Indexing statisticS
- -- Zipf Law 2:58 2:98
- -- Indexing, transparency of 2:229 2:240
- -- Indexes, printeD 118
- -- Book indexeS 239 2:235 240ff
- -- Chain indexeS 239ff 243 250 258
- -- - Related to Chain
- --- indexeS
- --- Links in chain indexing 251
- --- Citation indexeS 239 244 248
- --- - See also Citations
- --- KWIC indexes 163 167 2:35
- --- KWOC indexes 51 2:35
- --- See also Search in indexes, visual
- --- See also Indexing software
- --- See also Indexing psychologY
- -- Search procedureS
- -- Data base selectioN 14 1684 221 231 2:229 2:234 2:250
- -- Related to Search procedureS
- -- TOME selector 16
- -- Search request maturatioN 233 267 2:10 2:176 2:167 2:187
- -- Related to search request maturatioN
- -- Browsing in shelf or responses 11 39 184 233 2:9 2:14ff 2:18 2:862:88 2:97 2:175 2:189
- -- Search goal, uncertainty of 14 30 32 2:13 2:178ff 2:187
- -- Serendipity 2:11ff 2:188
- -- See also Hermeneutic viewpoints in knowledge organization
- -- Subject search 11 37ff 40 229 2:92:10 2:228
- -- MTM Model 269ff
- -- PPS 2:234
- -- Subject search typologY 2:151ff
- -- Quorum function search 2:161 2:163
- -- Subject search by analogy 2:186
- -- Search, weighted 226 244 2:41 2:186
- -- Fact search 2:231
- -- Related to Fact search
- -- See also Fact data bases
- -- Searching by expertS 203 210 221 223 225 229ff 2:38 2:43 2:47 2:176 2:227ff 2:229 2:234 2:237
- -- Related to Searching by expertS
- -- Intermediary search 2:43 2:46 2:176 2:179 2:191ff 2:226ff 2:229 2:231 2:243
- -- End user search 13 200 2:37ff 2:43 2:48 2:52 2:56 2:176 2:227 2:234ff 2:237
- -- Related to end user search
- -- End user 11 2:9 2:17 2:176 2:178ff 2:191
- -- End user's influence on
- -- ISAR design 2:45
- -- See also OPACs
- -- Search, corporate 230 2:233 2:237
- -- Search, probabilistic 11
- -- Free text search 49 54ff 84 88 216ff 233 2:37 2:40ff 2:46ff 2:89 2:110 2:202 ff2:234 2:236 2: 239ff 2:242ff 2:249
- -- - See also PARADOKs
- -- Search for SDI 50
- -- Search, interactivE 11 35 220 229 276 2:53 2:109 2:151 2: 1592:161 2:226ff
- -- OPACs 16ff 19 35ff 45 114 126 119 161 163 167 216ff 2762:9 2:13 2:151 2:202ff 2:210ff 2:226
- -- Related to OPACs
- -- End user search 13 200 2:37ff 2:43 2:48 2:52 2:56 2:176 2: 227 2:234ff 2:237
- -- See also Classifications, universAL
- -- Query phrasinG
- -- Query phrasing, intellectuaL 14 88 226 2:185 2:229
- -- Natural language query phrasinG 14 36 38 49 55 65 76 84 88 2:32 2:89
- -- Text word vs. concept matching 269 2:157
- -- Faceted query phrasinG 2:159 2:161
- -- Related to Faceted query phrasinG
- -- - See also Classifica- tions, faceted
- -- - See also Concept analytico- synthesis
- -- Descriptor selection for search 15 18ff 35ff 40 48 5561 267 2:151
- -- TruncatioN 52 55 88 167 2:156
- -- Related to truncatioN
- -- - Morphological resemblance 89 209 224 270
- -- Related to query phrasing, intellectuaL
- -- Retrieval strategY
- -- - Proximity operators 2332:153
- -- Boolean LogicS 11 162 205 219 226 274 2:40 2:153 2:155 2:161 2:172 2:185 2:234 2:237
- -- - Postcoordination 11 2:109 2:155 2:152ff
- -- - Alphabetical approach 3745 216ff 2:202ff

- -- - Systematic approach, see Classification systems
- -- - Feedback techniques 39
- -Query phrasing, algorithmic 14 17 88 225 2:41
- Related to search procedureS
- -Human interfacE 12 2:37ff 2:158 2:175 2:226ff 2:235
- -- Related to human interface
- -- Human interfaces, design of 2:176 2:226
- -Retrieval performance 2:17
- -Recall 65 232 264 274 2:11 2:109 2:158 2:164 2:236 2:243
- -- Related to recall
- -- - Hits" 2:245
- -- - See also Representational predictability
- Precision 65 162 232 244 274 2:11 2:109 2:158 2:164 2:236 2:243
- -- Related to precisiON
- -- - Manageability of responses 34 2:48
- -- - See also Representational fidelity
- -- Relevance 2:229 2:17
- -- User satisfaction 243 2:372:48 2:192 2:226ff 2:231 2:250
- -- Related to Retrieval performance
- -- - See also Serendipity
- -Duplicate responses 237
- -Search results, transparency of 2:230 2:229
- -See also Search software packages
- **ISAR data baseS** 239
- Data Bases, bibliographicaL 217 2:196 2:203
- -Data banks, multilingual 61
- -Individual data baseS, see name index
- Classifications as data baseS 16ff 19 45 114 122 126 161 167218 276 2:1092:151 2:210
- -See also OPACs
- Fact data baseS 13 221 2:50 2:231 2:249
- -Related to Fact data baseS
- -- See also Fact search
- -- Fact, definition of 2:197
- -- Numeric datA 2:156
- -- Time intervals 2:156
- Databases, pictorial 155 2:122
- Data bases, relational 2:53 2:195 2:197
- Data bases, referral 221ff
- Related to ISAR data baseS
- -Data base design 161 2:50 2:55 2:61
- -Data base integrity 2:52 2:197
- -- ISAR data bases, definition of 2:75ff
- -- -See also End user's influence on ISAR design
- **Related to ISARS**
- Information economics 217 2:43ff 2:48 2:203 2:248
- Changes in ISARS 28 205
- ISAR transparency 2:38 2:226
- See also End user's influence on ISAR design
- Relations between ISARS 31
- -Comparison and evaluation of ISARS 21 2:228
- -- ISAR compatibility 122 172 232 2:212 2:220 2:134
- -- -Relations between ISAR- Components 27
- **Related to information sciE**
- **Information science, research in** 12 65 2:9 2:249ff
- **Information, definition of** 107 132 2:194 2:219ff
- **Information science theorY** 2:194 2:702:71 2:119
- Law of requisite variety 166
- Related to Information science theorY
- -Theory, lack oF 2:194
- -- Chaos (Theory) 2:119
- -- Information theorY
- -- EntropY 2:70
- -- Related to entropY
- -- - Negentropy 2:70
- Data bases of special fields** 2:70 2:89 2:95 2:160
- **BioscienceS**
- **BiologY** 2:118
- **Botanics** 2:120
- **Genetics** 246
- **Plant breeding** 246
- **Zoology** 131 2:120
- **MedicinE** 231
- **Anaesthesiology** 133ff
- **Pathology** 137
- **Soil Science** 132
- **EconomicS** 13 154 173 175 221 2:50:149 2:194
- **Commodity economicS** 174 2:249 2:195
- Related to Commodity economicS
- -Harmonized system 175 178
- **Business information** 2:51 2:233
- **Management** 173 2:37 2:194
- **Geography** 132 199 203 210 226
- **Humanities**
- **AnthropologY** 2:90
- **Ethnology** 2:93
- **ArT** 267271 273ff
- **Music** 2:99
- **Language data baseS** 98 101 108 2:90:93 2:124
- Related to Language data baseS
- See also Countries and their languages
- **LiteraturE** 2:124
- **Fiction** 2:175ff
- **HistorY** 226 2:90 2:124
- Middle ages 200 210
- Related to historY
- -Archeology 155 2:251
- -Archives 199
- -Museum objects 172
- -Paleontology 2:95 2:121
- -See Time intervals
- **Philosophy** 2:91
- **Social scienceS** 2:90 2:97 2:149
- Demography 122 2:109 2:111
- Psychology 154
- **Religion** 2:124
- **TechnologY** 2:97
- **Architecture** 155 267 271 273ff
- **Computing literature** 51 2:234
- **Related to special field data baseS**
- Interdisciplinarity problems 52 241 2:62
- See also Main classes
- Information technologY** 2:46
- **Determinate vs. indeterminate processes** 47 166
- **Parallel processing** 80 84 86 233 237
- **Sequential processing** 80 233
- **Information software**
- Individual programming languages, see name index
- Individual information software packages, see name index
- **Indexing softwarE** 224 2:236
- **Search software packageS**
- Search interfaceS 14 48 50 61 84ff 164 217 230 2:41 2:141 2:175 2:192 2:203 2:219 2:233
- -EASYNET 16
- -HYPERCARD 188 191 206ff
- -IMIs 16
- -STATUS/Iq 2:41
- -TOME searcher 19
- -Interfaces, graphical 2:1422:178 2:235
- Individual search software packages, see name index
- **Related to information softwarE**
- Software transparency 229 2:226 2:228 2:230ff
- Information software comparison 195

- Software reuse 48ff 2:234
- Software problems 2:40
- Software research and development 2:45
- See also Software suppliers
- Information hardware, see Name Index
- Telecommunication 2:38
- Related to information technology
 - Limitations of information technology 2:48 2:248
- Artificial intelligence** 12 19
 - 107202 221ff
 - 224ff 228 2:33ff
 - 2:832:171 2:219
 - 2:231 2:237
- Machine learning 82 2:55 2:68
- Expert systemS 14 21 33 54 80
 - 145 171 174 203
 - 2:42 2:74 2:140
 - 2:168 2:171 2:220
 - 2:222 2:226ff
 - Inference engine 2:34 2:219
 - Related to expert systemS
 - Expert systems, limitations of 174
- Connectionist systemS 15 18 23
 - 55 80 145 2272:83
 - 2:135 2:220 2:222
- Related to connectionist systemS
 - Connectionist systems, definition 2:137 2:136
 - Connectionist systems, definition of parts 2:137
- Computer linguistics 88ff 96
- Natural language processinG
 - 80 97 112 221 268
 - 2:41 2:168ff
 - 2:171ff
 - Parsing 89 267 2:225
- Machine translation 2:32 2:248
- Word similarity recognition 80 85ff
- Decision making, algorithmic
 - 2:174
- Pattern recognitioN 83 85
 - Pattern similarity recognitioN 80 83
 - Related to pattern similarity recognitioN
 - -Hamming distance 84
- Related to artificial intelligencE
 - Artificial intelligence, limitations 2:47 2:227 2:248

Individualities

- Projects in information science and technology, see name index
- Institutes for knowledge organizatioN
 - Libraries, see name index
 - Standard institutes, see name index
 - Related to standard instituteS
 - Standardization, failure of 2:228 2:227
 - Other institutes for knowledge organization, see name index
- Countries or their languages, reported oN
 - Bangladesh 175
 - China 108
 - France 2:85 2:87ff 2:249
 - Germany 1082:99
 - Great Britain 108 221 2:41 2:85
 - India 144 175 245 2:124
 - Japan 108
 - Netherlands 163
 - Sambia 175
 - Sweden 190 199
 - Switzerland 216 2:202ff
 - USSR 114
 - USA 35 175

INTERNATIONAL CONCEPTUAL ENCYCLOPEDIA FOR THE SOCIAL SCIENCES

Volume I

INTERCULTURAL GLOSSARY CONCEPTS & TERMS USED IN ETHNICITY RESEARCH

Edited by
Fred W. Riggs

Here is the prototype of a new glossary conception and construction using the socalled onomantic approach. Some 250 concepts found in the current literature are arranged systematically with their definitions, occurrence sources and differing modes of expression. They are made accessible by different indexes. 1988. 205 p., DM 48.-

INDEKS-Verlag, Woogstr.36a, D-6000 Frankfurt 50, Tel.: (069) 52 36 90