Ingetraut Dahlberg
Fachhochschule Hannover, FB BID

The International Classification and Indexing Bibliography (ICIB) and its Classification Systems

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In the years 1980-1983 the German Federal Federal Ministry of Research and Technology, Bonn, sponsored a project concerning the documentation of the literature on classification and indexing of the last 30 years. This resulted in a card file of some 20 000 references, a data bank and five printed volumes entitled INTERNATIONAL CLASSIFICATION AND INDEXING BIBLIOGRAPHY (ICIB 1-5). The article describes in short purposes and development of the project, the structure and coverage of the ICIB volumes, their indexes and correlation tables and the machinery. It outlines the classification systems used for the subdivisions of the first two volumes and gives the CLASSIFICATION LITERATURE CLASSIFICATION (CLC) used for the last three volumes as Annex 1 to the article. The application of the universal classification system of subject fields, the INFORMATION CODING CLASSIFICATION (ICC) is demonstrated in those cases which call for a combination of the CLC classes with a subject field class. In conclusion, further possibilities of research based on the results of the project as well as its current updating in the journal INTERNATIONAL CLASSIFICATION are outlined. (Author)

1. Purposes and Development

In the opinion of many of our colleagues, a bibliography helps to ascertain the state-of-the-art of a field. Some 20 years ago, Eric de Grolier gave us the good advice not to forget classification bibliography. Mindful of this urgent exhortation we had started already with the very first issue of the journal INTERNATIONAL CASSIFICATION in its section Classification Literature, to keep track of this literature at least as of 1974 while even going back as far as 1960 in the coverage of the proceedings volumes in our field. But in so doing, we were not sure of having recorded the complete pre- and post-1974 literature. A more careful search and collecting seemed to become necessary, the results of which should furnish an adequate picture of how the professional work developed and what has already been done in the field of classification and indexing.

Therefore, the bibliography was meant to help in all cases where such literature is needed for the development of tools for the organization of knowledge, be it from a methodological point of view or for the sake of elaboration in a special subject field. Any research to be accomplished, e.g. in the research departments of institutions or in the schools of library and information science, will need such a tool. We attempted to publish a widely comprehensive list for all of these application purposes.

In 1980, the Federal Ministry of Research and Technology, Bonn, funded our project called "Literature on Classification", by which – as it was estimated – some 10 000 titles from the field of classification and indexing published during 1950–1980 were to be traced, checked against the already existing collection, classed and indexed, data processed and published in one volume after two years of compilation[1]. However, we soon found that our estimation of the number of publications was far too low. And as we were continuing to publish the bibliography of current literature in INTERNATIONAL CLASSIFICATION, we also felt that we should update the comprehensive bibliography and include titles at least until 1982. This, however, meant that it would be practically impossible to publish the entire literature in only one volume.

For this reason we started with Volume 1 (ICIB 1) published in 1982, which contained only the universal and special classification systems and thesauri from the period 1950–1982. This includes some 2300 titles (some 1000 universal ones in all of their special editions and languages and some 1300 special ones) with indexes and correlation tables. Volume 2, containing reference works and pertinent conference proceedings with their papers and reports, was estimated to cover some 2500 titles. However, when checking the material collected, it was found that it needed an even more careful processing and updating. Covering now some 4000 titles it was finished and published in July 1984.

Both vols. 1 and 2 thus cover the literature of our field based on form categories. Vols. 3 – 5 will cover the literature **on** or about classification and indexing, including also the literature **on** classification systems of all kinds.

2. Structure and Coverage of the ICIB Volumes

2.0 General remarks

The outline and classification system with its two-level groupings, used since 1974 for the section Classification Literature in the journal International Classification, had proved - with a few exceptions - to be a worthwhile structure with its two-level groupings and we decided to use the bibliographical material to see how it distributes among these two-level classes. A further breakdown to a third level – mostly done on the same principles by using the device of the socalled Systematifier[2] – became, of course, necessary and in a few cases another level was added. The scheme, published in the ICIB vol.2 down to its third level, is reprinted in the Annex 1 to this introductory article. This Annex, however, does not include the outline according to which the classification systems and thesauri of Vol.1 have been arranged (class 04 of the scheme of Classification Literature) as well as the other form-oriented literature (classes 01–03 and 05–09) of Vol.2. These will be shown below.

2.1 Arrangement of ICIB Volume 1

Volume ICIB 1 "Classification Systems and Thesauri 1950–1982" is arranged in two parts: Part 1 lists the universal systems and Part 2 the special subject oriented ones. The universal systems of Part 1 are as follows:

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041 Library Classification Systems and Library Subject Headings Lists
042 Universal Decimal Classification (UDC)
043 Dewey Decimal Classification (DDC)
044 Library of Congress Classification (LCC) and LCSH
045 Bliss Bibliographic Classification (BBC)
046 Ranganathan Colon Classification (RCC)
047 Library Bibliographical Classification (LBC/BBK)
048 Other Universal Classification Systems

The list of these universal systems was subdivided in a recurrent sequence, namely according to the kinds of editions (full, medium, abridged, supplementing, several kinds of special editions and concordances). The scheme which needed the most detailed breakdown was the UDC, which can serve as an example for the rest of the schemes. The following list reveals this fact:

042 Universal Decimal Classification (UDC)
042.1 Full Editions (by languages)
042.1-cs Czechoslovakian Full Edition
042.1-de German Full Edition
042.1-en English Full Edition
042.1-es Spanish Full Edition
042.1-fr French Full Edition
042.1-hu Hungarian Full Edition
042.1-it Italian Full Edition
042.1-ja Japanese Full Edition
042.1-pl Polish Full Edition
042.1-pt Portuguese Full Edition
042.1-ru Russian Full Edition
042.1-sk Serbo-Croation Full Edition
042.2 Medium Editions (further subdivisions by languages)
042.3 Abridged Editions (further subdivisions by languages)
042.4 Proposals and Supplements
042.5 Extensions and Corrections to the UDC
042.6 Specialized UDC Editions (by subject fields and languages)
042.7 Special purpose-oriented UDC Editions (e.g. for school libraries)
042.8 UDC Indexes and Thesauri
042.9 Concordances, Correlations with the UDC

The UDC-editions in all languages and in all subject fields included in the bibliography covered exactly 500 titles. The list was based on the material received from the copyright holder of this classification system, the Fédération Internationale de Documentation (FID).
Under 048 are listed "Other Universal Classification Systems and Thesauri for General and Special Purposes". The breakdown of this group is as follows:

048.1 General Schemes and thesauri (other than the Library Classification Systems and Subject Headings lists under 041)
048.4 Schemes and Thesauri for Archives
048.6 Schemes and Thesauri for Statistics
048.7 Patent Classification Systems
048.8 Classification Systems for Terminology
048.9 Schemes for Special User Groups
048.91 Schemes for Children
048.92 Schemes for School Libraries
048.96 Schemes for Government Publications
048.97 Schemes for Museum Collections
048.98 Schemes for other kinds of Documents

The list shows that universal systems are indeed necessary and used in many areas. We are almost convinced, despite our comprehensive search, that we have failed to include all the relevant schemes and would like to ask all those who miss certain systems to help us to make a second edition more complete.

The second part of ICIB 1, listing special classification systems and thesauri, is arranged according to the subject fields as structured in the new universal scheme of subject fields called Information Coding Classification (ICC), which is published down to its third level in ICIB Vol.1 (see also (3); an outline is given in Annex 2). Some 126 groupings from ICC (on a two and three-level basis) were deemed necessary for the grouping of the special classification systems and thesauri, however, within these groupings, further sublevels were also considered and are distinguishable in the notations to the references under the groupings.

In order to form a bridge between the special subject editions of universal classification systems and the special systems and thesauri, we started each section of the second part with the references to the subjects of such editions of universal systems. This was possible because each of the universal systems – if published as a special subject edition (a fact occurring quite often, especially e.g. in the English UDC edition with 112 single schemes, or the Depth Schedules of the Colon Classification with 172 special schemes!) – was also classed according to the ICC and in this way their references could be transferred to the groupings of Part 2.

It should be added that in Vol.1 as well as in all the further volumes within a form or a subject section of the bibliography, the sequence of the titles is determined by chronological order, ending with the most recent title and within a certain year alphabetically according to the authors; "anonymous titles" are placed before the others.

2.2 Arrangement of ICIB Volume 2

This volume, called "Reference Tools and Conferences in Classification and Indexing", includes bibliographies, review articles and books, dictionaries and glossaries, periodicals (journals, news bulletins, serials), textbooks, other monographs, standards (approx. 1000 altogether) and reports and proceedings of conferences with all of their papers as far as they could be traced (approx. some 3000 altogether), each one made accessible by its subject through a systematic index and an alphabetical subject index to it.

Besides the main field of classification and indexing, this listing also covers the main literature and the conferences and their papers from the fields of Numerical Taxonomy, Linguistics Related to Classification, and Terminology in the period 1950–1982.

The interested reader will find that not only were the conferences and respective papers devoted solely to classification and indexing included, but also those conferences with a few or with a considerable amount of relevant papers in our field, pertaining otherwise, however, to the field of information science and librarianship, to linguistics or to logic or to philosophy of science.

Our main sources for the selection of this literature for ICIB Vol.2 as well as of all the other volumes were the abstracting journals (Informatics Abstracts, Information Science Abstracts, Library and Information Science Abstracts, Bulletin Signalétique. Science de l'Information-Documentation) and other current bibliographies in addition to the evaluation of the primary literature at hand. Of great help were also the services and the holdings of the Library of the Informationszentrum Informationswissenschaften und Praxis of the

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Gesellschaft fiir Information und Dokumentation (GID), Frankfurt, where also much of the literature quoted can be found.

The contents list of Vol.2 shows that the arrangement is entirely by form:

01 Bibliographies
02 Literature Reviews
03 Glossaries, Vocabularies, Terminologies
05 Periodicals and Serials
06 Conference Reports and Proceedings
07 Textbooks
08 Other Monographs
09 Standards and Guidelines

The subdivisions of these form categories have also been devised as a recurring sequence in order to facilitate their use. The following subdivisions of 01 can be used in a similar way, as also with the headings under 02, 03, and 05 (with some exceptions):

011 General Bibliographies
012 Current Bibliographies
013 Bibliographies of Classification Systems (CS) and Thesauri (T)
014 Bibliographies of Major Universal CS
015 Recurring Bibliographies and Holding Lists
016 Bibliographies of Special Classification and Indexing (C&I) Fields
017 Bibliographies of Special Indexing Systems
018 Bibliographies of CS and T in Special Subject Fields
019 Bibliographies of the Works of Persons in C&I

Subdivisions of groups 07–09 were achieved by applying the subdivisions of the CLC (the scheme in Annex 1) and separating them from the form number by a period, e.g.:

07.21 Textbooks on General questions of CS & T
07.23 Textbooks on the Construction of CS & T

08.3 Monographs on Indexing

09.77 Terminological Standards

Whenever a subdivision of the CLC could be applied, this would then also be used with the first four groupings of 01–03 and 05), namely for the subdivision of 016, 026, 036, 056 in the same manner as above to indicate, for instance,

016.23 "Bibliography on the construction of schemes for classification".

In some cases, the form categories in our field of classification are also connected to certain subject fields, as shown through the description of e.g.

018 Bibliographies of CS & T in Special Subject Fields

Here the notation for the subject field in question is taken from the ICC (outline in Annex 2) and added to the form number 018 by a hyphen, e.g.

018-366 Soil classification. A bibliography

Conference proceedings are arranged chronologically. Their notation 06 is followed by the dates of the conference, e.g.

06.72-04-23/25, meaning: conference on 23–25 April 1972.

The single papers following a main conference entry are, however, classed according to the CLC Scheme.

References of the reports to conferences usually follow the conference proceedings of a conference – if any. The extent to which a conference has found response in the journals of the profession transpires therefrom.

If any book reviews could be found (admittedly more or less by chance, except for those from the journal International Classification) they were added at the end of a citation without a serial number.

2.3 Arrangement and Coverage of ICIB Volumes 3–5

Vols. 3–5 with the literature **on** or about classification and indexing (mostly journal articles, reports, dissertations and other kinds of publications) are arranged according to the CLC (Annex 1) where three groups are always assembled in one volume, as follows:

Vol.3	1 Theoretical Foundations 2 Structure and Construction of CS and T 3 Classing and Indexing Methodology
Vol.4	4 On Universal Systems 5 On Special Object Related Systems 6 On Special Subject Related Systems
Vol.5	7 Classification and Language 8 Applied Classing and Indexing 9 Classification Environment

Vol. 3 covers some 5600 titles, Vol. 4 will cover some 5 000 titles, Volume 5 some 3200 titles.

3. Indexes and Correlation Tables

Vols. 1 and 2 contain author indexes for personal and corporate authors and subject indexes. Vols. 3–5 contain two author indexes, a first one for the first author and a second one for the second and further authors.

In the first two volumes, the alphabetical subject index leads mainly to the systematic divisions, that is in Vol. 1 to the special subject fields of the ICC and in Vol. 2 to the subdivisions of the Classification Literature Classification (CLC) which has been used in that volume also for a Systematic Index to the approx. 3000 papers of the conference proceedings volumes.

From Vol. 3 on the alphabetical subject index leads to the headings of the outline (underlined in the index) and to the single entries whenever these are not named in the headings of the outline.

In Vol. 1 two correlation tables were deemed necessary, namely between the UDC and the ICC and vice versa, as the many (500) UDC schemes included would demand such a correlation of subject field notations.

The systematic index of the conference papers in Vol. 2 is quite interesting in so far as it reveals that most of the CLC classes are represented. Some are even overrepresented, as e.g. 251, 252, 253 belonging to the field of Numerical Taxonomy; they will need further subdivisions. It can also be seen that a great number of combinations became necessary, due to the fact that the classes of the system have been constructed in a faceted way so as to allow such combinations in the notation. (See especially the entries in the systematic index of Vol. 2 under 42 "On the UDC").

4. Languages of Entries

Entries came from many languages of the world. Except for German, French, Spanish, Portuguese, and Italian, entries were given in English with the indication (by the language symbol) of the original language. In all other cases, a title is first given in its original language with the

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English translation following in brackets. Tables for the language codes (in 2-letter abbreviations according to the German standard DIN 2335) are included in each volume.

The language codes have even been used also with each reference number in the systematic index of Vol. 2, namely in all those cases where a source was in a non-English language.

The majority of the sources are in English. A great number are in Russian and German followed by French, Portuguese, Italian and Spanish. Other sources are in Japanese, Polish, Hungarian, Czech, Croation, Danish, Swedish, Chinese and some other languages.

5. Machinery

With the printed volumes it had been intended to establish a databank accessible through EURONET. However support for this was withdrawn after two years of work which meant – as we were working with the text system IBM 6/452 – that the coding done on our diskettes for the transfer of the data had to be deleted by hand again so that we were able to set the text from the data files of our own system. This is also one of the reasons why the whole "enterprise" was delayed, as the editing of the texts for the printouts had also to be done in the machine "by hand".

The card file (in systematic order) fills 25 boxes and the diskettes necessary amounted to 72. As this material is available in machine readable form, it can always be updated and also transferred and used for information retrieval or any other purposes, provided that the necessary coding and programming can be supplied.

6. Outlook and Updating

We intend to publish the remaining Vols. 4 and 5 in the first half of 1986. With the five volumes available (through INDEKS Verlag, Frankfurt) will one ask "what about the updating of the classification and indexing literature after 1982?" However, this is done – as many of the colleagues know well – in the journal INTERNATIONAL CLASSIFICATION, in its section CLASSIFICATION LITERATURE, appearing three times per year with some 400–500 references in each issue, often annotated ones.

On the basis of the five volumes and their current updatings further studies can be envisaged and subbibliographies could be established, for instance on certain topics relating to aspects not included in the CLC, which may now be spread over all the volumes, but which might be compiled by using the indexes.

Studies could relate to the contents of the references found and lead perhaps to state-of-the-art reports with intensive treatments of the results of the works quoted.

Studies could also relate to the terminology displayed in the indexes. The different terms used could be investigated thoroughly, and such studies could lead to elaboration of mono- and multilingual glossaries and dictionaries in our field. Also a thesaurus could be compiled and mapped to the classification system used, the CLC.

If someone could perhaps suggest improvements to the CLC or would propose a new scheme for the classification of this literature, this would also be a worthwhile contribution for any future work in classification science.

The author indexes will show who has contributed to this field. Such indexes will also provide the data for scientometric studies.

With the data still in the machine, it is possible to make statistical studies concerning a number of data, as e.g. the distribution of languages and the frequency of occurrences of relevant articles in specific journals.

7. Acknowledgments

Our thanks go especially to the Gesellschaft für Information und Dokumentation (GID) through whose services the project was financed and administered during the period 1980–1983. We should like in particular to express our appreciation of the patience of the GID staff – and also of our readers – shown while waiting for the completion of the printed volumes.

I should also like to thank the General Secretariat of the Fédération Internationale de Documentation, in particular the late Mr. Ken BROWN, for the helpful cooperation in letting us have their card files on their thesaurus collection, as they had intended to publish a thesaurus bibliography at almost the same time as we started our work on Vol. 1.

In compiling Vol. 1, we also collaborated with the publishers of the six different universal schemes and should like to acknowledge gratefully the help extended by them.

And finally I should like to thank Dr. S. SEETHARAMA who did the indexing of some 12000 titles (Vols. 3–5) in only 6 months, and my collaborators, Mr. Bernhard EWALD and Ms. Rotraud GRENZ for the care with which they handled the typing, editing and copy preparation.

Let me thank in advance all those who take an interest in this compilation of the contributions to our subject field of classification and indexing science and all those who might help with suggestions on how to improve it in the future.

Notes:

1 See also the Editorial of Int. Classif. 7 (1980) No. 1

2 The term "Systematifier" denotes a mnemonic device for the ("helpful") sequence of the facet components of a subject field and its subdivisions. It has already been shown and explained in some publications, c.f. in (1)–(3).

References:

(1) Riggs, F.W.: Interconcept Report: A new paradigm for solving the terminology problems in the Social Sciences. Paris: Unesco 1981. p. 41

(2) Dahlberg, I.: Ontical Structures and Universal Classification. Bangalore: Sarada Ranganathan Endowment for Library Science 1978.

(3) Dahlberg, I.: ICC Information Coding Classification – Principles, Structure and Application Possibilities. Int. Classif. 9 (1982) No. 2, p. 87–93

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Annex 1

Classification Literature Classification (CLC)

1 THEORETICAL FOUNDATIONS

11 ORDER AND CLASSIFICATION

111 Classification Theory in General
112 Structures in General
113 General Classification Activities
114 Universal Order
115 General Order of Objects, Actions
116 General Order of Subjects
118 Problems of Order in Application Fields
119 Role and Significance of Classification

12 CONCEPTOLOGY IN CLASSIFICATION

121 Logical Basis of Concepts
122 Theory of Concepts
123 Concept Construction
1231 Concept Formation in General
1232 Definitions, Definition Theory
1233 Analysis of Concepts
124 Knowledge Representation
125 Basic Concepts, Categories
1254 Conceptual Universals
126 General Kinds of Concepts
127 Special Kinds of Concepts
128 Concepts of Certain Subject Fields
129 Concept Documentation

13 MATHEMATICS IN CLASSIFICATION

131 Mathematical Theory of Classification
132 Algebra of Classification
1321 Algebraic Problems in General
1322 Set-theoretical Approaches
1324 Fuzzy Sets in Classification
133 Formalization and Mathematical Models
134 Geometrical Methods in Classification
135 Graph-Theoretical Methods
136 Distribution Theory and Frequency Studies
137 Numbers in Classification
139 Mathematical Methods for Certain Purposes

14 SYSTEMS THEORY AND CLASSIFICATION

141 Systems Principles
142 Typology of Systems
143 Systems Analysis and Description
144 Systems Approach, Knowledge Analysis
145 Structure of Science
146 Levels, Integrative Levels
147 Systems Approach to the Analysis of Concepts
148 Systems in Special Fields of Knowledge

15 PSYCHOLOGY OF CLASSIFICATION

151 Psychological Basis of Classification
152 Thought and Memory
153 Intellectual Work
154 Concept Formation
155 Psychology of Classification Processes
156 Cognition and New Knowledge
157 Computerization of Thought Processes

16 SCIENCE AND CLASSIFICATION

161 General Problems of Science Classification
162 Structure and Interrelationship of Sciences
1622 Disciplinary Structure of Science
1623 Interrelationships between Sciences
1624 Interdisciplinarity
1625 Synthesis of Sciences
1626 Integration of the Sciences
1627 Unity of the Sciences
163 Science Methodology
164 Development of Knowledge and Science
165 Control of Knowledge, Growth
166 Structure of Scientific Literature
167 Contribution of Classification to Science Development
168 Science Developments in Fields of Knowledge

17 CLASSIFICATION PROBLEMS

171 Classification Problems in General
172 Problems from Classification Systems
173 Methodological Problems
174 Organizational Problems
175 Problems of Choice of Classification Systems
176 Problems from New Methods
177 Problems from New Technology
178 Classification Problems in Subject Fields
179 Trends and Future Tasks in Classification

18 CLASSIFICATION RESEARCH

181 General Problems of Classification Research
182 State of the Art of Classification in General
183 Research on Classification Methods and Techniques
184 Research on Classification Systems
185 Areas for Research, Proposals
186 Research on New Topics in Classification
188 Classification Research in Countries
189 Classification Research of and in Institutions

19 HISTORY OF CLASSIFICATION

191 History of Knowledge and Classification
192 History of Classification System Construction
193 History of Indexing and Subject Cataloguing
196 History of Subjects Related to Classification
197 History of Classification in Countries
198 History of Classification in Subject Fields

2 STRUCTURE AND CONSTRUCTION OF CLASSIFICATION SYSTEMS AND THESAURI (CS & T)

21 GENERAL QUESTIONS OF CS & T

211 Theory of Classification Systems and Thesauri
212 Characteristics and Typology of CS
2121 Characteristics of CS
2122 Typologies of CS & T
2124 Kinds of CS
213 Management of CS
214 Thesauri in General
215 Characteristics and Kinds of Thesauri
2151 Thesaurus Bases
2152 Characteristics of Thesauri, Semantic Aspects
2153 Thesauri, Quantitative Aspects
2154 Special Kinds of Thesauri
2155 Object-Attribute Retrieval Languages
216 Thesaurus Systems, Integrated Thesauri
217 Role and Function of a CS or Thesaurus
218 Use of CS & T in Special Environments
219 Comparisons between CS & T

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22 STRUCTURE AND ELEMENTS OF CS & T

221 Conceptual Structures of CS
222 Components of CS & T in General
223 Vocabulary Selection and Extraction
224 Hierarchy and Hierarchical Levels
225 Facets, Faceted Classification
226 Descriptors, Keywords, Subjects Headings, etc.
227 Compound Descriptors, Descriptor Combinations
228 Descriptors in Certain Subject Fields
229 Representation Form of Descriptors

23 CONSTRUCTION OF CS AND THESAURI

231 Preconditions for Construction
2312 Sources for Thesauri
232 Design Principles for CS
2324 Systematic Arrangement of Classes
233 Methodology of CS Construction
234 Linguistic Support of Descriptor Languages
235 Construction of Thesauri in General
235.09 Guidelines for Thesaurus Construction
235.136 Statistical Methods of Thesaurus Construction
236 Construction of Thesauri for Special Purposes
237 Computer-Supported Construction of CS & T
238 CS & T Construction in Different Natural Languages
239 Evaluation of Thesaurus Construction Work

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245 Roles and Links
246 Weights
247 Relational Data Files
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249 Representation of Relationships

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262 Notational Systems
263 Code and Notation Development, Construction etc.
264 Characteristics of Codes
265 Book Numbers, Call Numbers
266 Class Numbers, Notation of CS
267 Numbering Systems and Codes for Special Purposes
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27 MAINTENANCE, UPDATING, AND STORAGE OF CS & T

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293 Testing and Evaluating the Validity of CS & T
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317 Author and Editor Indexing
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33 CLASSING AND INDEXING TECHNIQUES

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343 Automatic Indexing Methods
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3432 Linguistic Methods of Automatic C & I
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41 ON UNIVERSAL CS IN GENERAL

411 Library Classification in General
412 Surveys on Existing Universal Systems
414 Problems of Library Classification
415 Specifications for a New Universal CS
417 Problems from Comparative Studies of Universal CS
418 Special Topics Treated in Universal CS
419 Trends in the Development of Universal CS

42 ON THE UNIVERSAL DECIMAL CLASSIFICATION

Subdivisions here as well as for the following classes 43-47 by CLC 0–3

43 ON THE DEWEY DECIMAL CLASSIFICATION

44 ON THE LIBRARY OF CONGRESS CLASSIFICATION

45 ON THE BLISS BIBLIOGRAPHIC CLASSIFICATION

46 ON THE COLON CLASSIFICATION

47 ON THE LIBRARY BIBLIOGRAPHICAL CLASSIFICATION

48 ON OTHER UNIVERSAL CS & T

481 On Proposals of Universal CS & T
482 On CS for General Purposes
483 On Thesauri and Subject Heading Lists & Similar Devices for General Purposes
484 On CS & T for Archives
485 On CS & T for Libraries
486 On CS & T for Documentation & Inform.Syst.
487 On Patent Classification Systems
488 On CS for Reseach & Terminology
489 On CS for Other Special Purposes (Children, School & Youth, Public Offices, State Documents etc.)

5 ON SPECIAL OBJECTS CS (TAXONOMIES)

Classes 51-52 are subdivided by the main classes of the Information Coding Classification - ICC (See Annex 2)

51 On Taxonomies in Area 1 (Form and Structure)
52 On Taxonomies in Area 2 (Matter and Energy)
53 On Taxonomies in Area 3 (Cosmos and Earth)
54 On Taxonomies in Area 4 (Plants and Animals)
55 On Taxonomies in Area 5 (Human Beings)
56 On Taxonomies in Area 6 (Society)
57 On Taxonomies in Area 7 (Material Goods)
58 On Taxonomies in Area 8 (Intellectual Goods)
59 On Taxonomies in Area 9 (Spiritual Goods)

6 ON SPECIAL SUBJECTS CS & THESAURI

Classes 61–69 are subdivided by the main classes of the Information Coding Classification – ICC, just as 51–59 above.

7 CLASSIFICATION AND LANGUAGE

71 GENERAL PROBLEMS OF NATURAL LANGUAGE RELATED TO CLASSIFICATION & INDEXING

711 Linguistics and Classification
712 Natural Language & Metalanguage
713 Math.& Comput.Linguistics in General
714 Semiotics
715 Formalization of Natl.Language; Artificial Intelligence
716 Problems of Structure

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717 Language Universals
718 Problems of Different Natural Languages

72 SEMANTICS

721 General Problems of Semantics
722 Word & Sentence Meaning
723 Semantic Analysis
724 On Synonyms & Other Ambiguities
725 Semantic Networks & Associations
726 Semantics of Texts & Languages
727 Semantics of Data Bases, Memory Systems
728 Semantics in Subject Fields

73 AUTOMATIC LANGUAGE PROCESSING

731 General & Theoretical Problems
732 On Language Items for Processing
733 Methodololgy & Procedures
734 Computer Programs for ALP
735 Word Truncation, Root, Stem Proc.
736 File, Text Compression
737 Autom.Analysis of Spec.Natural Lang.
738 Autom.Analysis in Subject Fields

74 GRAMMAR PROBLEMS

741 General & Theor.Problems of Grammar
742 Grammars
743 Syntactic Analysis & their Algorithms
744 Grammatical Forms, e.g. of key-words, terms, words
745 Spec.Gramm. Problems, e.g. frames
746 Generation of Phrases, Syntax.Struct.
747 Syntax of Spec.Natural Languages
748 Syntax in Spec.Subject Fields

75 QUESTION-ANSWERING SYSTEMS

751 General & Theor.Problems
752 Dialogue Systems
753 On-line Activities, Query Optimization
754 Programs for On-line Queries
755 Problems of Question-answering Syst.
756 Thesaurus-based Queries
758 Question-answ.Syst.in Subj.Fields

76 LEXICON/DICTIONARY PROBLEMS

761 General & Theor.Problems
762 Dictionary Structures
763 Constr.& Updating of Dictionaries
764 Kinds of Dictionaries, except 765/6
765 Automatic Dictionaries, Monolingual
766 Automatic Dictionaries, Multilingual
767 Data Bases in Dictionary Form
768 Dictionaries in Subject Fields

77 GENERAL PROBLEMS OF TERMINOLOGY

771 General & Theor.Problems of Terminology
772 Form and Designation of Terms
773 Terminological Work
774 Term Systems and Terminological Syst.
775 Classification in Terminology
776 Terminological Data Banks
777 Country & Lang.Orient.Term.Work
778 Special Language Research
779 Contrastive Terminology

78 SUBJECT-ORIENTED TERMINOLOGY

Subdivision by ICC as Classes under 5 above

79 PROBLEMS OF MULTILINGUAL SYSTEMS

791 General & Theor.Probl.of Translation
792 Aspects and Models of Translation
793 Methods of Machine Translation
794 Translation of CS & Thesauri
795 Multilingual CS & T, Construction
796 Multilingual CS & T, Use
797 Indexing, Multilingual Systems
798 Translation Probl.in Subject Fields
799 Interlinguistics and Translation

8 APPLIED CLASSING & INDEXING (C & I)

81 GENERAL PROBLEMS, SUBJECT CATALOGUES GUIDELINES

811 General Problems of Indexing, Indexes & Indexers
812 Alphabet.& Class.Subj.Catalogues
813 Establish.& Maint.of Subject Catalogues
814 Manuals, Rules, Codes for Subj.Cat.
815 Index specifications
816 Rules for Good Indexes
817 Editing & Printing of Indexes
818 Subj.Indexes & Subj.Catalogues in Certain Institutions
819 Evaluation of Indexes & Catalogues

82 DATA CLASSING AND INDEXING

820 Data Classing & Indexing in General

Further subdivisions according to ICC as Classes under 5 above

83 TITLE CLASSING AND INDEXING

831 General Problems
832 Information Contents of Titles
833 Methodology of Title and Sentence C&I
838 Permuted Title Indexes in Subj.Fields
839 Permuted Title Indexing in Spec. Institutions (libraries, etc.)

84 PRIMARY LITERATURE C & I (except 85)

841 C&I of Research Reports
842 C&I of Patents & Similar Docs.
843 C&I of Biographies
844 C&I of News and Newspapers incl. Prestel/Viewdata Ind.
845 C&I of Journals and Serials
847 C&I of Archival Materials
848 C&I of Field-oriented Prim.Docs.
849 C&I of Other Kinds of Prim.Docs.

85 BOOK CLASSIFICATION AND INDEXING

851 General Problems
852 Term or Topic for Entries
853 Methodology of Book Indexing
854 Characteristics of Book Indexes
856 Index Generation of Spec.Books (Proceedings, etc.)
857 Computerized Book Indexing
858 Book Indexing in Subject Fields
859 Evaluation of Book Indexing

86 SECONDARY LITERATURE C & I

861 C&I of Encyclopedias, Manuals
862 C&I of Bibliographies

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863 C&I of Abstracts & Abstract.Journals
864 Citation Indexing
865 C&I of Library Catalogues
866 Establ. of Indexes to CS, Methodology
867 Establ. of Indexes to Univ.CS
868 Establ. of Indexes to Spec.CS
869 C&I of Other Secondary Literature

87 C&I OF NONBOOK MATERIALS

871 General Problems
872 Picture C&I, including Photographs
873 Microform Indexing
874 Slides C&I
875 Video Tape & Film C&I
876 Cartographic C&I
877 Audio-indexing, Indexing of Phonographic Records
878 Museum Objects C&I
879 C&I of Other Non-book Materials

88 C&I IN SUBJECT FIELDS

(Manual & Computerized)
subdivision by ICC as Classes under 5

9 CLASSIFICATION ENVIRONMENT

91 ORGANIZATION PROBLEMS IN GENERAL

92 PERSONS AND INSTITUTIONS IN CLASSIFICATION

922 Historical Persons
923 Comparison of Persons
924 Contemporaries
925 Societies, Research Groups, Committees (national level)
926 International Societies & Groups
927 International Institutions
928 Awards in C&I

93 ORGANIZATION OF CLASSIFICATION AND INDEXING ON A NATIONAL & INTERNAT.LEVEL

931 General Principles
932 International Cooperation & Systems
933 International Activities
934 Activities in Europe
935 Activities in Asia
936 Activities in Africa
937 Activities in America

95 EDUCATION AND TRAINING IN CLASSIFICATION AND INDEXING

951 General Problems
952 Subject, Curricula & Training Programs
953 Methodology of Teaching C&I
954 Side Effects of Teaching C&I
955 Teaching Aids
956 Educational Requirements
957 Educ.& Train.in Particular Countries
958 Teaching of Subject Oriented Classif. & Indexing Systems

97 ECONOMIC ASPECTS IN CLASSIF. & INDEXING

Subdivision by CLC Classes

98 USER STUDIES IN CLASSIF.& INDEXING

981 Studies of Users, Readers
982 Requirements of C&I Users
983 Use of certain C&I Practices
984 Use of CS
985 Use of Thesauri
986 Use of Subject Catalogues
987 Use of Indexing Syst.& Methods
988 Use of Indexes
989 Use of CS & T in Certain Institutions

99 STANDARDIZATION IN CLASSIF.& INDEXING

991 General Problems
992 Standardiz.of Terms & Characteristics
993 Standardiz.in Shelving & Organization of Materials
994 Standardization of CS
995 Standardization of Thesauri
996 Standardization of Subject Catalogues
997 Standardization in Indexing

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INTERNATIONAL CLASSIFICATION

Devoted to Concept Theory, Systematic Terminology and Organization of Knowledge

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Annex 2

Information Coding Classification (ICC)

Survey on the first two level subdivisions

1 FORM AND STRUCTURE AREA

11 Logic
12 Mathematics
13 Statistics
14 Systemology
15 Organization Science & Technology
16 Metrology
17 Cybernetics (Control, Automation)
18 Standardization
19 Testing and Checking

2 ENERGY AND MATTER AREA

21 Mechanics
22 Physics of Matter
23 General & Technical Physics
24 Electronics
25 Physical Chemistry
26 Pure Chemistry
27 Chemical Technology & Engineering
28 Energy Science & Technology
29 Electrical Engineering

3 COSMO- AND GEO-AREA

31 Astronomy & Astrophysics
32 Astronautics & Space Research
33 Basic Geosciences
34 Atmospher.Sciences, Meteorology
35 Hydrospheric & Oceanol.Science
36 Geological Sciences
37 Mining
38 Materials Science & Metallurgy
39 Geography

4 BIO-AREA

41 Basic Biological Sciences
42 Microbiology and Cultivation
43 Plant Biology and Cultivation
44 Animal Biology and Breeding
45 Veterinary Science
46 Agriculture and Horticulture
47 Forestry & Wood Science & Technol.
48 Food Sciences & Technology
49 Ecology and Environm.Sci.& T.

5 HUMAN AREA

51 Human Biology
52 Health & Theoretical Medicine
53 Pathology & Special Medicine
54 Clinical Medicine & Nature Cure

(Continuation of Human Area)
55 Psychology
56 Education
57 Profession, Labour, Leisure
58 Sports and Games
59 Household and Home Life

6 SOCIO-AREA

61 Sociology
62 State and Politics
63 Public Administration
64 Money and Finances
65 Social Aid, Social Politics
66 Law
67 Area Planning and Urbanism
68 Military Science & Technology
69 History

7 ECONOMICS & TECHN'PROD'AREA

71 Gen.Economics and National Economy
72 Management of Enterprises
73 Technology, Engineering in general
74 Mechanical Engineering
75 Building
76 Commodity Science & Technology
77 Vehicle Science & Technology
78 Transport Technology & Services
79 Service Economics

8 SCIENCE & INFORMATION AREA

81 Science of Science
82 Information Sciences
83 Computer Science & Technology
84 Information in general
85 Communication Science & Technol.
86 Mass Communication
87 Printing and Publishing
88 Communication Engineering
89 Semiotics

9 HUMANITIES & CULTURE AREA

91 Language
92 Literature and Philology
93 Music
94 Fine Arts
95 Performing Arts. Theatre
96 Culture Science (Ethnol., Archeol.)
97 Philosophy
98 Non-Christ.Religion & Secr.Teach.
99 Christian Religion & Theology

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