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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 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)

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### 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 CLASSIFICATION 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<sup>1</sup>. 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 so-called Systematifier<sup>2</sup> – 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 O4 of the scheme of Classification Literature) as well as the other form-oriented literature (classes O1–O3 and O5–O9) 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:

- 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-Croatian 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

Gesellschaft für 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:

- 1 Theoretical Foundations
- Vol.3 2 Structure and Construction of CS and T
- 3 Classing and Indexing Methodology
- 4 On Universal Systems
- Vol.4 5 On Special Object Related Systems
- 6 On Special Subject Related Systems
- 7 Classification and Language
- Vol.5 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 over-represented, 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

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, Croatia, 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 updates 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

## 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  
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 1324 Fuzzy Sets in Classification  
 133 Formalization and Mathematical Models  
 134 Geometrical Methods in Classification  
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 137 Numbers in Classification  
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- 14 SYSTEMS THEORY AND CLASSIFICATION**
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 143 Systems Analysis and Description  
 144 Systems Approach, Knowledge Analysis  
 145 Structure of Science  
 146 Levels, Integrative Levels  
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 192 History of Classification System Construction  
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 2151 Thesaurus Bases  
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 2155 Object-Attribute Retrieval Languages  
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365	Bibliographic Encoding		
366	Encoding of Text and Data		
367	Coding of Techno-Economic Data	48	ON OTHER UNIVERSAL CS & T
368	Coding in Subject Fields	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.)
37	<b>RECLASSIFICATION</b>		
371	General and Theoretical Problems		
372	Parameters of Reclassification		
373	Organisation of Reclassification		
374	Administrative Viewpoints of Reclassification		
375	Reclassification Between Universal CS except 376		
376	Reclassification to LCC		
377	Reclassification in Patent Classification		
378	Reclassification in Subject Fields		
38	<b>INDEX GENERATION AND PROGRAMS</b>		
381	General and Theoretical Problems		
382	Special Kinds of Indexes		
383	Manual & Computerized Methods for Index Generation		
384	Programs for Index Preparation		
385	Index Generation Programming Systems		
386	Index Generation Programs by Name		
387	Programs for Other Activities in C & I		
388	Index Generation in Subject Fields		
389	Evaluation of Indexes		
39	<b>EVALUATION OF CLASSING AND INDEXING</b>		
391	Problems and Principles of Indexing Evaluation		
392	Evaluation Criteria		
3922	Indexer Consistency		
3923	Measures of Indexer Consistency		
393	Methods of Evaluation		
394	Evaluation of Single Indexing Systems Applications		
395	Comparative Evaluation of Indexing Systems		
396	Comparative Evaluation of Controlled and Free Indexing		
397	Comparative Studies of CS vs Indexing Systems		
398	Comparative Studies of Indexing in Subject Fields		
4	<b>ON UNIVERSAL CLASSIFICATION SYSTEMS</b>		
41	<b>ON UNIVERSAL CS IN GENERAL</b>		
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	<b>ON THE UNIVERSAL DECIMAL CLASSIFICATION</b>		
	Subdivisions here as well as for the following classes 43-47 by CLC 0-3		
		5	<b>ON SPECIAL OBJECTS CS (TAXONOMIES)</b>
			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	<b>ON SPECIAL SUBJECTS CS &amp; THESAURI</b>
			Classes 61-69 are subdivided by the main classes of the Information Coding Classification - ICC, just as 51-59 above.
		7	<b>CLASSIFICATION AND LANGUAGE</b>
		71	<b>GENERAL PROBLEMS OF NATURAL LANGUAGE RELATED TO CLASSIFICATION &amp; INDEXING</b>
		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

- 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 Methodology & 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

- 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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## Information Coding Classification (ICC)

## Survey on the first two level subdivisions

<b>1</b>	<b>FORM AND STRUCTURE AREA</b>	(Continuation of Human Area)
11	Logic	55 Psychology
12	Mathematics	56 Education
13	Statistics	57 Profession, Labour, Leisure
14	Systemology	58 Sports and Games
15	Organization Science & Technology	59 Household and Home Life
16	Metrology	
17	Cybernetics (Control, Automation)	
18	Standardization	
19	Testing and Checking	
<b>2</b>	<b>ENERGY AND MATTER AREA</b>	<b>6</b>
21	Mechanics	61 Sociology
22	Physics of Matter	62 State and Politics
23	General & Technical Physics	63 Public Administration
24	Electronics	64 Money and Finances
25	Physical Chemistry	65 Social Aid, Social Politics
26	Pure Chemistry	66 Law
27	Chemical Technology & Engineering	67 Area Planning and Urbanism
28	Energy Science & Technology	68 Military Science & Technology
29	Electrical Engineering	69 History
<b>3</b>	<b>COSMO- AND GEO-AREA</b>	<b>7</b>
31	Astronomy & Astrophysics	71 Gen.Economics and National Economy
32	Astronautics & Space Research	72 Management of Enterprises
33	Basic Geosciences	73 Technology, Engineering in general
34	Atmospher.Sciences, Meteorology	74 Mechanical Engineering
35	Hydrospheric & Oceanol.Science	75 Building
36	Geological Sciences	76 Commodity Science & Technology
37	Mining	77 Vehicle Science & Technology
38	Materials Science & Metallurgy	78 Transport Technology & Services
39	Geography	79 Service Economics
<b>4</b>	<b>BIO-AREA</b>	<b>8</b>
41	Basic Biological Sciences	81 Science of Science
42	Microbiology and Cultivation	82 Information Sciences
43	Plant Biology and Cultivation	83 Computer Science & Technology
44	Animal Biology and Breeding	84 Information in general
45	Veterinary Science	85 Communication Science & Technol.
46	Agriculture and Horticulture	86 Mass Communication
47	Forestry & Wood Science & Technol.	87 Printing and Publishing
48	Food Sciences & Technology	88 Communication Engineering
49	Ecology and Environm.Sci.& T.	89 Semiotics
<b>5</b>	<b>HUMAN AREA</b>	<b>9</b>
51	Human Biology	91 Language
52	Health & Theoretical Medicine	92 Literature and Philology
53	Pathology & Special Medicine	93 Music
54	Clinical Medicine & Nature Cure	94 Fine Arts
		95 Performing Arts. Theatre
		96 Culture Science (Ethnol., Archeol.)
		97 Philosophy
		98 Non-Christ.Religion & Secr.Teach.
		99 Christian Religion & Theology