

viewed as a „copy“ or „image“ („Abbild“) of the world; instead it is seen as a representative organ, whose function is to manifest the imperfection of natural language and to provide a formel for ordering things.

In the last chapter, the authoress turns her attention to an objection which might be made to her study, that namely with her concentration on theory in the context of library science nothing is gained for the day-to-day problems of library practice. She replies, that when one views the system of the sciences as a variable historical construction, Leibniz's own efforts to bring together his practical work as a librarian and his theoretical and philosophical work in ordering knowledge turns out to be quite interesting. In conclusion, then, the authoress calls attention to the new situation for communicating knowledge created by the new possibilities of electronic storage of information. In doing so, she also calls attention to the danger inherent therein, namely that thinking would appear to depend less and less on the context. As a consequence, questions pertaining to the ordering of knowledge come less and less to the fore; in libraries, classificatory subject-cataloging is abandoned in favor of verbal indexing. Quite correctly, the authoress replies that today as in the past, new knowledge comes to expression „between the texts“. Furthermore, as she points out, the definition of knowledge must not be reduced to merely collecting and recalling facts. When the library as institution should, in the future as in the past, continue to fulfill its function of ordering the knowledge of its time, then — so the authoress concludes — it is necessary „to reflect upon the spatial aspect of knowledge as this is being transformed by the media. In the spatial organization of knowledge, new structures emerge within and between previously existing structures“. Thus to fulfill this task, much can be learned from the way organizing structures of the past have approached the problem.

Thus for the solution of contemporary problems in organizing and ordering knowledge, recourse to the proposals developed by Leibniz in the context of his theories can well prove fruitful. The authoress's combination of methods belonging to the theory of knowledge with those belonging to the history of knowledge is well suited to call attention to specific aspects of Leibniz's contribution to the organization of knowledge and of science. Not only librarians but also Leibniz-specialists should pay close attention to this study, which, by the way remarked, has dealt thoroughly with all the literature relevant to its themes.

Wilhelm Totok

Prof. Dr. W. Totok, Buchweizenfeld 8, D-30657 Hannover

Subject Indexing: Principles and Practices in the 90's. Proceedings of the IFLA Satellite Meeting held in Lisbon, Portugal, 17-18 August 1993. Edited by Robert P. Holley, Dorothy McGarry, Donna Duncan and Elaine Svenonius. München: K.G. Saur 1995. 302p. = IFLA UBCIM Publications, New Series, Vol. 15.

In the Introduction to this proceedings volume, *Dorothy McGarry* gives a short description of decisions and actions that preceded the Meeting. At its meeting in Stockholm in

1990 the Standing Committee of IFLA's Section on Classification and Indexing decided to form a working group which would look into the feasibility of formulating a list of principles underlying subject heading languages used in various subject access systems throughout the world. The Working Group on Principles Underlying Subject Heading Languages was chaired by *Elaine Svenonius* and held several meetings. During one of these meetings, namely in New Delhi in 1992, the Standing Committee of the Section decided to sponsor a satellite meeting on „Subject Indexing: Principles and Practices in the 90's“. The goals of the meeting were to review national subject access systems worldwide and to consider current issues in the development of such systems.

The papers presented in the book are divided according to the sessions of the meeting: Session 1, Systems and Practices Today: An Overview, and Session 2, Current Issues in Subject Indexing. The reviews of subject systems of 11 countries given in alphabetical order of the countries were presented in Session 1.

Brazil: „Subject Access in the Brazilian Library Network, BIBLIODATA CALCO“ was presented by *E. Decourt* and *S. M. Guerreiro Pacheco*. The Fundação Getulio Vargas (FGV), founded in 1944, provides Brazilian libraries with a set of different library services, and since 1976 with the first bibliographic database, the BIBLIODATA network. The bibliographic database, CALCO, is searchable by author, title and subject with some other operators (publication date, language etc.) to refine the search. The FGV began to develop the subject heading list in Portuguese, for which the basic source for consultation was the Library of Congress list. The list of the BIBLIODATA network includes Topical Subject Headings, Subdivisions, Geographic Names, „See“ References, „See Also“ References and LC Terms. The rules and procedures are described in the Subject Heading Manual.

Canada: *Alina Schweitzer* read her paper on „Subject Access to Library Materials in Canada: A Balancing Act Between Conformity and Divergence“ and *Ingrid Parent* summarized the main points made in Schweitzer's paper and added a few observations of her own. LCSH and two other subject heading systems are in use in Canada: these two systems developed in Canada are Canadian Subject Headings (CSH) in English and Répertoire de vedettes-matière (RVM) in French. LCSH are welcome because Canada acquires many foreign books. With the development of publishing in Canada the need was felt for additional subject headings for the national topics to express particularities of Canadian history, literature, multiculturalism and bilingualism of Canadian native people. The Canadian Subject Headings are largely based on LCSH in its underlying principles, but are designed as an adjunct list to be used in tandem with LCSH. The Subject Headings RVM was developed at the library of the Université Laval in Quebec and in cooperation with the Bibliothèque Nationale in Paris, which maintains its own subject heading list (RAMEAU). The two lists that serve its own international francophone clientele, are similar and compatible. DDC is also used, adapted for the use in Canada. The Sears List of Subject Headings is also adopted according to the same principles and published as *Sears List of Subject*

Headings. Canadian Companion. Describing these systems, Schweitzer attempts to show „that it is possible to reflect the particular characteristics of one's own country in the use of subject headings, and yet still to follow international standards“.

Croatia: „Subject access systems in use in Croatia“ were described by *Mirna Willer*. The bottom design model of the CROLIST - Croatian Library and Information System developed in the National and University Library is based on UNIMARC formats for bibliographic and authority data. Title keyword searching with the possibility of adding descriptors to marked-up keywords in the process of cataloguing is implemented as an additional searching tool. Although CROLIST technologically supports subject cataloguing via authority file, the full processing of subject headings is still in the development phase. The subject heading system under development in the National and University Library is based on *Guidelines for Subject Authority and Reference Entries (Draft)*, UNIMARC/ Authorities, ISO standards, relevant codes from the Croatian cataloguing rules by *Eva Verona* and available subject thesauri in Croatian and other languages. Other subject heading systems in use by Croatian libraries like MESH, used by the Central Medical Library of Croatia, and some locally developed ones by certain research and public libraries, are not yet implemented through authority files either of their locally developed software packages nor of the CROLIST system. Mention is made also of subject cataloguing of special collections - older printed books (antiquarian), graphics and three-dimensional artifact and realia which pose problems of categorizing and content designating genre terms and form headings as well as special access points required for older books, which are not defined as a separate category of subject headings both in GSARE and the two UNIMARC formats. It may be added here that *Mira Mikacic*, Corresponding Member of the IFLA Section on Classification and Indexing, designed the system „Syntactical System for Subject Designation“ for use in the National and University Library. In the time of the meeting it was not yet published. As M. Mikacic informed the Chairperson of the Section about the work, a note was published in the Section's Newsletter, June 1993. The system was later described in the book published in Croatian in 1996, and in the form of an article in English on a „Syntactical System for Subject Designation (SSSD) for Libraries in Croatia“ (misprinted as 'Statistical System...') in *Cataloguing and Classification Quarterly*, 22(1996)No.1.

France: *Suzanne Jouguelet* presented three examples out of the 'total universe' of indexing systems currently used in France in order to emphasize multidisciplinary indexing used within a network. They are RAMEAU, MOTBIS and the PASCAL lexicon. RAMEAU is an encyclopedic list based on the subject authority file of the Bibliothèque nationale and adapted from the *Répertoire de vedettes-matière* (RVM) of the Université Laval in Quebec. It is used by university as well as public libraries. MOTBIS is a thesaurus designed for the secondary school environment and is the tool used in national and pedagogical information science. At the end of the 1980's INIST (Institut de l'information Scientifique et Technique) conducted an investigation into the possible

evolution of indexing based on the indexing vocabulary of the PASCAL database. A detailed analysis of indexing steps were conducted, with the conclusion that the process should be modelled by discipline, and within each discipline „indexing grids“ and „pre-indexing grids“ were established. Indexing grids are lists of categories, and concepts within each category to be established for particular disciplines. The objective for the modelling was homogeneity and time saving in indexing. INIST is also conducting research in automatic indexing with the aim of creating computerized procedures for structured indexing. Among other research agendas, Jouguelet mentioned one in the Bibliothèque nationale on the linguistic aid in the production and consulting of cataloguing, particularly for subject indexing, and on a front end interface for querying RAMEAU to improve the „dialogue“ between the catalogue and user.

Germany: *Magda Heiner-Freiling* in her presentation of subject indexing in the nineties starts with the historical background of subject catalogues in Germany. The RSWK (Regeln für den Schlagwortkatalog) - Subject cataloguing rules, and the SWD (Schlagwortnormdatei) - Descriptor authority-file are in use since the 1980's. The RSWK consists of rules for the correct generation of descriptors and for the construction of subject headings. The manual states that every document can receive between one and five subject headings to describe its contents. The editors of the RSWK established a list of descriptors in an authority file called SWD. It is applied in the Deutsche Bibliothek for the national bibliography and for their information retrieval system, BiblioData. The national bibliographic center at the Deutsche Bücherei in Leipzig maintains its own system of subject entries.

Although these two systems were not accepted by other libraries like the LCSH, with the newly developed regional and national networks it is foreseen that cooperation on the common authority file will grow.

Iran: Subject access systems in Iran were presented by *Poori Soltani*. In Iran documents were written from the tenth century onwards which described how the books were divided by subjects. After some centuries of silence, in the middle of the 19th century the first modern library was established. During the first half of the twentieth century the question of subject access appeared. The question was not an easy one because the books in Iranian libraries were in English, French and Persian. Persian has a different script and writing from right to left. A research committee was set up and decided to study different ways of subject analysis by comparing various systems. The decision was made in favour of subject terms in natural language. A List of Persian Subject Headings was made based on the List of LCSH. DDC was also introduced, so that subject access is possible both by class number and subject terms.

Poland: *Jadwiga Sadowska* presented the historical background of subject cataloguing in Poland. A subject catalogue is used in many libraries. The national bibliography is provided with a subject index and UDC class marks. In 1986 the Committee on the Subject Catalogue was established within the Association of Polish Librarians which works on guidelines for subject indexing. Distinction is made in sub-

ject cataloguing in medical and general libraries. The Dictionary (Slownik), issued in 1989, contains headings with all relations in its first part, and subheadings (topic and form) in the second. The headings are tending to be more and more expressive of the subject contents of the documents. An automated subject heading system is partly realized.

Portugal: *Maria Ines Lopes* presented a new approach with SIPORbase, the subject indexing system of the Portuguese National Library. Its development was connected with the automation process in the national library which started in 1986. At that time only UDC was in use and the old subject catalogue was closed, thus requirements for a new subject system were necessary. The new system needed to be alphabetical and to provide direct specific and coextensive representation of subjects. It was decided to apply a pre-coordinated approach because it would meet with the basic requirements. For vocabulary control the ISO 2788 recommendations were accepted and adapted to the characteristics of the Portuguese language and the basic principles of the system. Besides, a set of syntax rules was established to provide citation order in a logical way preserving the semantic function of each term in context, and consistent in the forms of representation adopted. The rules are described in the SIPORbase manual which consists of a code of rules, basic principles and a general indexing policy, with guidelines for content analysis and synthesis. Since 1989 the system is used for the current bibliography.

Spain: *Pilar Benedito Castellote* described the subject indexing system at the National Library of Spain. Since its beginning as the Royal Library in 1712, the Library maintained a subject catalogue. In 1935 the UDC was introduced. When computerization started in 1987, a study was made as to what kind of subject system to use. Decision was made not to use the old subject files as the authority file for the new system, but to keep it as a historic resource in establishing the new subject authority file. The new system of the National Library ILIADA, designed in 1991, is based on the intercommunication of information and the interdependence of authority and bibliographic files. A detailed description of search in such an environment is given as well as the problems with the integration of *Bibliografia Espanola* into the database. Among other immediate projects the author mentions the publication of a subject indexing manual and the IBERMARC authorities format.

United Kingdom: *I.C. Ilvaine* presented the British viewpoint on subject control. At present, the word-based indexing systems have preference over the systematic approach in the UK. Since January 1991 the National Bibliographic Service has ceased to use the PRECIS system of indexing and has changed to a greatly simplified system called COMPASS. COMPASS applies some features from PRECIS: arrangements of terms in subject strings organized by the PRECIS principles of context dependency and role operators. Terms are grouped in two types: Core concepts (Key systems, Actions/Effects, Agents) in grammatical terms essentially proper and common nouns, verbs and verbal nouns, and dependent elements (Part/properties, aggregates and quasi generics) broadly speaking comprising adjectives, abstract and collective nouns. Five other libraries apply LCSH. The

author states that in Britain cataloguing and subject work is becoming a dying art and that some library schools have ceased to teach it altogether on the „false assumption that all librarians nowadays simply copy records made by others. But someone has to make those records in the first place and someone has to know how to search them“. The changes that came about have their pluses and minuses. „In a country which, for many years, prided itself on the virtues of the systematic approach, assisted by the verbal index ... and a clear structure, providing a map for the user to find his way through the complexities of knowledge, it seems sad to see it abandoned totally in the age of OPACs“. The plus side is that in the past in the UK the majority of the older libraries provided no means of searching by subject, and now, with the advent of the OPAC this is made possible.

USA: *Lois Mai Chan* described subject access systems in the USA. Among the subject access systems used in American libraries, the most widely adopted are LCSH, a system designed for a general collection covering all subjects, and MeSH, a system dealing with a special field. In terms of precoordination, LCSH is more enumerative than MeSH, which relies more heavily on synthesis. There is no subject cataloguing code for either system. In 1990, the Library of Congress published a statement of principles of structure and policies for their application. Detailed instructions for applying LCSH are published in 1991 in „Subject Cataloging Manual: Subject Headings“. A detailed explanation of semantics and syntax of these two systems is given. LCSH is described in the following parts: basic principles, format, syntax, subdivisions, cross references, precoordination and postcoordination in LCSH. MeSH is described according to its parts: format, syntax of headings, cross references, precoordination vs. postcoordination in MeSH. Examples of LCSH and MeSH headings are given in the end for comparison purposes.

In *Section 2*, „Current Issues in Subject Indexing“, four papers were presented: *Robert Fugmann*: The Complementarity of Natural and Controlled Languages in Indexing; *Elaine Svenonius*: Pre-coordination or Not?; *J. Rey*: International Tendencies in Terminology and Indexing; and *Nancy J. Williamson*: Standards and Standardization in Subject Analysis Systems: Current Status and Future Directions.

E. Svenonius approached in the greatest degree the topic of the meeting. Her text is divided into two parts. In the first part she shows the historical roots of subject analysis since the 1950s, in the second part she discusses the pros and cons of pre- and post-coordinate systems, with special regard to online catalogues. Authors who had invented new systems and named them were: M. Taube, C. Mooers, D. Austin, J. Kaiser, S.R. Ranganathan, H.P. Luhn, Ch. Cutter. In coordinate indexing it is important 1) to discern who performs the coordination, indexer or user; 2) when the coordination is performed, in the moment of indexing or searching; and 3) how terms are coordinated, according to rules for subject heading construction or Boolean syntax. Thereafter she discusses - according to twenty criteria - the efficiency of the pre- and post-coordinate systems. Among them 16 have been taken from M. Taube, and 4 new ones added: precision,

recall, browsability, and contextuality. Not all of the criteria are of the same value. Some of them refer to syntax, and others to vocabulary. According to some criteria (logical syntax, simplicity, speed in cataloguing, and cost) preference is given to post-coordinate systems, and according to some others (universality, browsability, precision, recall, speed in searching, suggestibility, contextuality), pre-coordinate systems obtain preference. Adaptability to a machine environment today is equally possible for both. Indexer and user have not the same point of view of the same criteria: indexers claim for greater speed and less cost, thus they prefer post-coordinate systems. On the other hand, users claim for precision and recall and thus prefer pre-coordinate systems. It should be evaluated whether the advantages of pre-coordinate systems are worth their cost.

N.J. Williamson starts with a definition of 'standard' and points out that 'standardization' can have different meanings in different contexts. According to the degree of regularity and voluntariness she distinguishes three levels of standardization. There are standards with the highest degree of regularity; those with less regularity and more voluntariness, usually known as guidelines; and those which have a common origin, voluntary use. In librarianship we find mostly those of the second and third kind. The author quotes several reasons why standards are necessary and concludes that the purpose of standards is to achieve an acceptable level of „quality“. Standards have developed in two ways: from the lowest, local level up to national and international levels; and, over the past 20 years, this direction has altered and formal standards are developed by international bodies and imposed at all lower levels. The body of knowledge which is required to establish standards or guidelines must come from a variety of sources and be used in theory or practice, and preferably in both. Concerning subject analysis standards and guidelines there are two steps: the intellectual analysis of the document and the assignment of subject descriptors. Standardization refers to the latter. For the most part intellectual analysis is largely ignored in the literature. Concerning classification systems and standards the author thinks that „standard rules“ for developing classification do not exist, since each classification system is based on a particular philosophy and has many unique features. Concerning verbal descriptors and standards there are two kinds: the string system, often referred to as subject headings and designed for pre-coordinate systems; and the concept or descriptor systems, usually referred to as thesauri and designed for post-coordinate systems. The distinction between the two types has recently become somewhat confused. Standardization of controlled vocabularies is brought about in two ways: by common use of standard subject heading lists (LCSH), and by the application of acceptable guidelines (ISO 2788). Recently published Guidelines for Subject Authority and Reference Entries set out rules for establishing terminology and structuring relationships among terms. What has been done so far can by no means represent accomplishment of our professional work in standardization.

Julianne Beall's summary review of the whole meeting is of particular importance. She relates current issues in subject indexing to the Working Group's project of developing a list

of principles underlying subject heading languages. There are three principles with clearly wide agreement: the 'Uniform Heading Principle', the 'Synonymy Principle', and the 'Homonymy Principle'. There is probably also wide agreement on principles what the WG had called 'Consistency Principle', 'Naming Principle', and 'Semantic Principle'. To express the semantic (paradigmatic) structure of a subject heading language, subject headings should be linked by equivalence, hierarchical and coordinate relationships. In defining a subject heading language (SHL), the WG took care to allow for both precoordinate and postcoordinate languages: SHL is a documentary language used to provide consistent access in a catalogue, bibliography or index to the subject content of documents. It consists of a controlled vocabulary of terms representing concepts and named entities and a semantic structure showing paradigmatic relationships among these; it may sometimes have syntax rules for combining terms into strings. Considering the SHLs described, the author declares that all or almost all are wholly or predominantly precoordinate. One exception is the postcoordinate French System MOTBIS. LCSH and COMPASS are partly precoordinate and partly postcoordinate. On other principles ('Syntax Principle', 'User Principle', 'A-Posteriori Principle', and 'Specificity Principle') there was no such a wide agreement, but several different opinions, i.e. on procedures in practice. The WG's explanation of the 'Syntax Principle' is: "To express complex and compound subjects, the syntax of a subject heading language should link the compound parts of a subject heading by syntagmatic relationships rather than semantic (paradigmatic) ones". In other words, the main heading and subheadings should be linked by a-posteriori or document-dependent relationships, not a-priori or document-independent relationships. Concerning 'User's Language Principle' many speakers noted the difficulty of one system serving more than one user group. Implicitly agreed upon, the 'A-posteriori Principle' is based on the SHL literary warrant in a particular country. The 'Specificity Principle', the only application (not construction) principle, increases the precision power of an SHL: "a subject heading should be coextensive with the subject content to which it applies". This principle, however, did not find general agreement. Several papers described limitations on specificity in the construction of subject headings that would limit specificity in application. The WG did not say anything about principles regarding bibliographic form, nor on citation order for elements in a string (while this was discussed by several speakers).

In conclusion: The presentations of subject heading systems used in different countries as well as the theoretical part of the second session are written by specialists in the field which by itself proves the quality of the papers. The book is a very good source of information about the state of the art in practice. However, it is a pity, that not more countries were represented and took part in this IFLA Satellite Meeting!

Mira Micacic, Mirna Willer

Dr. M. Micacic and Ms. Mirna Willer, Consultant for Library Automation, National and University Library, P.O. Box 550, HR 10000 Zagreb, Croatia.