REPORTS AND COMMUNICATIONS

Classification and Cognition

Report on the Third Annual Conference of the Gesellschaft für Klassifikation e.V.

The conference with its ambitious title "Classification and Cognition" was held on April 5th and 6th 1979 in Königstein/Taunus, FRG. It was announced not only as the Third Annual Conference of the Gesellschaft für Klassification e.V. but also as the First Regional Conference of FID/CR. With over 140 participants from 15 countries and over 30 delivered papers most of which were simultaneously translated, this conference truly had international format. But apart from following the line of the Gesellschaft für Klassifikation's last conference on "Cooperation in Classification" (1–3) in introducing the whole width of the field of classification, the aim and the success of this conference was in conducting the first steps ahead into what could be found in probing into the very depth of this field.

Not only that the question concerning the role of classification in the process of generation, representation and mediation of cognition was considered in broad extent in three main sections but in addition to this a plenary session was held in which on a still more profound level the interrelationship of classification and cognition was thematized – all this surrounded by sessions and reports of the Special Interest Groups which started their activities already a day earlier, mainly with the Special Interest Group on Numerical Classification, the topic of which was found important enough to set up still another section covering solely questions of this domain.

Since *cognition* was the aim of the conference this reporter will limit himself to detecting a fils rouge along which basic insights into the nature and implications of the interrelationship between cognition and classification were formulated and discussed during the conference.

In her introduction *I. Dahlberg* stated that in selecting "Classification and Cognition" as theme for this conference the Gesellschaft had intended not only to bring out the role of classification in furthering cognition but also to explore the possibility of applying approaches of cognition-theory (epistemology) for a consistent and thorough representation of knowledge-structures.

In reply, *M. Scheele* in his opening paper: "Man, the prerequisite and objective of classification" underlined the insight that man in his conquest of reality is bound to a specific cognitional apparatus which insofar moves man into a central position of his human world – in contrast to the world which other beings, e.g. animals, perceive – and gives him the title of being the measure of all things for his world. Therefore, man's cognitional abilities are a necessary prerequisite for any cognitive activity. On the other hand, any cognitional activity, especially science, is nothing but man's quest for knowing himself – if it is carried to its ultimate consequence. Here man appears as the objective of any cognitional activity. Man therefore can be localized in a tensional area between *knowing* and *known*. Not only the objects of which we know but the subject which knows, the activity of coming to knowledge, the process of cognition must become a theme of itself in order to unfold the "third manifoldness" of our world – apart from time and space – which lies in the fact that the world appears different when seen from different perspectives, with different eyes. Classification furthers this process in overcoming the basic difficulty in cognition which lies in the dissemination and specialization of the branches of learning by introducing order and distinction as well as comprehension into all the branches of our cognitive cosmos.

T. Judge in his contribution on "Representation of sets: the role of number" carried on this idea of integrating the observer into that which is observed in formulating the question just how the structure of a set of statements, concepts and the like interacts necessarily with its content. "Irrespective of the set content, sets of a given number of elements have characteristic features which affect the interpenetration and comprehension of the content. The number also determines the pattern of possible relationships between the set elements." In comprehending complete sets the special problem indeed lies in realizing the relationship between the interdependent elements. Judge discussed diverse methods of representation, of which "the crudest and most prevalent (one) is a simple numbering of elements". The other extreme is made up of "sophisticated diagrams showing their relationships". He called special attention to "mandala-type representations", which allow comprehension to "focus its attention through the member elements disposed in an appropriate configuration." Clearly the field for research regarding the specific dynamics of given sets, the functional implications within these ("styles of debates"), research on complete sets and on the interrelationship between classification, comprehension, memory and representation was laid open fur further investigation in his contribution.

W. Dahlberg followed this line in: "Towards a Geometry of Basic Concepts" in identifying basic principles of order corresponding to the distinct levels of ordering. In analogy to Judge, order was understood as a geometrical task. Therefore, giving a version of definitiontheory suited to the problem of determination of general basic concepts he exposed methodic ways of coming to a more distinct understanding of categorial concepts. Exemplifying this in a "complete set-type" of cognition-theory in analogy to Judge and Scheele, W. Dahlberg pointed out the importance of developing the whole range of cognitional abilities in the subject of cognition in order to allow it to engage itself fruitfully in the cognitional realm which seemed especially important for any classificatory activity necessarily covering the whole range of cognition. Finally, the basic concepts governing the whole range of cognition were identified as structural – giving structure to all the other cognitional elements –, finale – forming the objectives and products of cognition –, causale – laying the grounds for which cognition comes into function –, and as material – containing all objectively given components of cognition. Within the latter "which span the space of activity in which the cognitive handling of the 'material of cognition' can be undertaken", the categorial area of material being appears as the one of highest struc-

tural importance for all the others. The classificatory aspect of being rooted in the categorial area therefore brings structure into all the other levels of material being and therefore into all fields of cognition. If classification is understood in this way, it becomes the only domain of cognition which, in growing, is able to further all others.

This understanding of classification in which it no longer appears as static in its results and methods was predominant all through the conference. "Non-dualistic complementarity" (Judge) could be sensed in all the issues and topics of the non-dualistic complementarity of the three main sections. Of all the issues (see (4)) let me select just a few, e.g.:

H. Karlgren on: "How to handle vagueness". Voting for natural language, Karlgren exposed how in dialog situations, understanding is built up out of the usage of vague terms and understandings by mutual interaction. Understanding how this is done and transforming this dynamism into artificial language and/or systems of ordering will solve existing difficulties.

P. Vasarhelyi on: "Implications of the Interconcept project for classification and indexing". Here again, working with social science concepts from various backgrounds, care is taken "to explain what are the differences in the various understandings of the same terms". Defining these concepts becomes a task of *netting* their divergent characteristics, with the result not being a *picture* of boundaries of understanding but rather a *motion picture* of social interaction of various groupings of social scientists in different countries.

P. Kaula giving in: "Canons in analytico-synthetic classification" a study of Canons of Ranganathan's Theory of Classification showed the possibilities of ordering opened up given a consistent facetting, that is dynamization of the facts to be ordered.

E. Svenonius in: "Facets as semantic categories" again focussed attention on the problem of prevailing lack of precision in handling categorial concepts.

N. Henrichs in: "Object-theoretical foundations of library classification?" while trying to call the concept of order into question altogether came up with a praxeological version of an understanding of the role of classification and of order, not in applying essential determinations for ordering the world (as static and motionless world-as-such) but in using categorial determinations to communicate about the world (the world as being in itself dynamically growing in relation to growth of cognition). Needless to say that order even in the cosmological sense of a divine order can be conceived of as dynamic and evolving?

Man, in his strive for ordering his knowledge is indeed the creator of his knowledge, for, as *F. Lang* summarized it in his closing words: "Classificationists carry a huge responsibility, for they guide the thoughts of all those who follow . . . they build up the image of this world out of the order which they create and out of which knowledge is then derived."

Order then being at the very basis of cognition, be it as structural precondition and as strategy for precise knowledge, be it as finale objective and desired goal of a well founded truth, be it as the causale grounds in the very ability of man to engage in cognitive activities or be it as the material of cognition which in all its aspects in all sciences appears as ordered and organized in all thinkable ways, order thematized in such a way, is not this the idea which stimulates every aspect of cognition?

"Classification and Cognition" offered plenty of room for growth toward as deeper recognition of the field of classification, while also raising more profound insights into the very nature of cognition itself. In his address at the end of the conference, *P. Kaula* emphatically called for an International Classification Society – but time will tell. In the meantime there is plenty of time to probe more deeply into the structures of knowledge and to discern more accurately the patterns of order, pending the next annual conference of the Gesellschaft für Klassifikation e.V. on: "Structures of Knowledge and Patterns of Order".

Wolfgang Dahlberg

References

(1) Dahlberg, W.: Cooperation in Classification. Report on the 2nd Conference of the Gesellschaft für Klassifikation. In: Intern. Classificat. 5 (1978) No. 2, p. 95–98

(2) Kooperation in der Klassifikation. I. Proc. d. Sekt. 1–3 der 2. Fachtagung der Gesellschaft für Klassifikation e.V., Frankfurt-Höchst, 6.–7. 4. 1978. Red. W. Dahlberg et al. Frankfurt 1978. X, 214 p.

(3) Kooperation in der Klassifikation. II. Proc. d. Sekt. 4–6 der 2. Fachtagung d. Gesellschaft für Klassifikation e.V., Frankfurt-Höchst, 6.–7. 4. 1978. Red. W. Dahlberg et al. Frankfurt 1978. XII, 231 p.

(4) Third GFK Annual Meeting and First FID/CR Regional Conference. (Program). In: Intern. Classificat. 6 (1979) No. 1, p. 39–40.

The Proceedings of the 3rd Annual Meeting are published in three volumes. They are available at the Secretariat of the Gesellschaft für Klassifikation e.V., Woogstr. 36a, D-6000 Frankfurt 50. (Bibliographical data see this issue, p. 192)

INTERCONCEPT Aims Redefined

The goals of UNESCO's INTERCONCEPT project were redefined during the second meeting of its Ad Hoc Committee, held from 21–23 August at the Hungarian Academy of Sciences in Budapest. A fundamental premise of the redefinition was the distinction between the normative approach to terminology employed in the work of term planning committees carried out for technological fields, under the aegis of the International Standards Organization, and the informative or descriptive mode of terminological work better suited to the requirements of the social sciences.

The basic shift of emphasis endorsed at the Budapest meeting involved giving up the expectation that an in-house terminology bank for the social sciences would be created, in the near future, as a component of UNESCO's DARE program. Instead, primary emphasis will be placed on the establishment of working relations with organized groups of social scientists in selected subject fields, leading to the creation of interactive glossary projects – i.e. projects in which a machine-readable data base containing information about how special concepts used in the selected subject field are defined and designated would be employed to generate frequently updated editions of a glossary that could be used and revised continuously by specialists in the field concerned.

Recognizing the needs of social scientists as primary users and contributors to such projects, the committee also addressed itself to the related concerns of in-

formation specialists and language mediators. A primary focus of Committee's continuing work will be the preparation of guidelines that can usefully be employed by any group of social scientists interested in undertaking an interactive glossary project. In the light of its redefined goals, the Ad Hoc Committee decided that its activities should include both a facilitating program, and related information services.

To achieve its new aims, the Ad Hoc Committee decided to sponsor the preparation of a volume of papers under the heading, "Cooperation in the Solution of Conceptual and Terminological Problems in the Social Sciences." A series of draft papers already produced will be revised for inclusion in this volume, together with a new introductory essay dealing with the philosophy and procedure of the INTERCONCEPT project. A distinctive type of glossary format will be recommended, in which systematically arranged concept definitions would be given as primary records, followed by an alphabetical index using all the synonymous terms employed, in a variety of contexts, to designate each concept.

Participants in the Ad Hoc Committee meeting include its chair, Fred W. Riggs, plus Ingetraut Dahlberg, editor of *International Classification*; Magdalena Krommer-Benz, of INFOTERM, Vienna; Robert Mdivani, of INION, Soviet Academy of Sciences; and Pal Vasarhelyi, of UNESCO's General Information Programme. Mr. J. Litoukhin attended as representative of UNESCO's Division for the International Development of Social Sciences, sponsor of INTERCONCEPT; and five Hungarian scholars and information specialists also participated in the meeting as guests of the committee. It is expected that copies of the Committee's report will soon become available through its chairman – and a more complete record of the project, including the findings of its pilot study on 'development', will eventually be published by the Social Science Division of UNESCO. F. W. Riggs

Classification Topics at 1979 ASIS Conference

The 42nd Annual Meeting of the American Society for Information Science took place in Minneapolis, Oct. 14–18, 1979 under the general theme of "Information Choices and Policies". It was again a major event with its 1500 participants, its 357 speakers and chairmen at 92 sessions, special meetings and workshops. This year ASIS had invited the FID Council and FID-Committees to be represented and active, thus turning their national meeting into an international one with 29 nations represented. A few "classification events" took place such as the (1) "International Classification Research Forum" sponsored by the ASIS/Special Interest Group on Classification Research (SIG/GR) and (2) the session on "Machine-aided indexing", sponsored by ASIS-SIG/CR and the American Society of Indexers (ASI). Of interest to our topics were also (3) papers presented at the SIG/Foundations of Information Science (FIS) as well as (4) those of a special session on "Co-citation analysis in investigation of the structures of scientific specialties", and, besides this, some "dispersed" papers (5). In the following the papers are listed according to the above numbering: (1) R. N. Oddy: Describing user's needs and documents for interactive retrieval systems. – J.-M. Griffiths: Computer modeling of human information processing. – I. Dahlberg: Developments at the Society for Classification in Germany. – G. Bhattacharyya: A general theory of SIL, POPSI, and Classaurus (presented by E. Svenonius in his absence). – (2) J. L. Milstead and B. Huybrechts: State-of-the-art paper on machine-aided indexing. – P. Klingbiel and C. K. Schultz: Applications papers on machine-aided indexing. – (3) F. Suppe: Information Science, artificial intelligence and the problem of the black noise. – Ch. Rieger: The AI frontier on story/text comprehension;and beyond. – F. Hayes-Roth: Matching and abstraction in knowledge systems. – L. B. Heilprin: Homomorphisms in information science and AI. – (4) D. J. de Solla Price: The revolution in mapping of science. – B. C. Brookes: Document and information spaces. – B. Griffith: The social and behavioral sciences' literature. – S. Crawford: Research in psychiatry: a co-citation analysis. – H. G. Small: Co-citation context analysis: the relationship between bibliographic structure and knowledge. – D. Sullivan et al: Understanding rapid theoretical change in particle physics: a month-by-month co-citation analysis. – (5) W. R. Foster et al.: The coordinated development of health-related clearinghouse vocabularies; a proposed technique. – T. C. Craven: Micro-computer simulation of large permuted indexes. – J. D. Anderson: Contextual indexing and faceted classification for data bases in the humanities. – N. Sager: Linguistics and information science.

Most of the papers have been printed in the 396 – pages proceedings volume – again available already before the conference.

At the Business Meeting of the SIG/CR with some 20 members present (of 198) it was announced that Dr. E. Svenonius will succeed Dr. Irene Travis as chairperson for the year beginning Oct. 1980. Since the ASIS-Mid-Term Meeting will be in Pittsburgh (May 1980) on "Power of Information", the SIG-CR plans a session on "Classification of energy information". At next year's Annual ASIS Meeting in Anaheim, Calif. the SIG/CR Meeting will concentrate on "Indexing for integrating systems". This topic introduces quite well into the Joint ASIS-SIG/CR and FID/CR Regional North American Conference planned on "Compatibility in Classification and Indexing" to take place in May 1981 at Denver, Colorado, preceding the ASIS-Mid-Term Meeting there. A call for papers will be prepared for this occasion and sent out early in 1980.

It seems that also in the USA 'classification' is recognized as an instrument for the organization and description of knowledge (by better indexing and better indexes). The great help which a good and easy-to-establish index means for the fast access to knowledge was demonstrated by a subject index to the conference's "Final Schedule of Events" called KWPSI (Keyword/Phrase Subject Index). It had been automatically prepared by a special program worked out by G. Vladutz at the Institute for Scientific Information, Philadelphia. This new type of index was described in the paper not mentioned so far by G. Vladutz and E. Garfield: KWPSI: an algorithmically derived Keyword/Phrase Subject Index. We were happy to hear that our Classification Literature section of 1979 could be indexed and computer-typesetted at the same time by KWPSI for publication in this or the forthcoming issue.

I. Dahlberg

"Software Developments in Cluster Analysis and Identification".

This will be the topic of the 1980 Scientific Meeting of The Classification Society, European Branch at the University of York, 31st March–1st April 1980. The following papers will be presented:

G. J. S. Ross (Rothamsted Experimental Station): Descriptive multivariate analysis using CLASP.

M. J. Sackin (Department of Microbiology, University of Leicester): A numerical taxonomy package in practice.

R. K. A. Feltham (Department of Microbiology, University of Leicester): Computer-assisted identification of bacteria.

J. J. Du Croz (Numerical Algorithms Group Ltd.): Software methodology for transportable FORTRAN programs.

R. W. Payne (Rothamsted Experimental Station): Diagnostic keys and tables to identify groups of taxa.

R. J. Pankhurst (British Museum – Natural History): Progress in identification methods with the aid of computers.

D. Wishart (Scottish Education Office): Recent developments in cluster analysis software.

A. J. Bullen (Department of Computer Science, University of York): Recent developments in cluster analysis software.

W. F. Hyde (Managing Director, Brisch, Birn & Partners Ltd.): Helping management better through classification and coding the data base.

J. Moult (Standards Controller, Perkins Engines): Classification and data retrieval as applied to a specialist engineering and manufacturing organization.

A. Entwistle (Senior Consultant, Brisch, Birn & Partners Ltd.): Classification and data retrieval as applied to a processing industry.

W. Jack (Managing Director, JLG Industries (UK) Ltd.): A top management view of classification, coding standardization and group technology.

The meeting will begin at 2pm on 31st March and will finish by 3.30 pm the following day. There will be a Classification Society Dinner on the evening of 31st March 1980. Booking and further information: Mr. A. J. Cooper, Brisch, Birn & Partners, Ltd., 81, Station Road, Marlow, Bucks, SL7 1NS, England not later than February 28, 1980.

Classification Teaching in India (Additional info.)

(Ed. Note: In Intern. Classificat. 6 (1979) No. 2, p. 117–118 we published a communication on this topic by A. Gopinath. What follows are additional data on the number of lectures, courses and hours as well as on the contents and goals of teaching in this field at the Documentation Research and Training Centre in Bangalore(DRTC) given also by Prof. Gopinath).

There are three lecture sessions each of 90 minutes duration for 3 to 5 students each week, this would be giving 325 hours of instruction for about 50 weeks in a year. Most of the classes are conducted on discussion mode.

The practical course in a formal class principally concentrates on knowing POPSI, PRECIS, CC, and UDC schedules, their design features, combinatorial capability with some illustrations, which include analysis of the subject and construction of subject headings or class numbers. About 250 actual examples are classified – at a slower pace in the beginning and gradually getting faster in the later part of the year.

An estimated 1,000 non-formal hours are generally spent for the project work in depth classification by the students. In that they collect 250 to 300 examples for analysis of subjects, design a classification schedule of about 1000 terms, for special fields such as "Cosmetics technology", "Financial planning", "Mycology", "Agricultural economics", and "Production of Amplifiers". They classify about 250 examples with three to five facets and a number of sub-facets. The same set is arranged in a classified order, and an alphabetical index is prepared for the same. Based on these a systematic alphabetical thesaurus for the subjects is developed.

Thus, the total formal hours spent in DRTC Course is 325 hours formal and 1,000 non-formal hours. The non-formal hours are usually based on the elective project. But it may happen that all the students choose this topic in one year, as it has happened this year – 1978–1979.

Research Project Announcement: Classification Systems – Utilization and Possibilities of Further Developments (Klassifikationssysteme – Nutzung und Möglichkeiten der Weiterentwicklung)

Der Bundesminister für Forschung und Technologie, Bonn, beabsichtigt die Förderung einer Untersuchung zum Thema "Klassifikationssysteme – Nutzung und Möglichkeiten der Weiterentwicklung". Ziel ist die Analyse von Inhalt und Aufbau der im Informations- u. Dokumentationsbereich verwendeten Klassifikationssysteme, ihrer Nutzung, ihrer Effizienz, sowie die Bedarfsermittlung für die eventuelle Entwicklung neuer Klassifikationssysteme.

Der vollständige Ausschreibungstext wird voraussichtlich ab Anfang November verfügbar sein und kann von Interessenten bei der Gesellschaft für Information und Dokumentation mbH (GID), Zentralbereich Förderung, Lyoner Strasse 44–48, 6000 Frankfurt 71, angefordert werden.