BOOK REVIEWS
BUCHBESPRECHUNGEN

WOJCIECHOWSKI, Jerzy A. (Ed.): **Conceptual Basis of the Classification of Knowledge: Proceedings of the Ottawa Conference on the Conceptual Basis of the Classification of Knowledge, October 1st to 5th, 1971.** München: Verlag Dokumentation 1974. 503 p. ISBN 3-7940-3649-2

What is the universe of knowledge? Can we map it? Can we devise a general classification for it? These are questions for philosophers and library classificationists. The 1971 Ottawa Conference on the Conceptual Basis of the Classification of Knowledge was unique in bringing together for the first time philosophers and classificationists from the world over. The organizers of the Conference, Guy La France, William Shea and Jerzy A. Wojciechowski, all members of the Faculty of Philosophy of the University of Ottawa, hoped that by bringing these two groups of people together the problems underlying a general classification of knowledge would be clarified, from a theoretical as well as a practical point of view.

Was this hope realized? In the Foreword to the Proceedings of the Conference J. A. *Wojciechowski* observes that at the conference there was an "estrangement of each group from the other, lack of knowledge of what the other was doing and . . . difficulty of communication" (pp. 7, 8); indeed, "something of the tower of Babel spirit is present in the Proceedings" (p. 8). Five years later this Babel spirit is apparent to someone viewing the Conference through the Proceedings. The Proceedings (the English contributions only are reviewed here) are difficult reading, not only because one is called upon to understand the vocabularies of both philosophers and library classificationists, but also because one is led down strange paths by some contributors who do not seem interested in the general theme of the conference. More fruitful dialogue might have been achieved at the Conference had the organizers of it been stricter in their acceptance of papers. On the other hand, there is no doubt that the Proceedings volume is very exciting, and a perusal of it might well rouse to creative activity anyone interested in problems underlying a general classification of knowledge.

Over the last two decades a revolt has been levelled against logical empiricism. Influenced by the later philosophy of Ludwig Wittgenstein and popularized by writers such as Kuhn and Feyerabend, the revolutionaries hold that there is nothing empirically sacrosanct about a scientific theory. A scientific theory presents a conceptual scheme, a paradigm or a way of looking at the world. But, the revolutionaries argue, there are many admissible conceptual schemes, and no one can be said to be empirically more valid than another. A distinction which is crucial is linguistic. According to the logical empiricists the meanings of scientific terms are acceptable to the extent they are grounded in empirical reality. A scientific theory, and the conceptual scheme is presents, is adequate to the extent that its theoretical language is reducible to terms in an observational language. It is possible to compare two scientific theories and to rank them according to how empirical they are. Not so for the Kuhnians. The Kuhnian revolution rejects the distinction between theoretical and observational language. Indeed, it even makes the former, rather than the latter, primary. To the empiricist theory of meaning it opposes a presupposition theory of meaning, whereby the meanings of scientific terms are determined by the conceptual scheme which uses them. No word has meaning in isolation. A scientific term does not have an independent meaning outside the context (conceptual scheme) in which it is used. A consequence of this is that scientific theories, and their conceptual schemes, not only are independent of each other, they are incommensurable and any attempt to compare them must be based on subjective rather than empirical grounds.

Most of the philosophers writing in the Ottawa Conference Proceedings are concerned with the revolution. An excellent synopsis of it is given by W. R. *Shea* in his paper "The Classification of Scientific Terms as "Theoretical" and "Observational" in Contemporary Philosophy of Science".

P. *Heelan*, in "The Logic of Changing Classificatory Frameworks", presents several models to explicate the relation of implication as it holds, or does not hold, between two descriptive linguistic frameworks (conceptual schemes). C. A. *Hooker* in "The Impact of Quantum Theory on the Conceptual Bases for the Classification of Knowledge", wishes to show how conceptual schemes enter into our theorizing about the physical world. His point is that where classical physics maintained a careful segregation of the atomic and plenum conceptual schemes, modern quantum theory attempts a marriage of the two – a marriage, which to Hooker, looks like a "very difficult, and improbable affair – certainly an undertaking almost unique in the history of physics" (p. 311).

J. A. *Wojciechowski* in "The Philosophical Relevance of the Problem of the Classification of Knowledge", while commenting generally on the nature of classifications, offers one hypothesis which is particular striking: "The 'survival value' of a classification with regard to the change of the paradigm is proportional to the degree of formalization or mathematization of the classification." (p. 18) If this is true, he says, there may be a future science of classification which will develop from its mathematization, just as four centuries ago modern physics originated with the application of mathematics to the study of physical objects.

E. J. *Ashworth*'s paper "Classification Schemes and the History of Logic" seems somewhat puzzling both in its relevance to the Conference and in the question it poses. The question is, what kinds of classifications do we need to isolate valid inferences. The question, presupposing that logical validity of an inference depends on the semantic as well as syntactic properties of the propositions forming the premises of the inference, is rejected presumably just because it does make the presupposition. Is it

debatable these days that the rules for using logical operators are merely linguistic conventions?

The most studious of the philosophical contributions to the Proceedings and that which shows the most subtle and original thinking is written by F. *Suppe:* "Some Philosophical Problems in Biological Speciation and Taxonomy." Suppe first presents an historical survey of taxonomic problems and then examines in detail what it means to say that a taxonomy is natural or that it has an objective basis in nature. The core of Suppe's paper is a logical analysis of the conditions which a taxonomy must satisfy to be natural and of the various ways in which these conditions can be met. However, his observations are more than casual on such questions as taxa membership (he espouses the Wittgenstein notion that taxa membership is to be defined in terms of family resemblances rather than the sharing of a common property) and the role and function of taxonomy in scientific theorizing.

Parallelling the revolution in philosophy of science, and surely not unrelated, has been another revolution in the library world. Here the paradigms being challenged are the traditional general classifications, the Dewey Decimal Classification, The Library of Congress Classification and the Universal Decimal Classification. These great monolithic structures, edifices appropriate to the Victorian era in which they were conceived, are challenged because they are rigid and inflexible. Incorporating ever more extensive subdividions into already detailed structures, they are largely enumerative in character, lacking synthetic cability and the capability to relate one class to many other classes. While at a certain level they allow for different points of view (Dewey's relative index), by and large they are macro-hierarchical structures, that is, they attempt to fit all of knowledge into one great hierarchical chain of knwoledge. – But just as Kuhn's view of scientific theorizing recognizes the legitimacy of a multiplicity of conceptual schemes, so in the library world what is being asked for is a "classification" that can accomodate a variety of points of view.

The questioning of the traditional macro-hierarchical classifications resulted, by 1971, not so much in the rejection of general classifications but in attempts to construct new better general classifications which would accomodate different points of view and which would be flexible enough to change over time. Nearly all of the contributions of the library classificationists are attempts of this sort. Interesting, and a divergence from the practice of 100 years ago, is that each of these attempts at a general classification is self-consciously concerned with "foundations". In some cases the new classifications are founded only upon an idea. In others a certain amount of formalization is present in the form of definitions and postulates.

J. L. *Jolley*, in "The Holotheme", presents the whole sweep of knowledge (what he calls "the Holotheme") as falling neatly into octal patterns notationally representable by sequences of binary code numbers. Ejnar *Wåhlin*, in "The AR-Complex-Adapted Systems Used in Combination with a Common Reference System", devises a "complex of connected systems" which is a combination of a general and special classifications which serves to represent the whole field of knowledge and at the same time is able to meet the very specialized needs of users. Wåhlin's classification, like Jolley's, has a visionary and idiosyncratic quality to it.

Also somewhat visionary is R. *Mölgaard-Hansen*'s contribution in "On the Problem of Universality in Knowledge Classification". After discussing five approaches to the construction of a universal classification, he then very briefly presents his own idea of a "Facet Globe" which he sees as collocating basic subjects along longitudinal ordinates and attributional qualities along latitudinal ordinates. A general systems theorist, Mölgaard-Hansen feels deeply that the construction of a general classification is important in guarding against the effects on society of the atomization of knowledge.

To be taken seriously is the contribution of *G. Bhattacharyya/S. R. Ranganathan* ("From Knowledge Classification to Library Classification"). The authors review the development of philosophers' classifications, observing that these have seldom been presented in sufficient detail for the practical purposes of librarians. They lament that, until recently, library classificationists have worked without guiding and normative principles. Even a development as significant as the changing of the foundation of classification from an enumerative on to a faceted one by the Colon Classification in 1933 was done without the aid of a theory. Presented then is an outline of the dynamic theory of classification (from the 3rd edition of the *Prolegomena*) including the general laws of thinking, the Five Laws of Library Science and the normative principles which have served to guide the work of the Colon Classificationists.

I. *Dahlberg* in "Principles for the Construction of a Universal Classification System", argues that a difficulty with the traditional classification structures is that they divide the universe of knowledge by subject (aspect fields or disciplines) and this leads to a wasteful scatter when the same objects are treated by different disciplines. She proposes, thus, a structure for a universal classification system which is based, primarily, on objects and aspect fields. (Aspect fields are further subdivided into facets, eg. general problems, administration, evaluation.) Dahlberg's paper is very systematically presented with admirable precision in the stating of definitions and premises, as well as in the elaboration of two examples; one a scheme for classifying documents and documentology, the other, a descriptor system for the information sciences.

S. *Datta* and J. E. L. *Farradane*, in "A Psychological Basis for General Classification", seek to ground a universal classification in psychological reality (since objective reality is unknowable). The work of J. P. Guilford is appealed to as offering experimental "evidence" of the rightness of the relations and concepts employed by the classification (called "relational indexing"). Phyllis *Richmond*, commenting on the paper, wonders about the acceptability to professional psychologists of Guilford's work – and indeed it has been questioned – suggesting, thus, that the foundation of relational indexing may be more philosophical than empirical.

D. *Austin*'s "A Conceptual Approach to the Organization of Machine-held Files for Subject Retrieval", is

interesting in that it presents PRECIS (a string indexing language) at an early stage in its evolution. PRECIS, Austin argues, is not like the traditional classifications. Whereas the traditional classifications attempted with their main classes to systematize a universe of knowledge, the purpose of PRECIS indexing is to systematize a universe of concepts. Is the distinction between a universe of knowledge (main classes) and one of concepts philosophically tenable? Is there a method of retrieving information that is "nonclassificatory" in nature"? In the opinion of the commentator on Austin's paper, J. M. *Perreault*: "if we seek to escape from classification in its broad sense we are fooling ourselves". (p. 403)

There is one writer from the library classification group who does not contribute his own scheme of things to the *Proceedings*. This is R. A. *Fairthorne* ("Temporal Structure in Bibliographic Classification"). In a disorganized yet insightful way Fairthorne considers what it might mean to incorporate time structure into a classification. His contribution, however, is more remarkable, in light of the contributions discussed above in that he dismisses, with a simile, the possibility of a general classification. A general classification is something which only an omniscient and omnipotent observer of the classificatory landscape can apprehend. As mere mortals we are as observers looking at the classificatory landscape from different vantage points and all our maps will differ according to our perspective.

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DAHLBERG, Ingetraut: **Grundlagen universaler Wissensordnung**. (Fundamentals of universal organization of knowledge). München: Verlag Dokumentation 1974. XVIII, 366 p. = DGD-Schriftenreihe, Vol. 3

This book is a fundamental treatise dealing with the theoretical foundations of classifying, where classifying is considered as a universally valid method for organizing the widest open set of knowledge-items by recognizing and displaying their interrelationships. The author's aim is to provide sufficient theoretical foundations for showing the feasibility of a new consistent universal classification system and she illustrates this by a brief (only 20 pages long) sketch of a proposed structure of such a system. But the main emphasis of the book is on the development and presentation of a consistent scientific theory of classification and this is an essential and unique feature distinguishing it from other, more locally oriented, previous studies.

It is likely that there will be considerable agreement about the importance of the urgent need for a new consistent universal classification of knowledge, convincingly discussed in the book, particularly in its final chapter describing the various areas of use of the information science (alias 'informatics'), the theory of classification at presents finds itself in the paradoxical situation of a Cinderella, whose dream about the fairy prince of an ideal classification is given less and less credibility. And this happens notwithstanding elements of classification (even in the most traditional sense of monohierarchical orders) are more and more frequently recognized as essential components of such tools of "entirely new type" as thesauri and postcoordinate index languages of the most sophisticated structure; at the same time the use of universal classification schemes is found to be the only way for bringing some order into the chaotically developing multitude of specialized thesauri and index languages. The author of the book is fully aware of this situation noticing that in the past few decades a critical attitude has developed towards classifications, in general, and towards universal classifications in particular. She provides fairly good explanation for this, considering it as a result of the increased awareness, during this time, of the inadequacies of the currently used universal classifications due to the deeper insights gained of the semantical structure of information. This view is supported by a detailed (80 pages) multiaspect analysis and a judicious comparison of the content and structure of six most used universal classification systems, including the Soviet Library Classification. One has to regret the lack of any discussion of patent classification systems in this fine chapter.

In this reviewer's opinion there is also another important reason for the present scepticism towards classification theory, namely the more or less intentional refusal of some theoreticians of classification to consider seriously and embed in their own thinking the achievements of such a young (compared with the centuries long history of classification) but rapidly developing, research area as that of mechanized information retrieval. Because one has to admit that there *was some* progress in this field, though I fully agree with the remark of D. Soergel (in: Subject retrieval in the seventies – new directions. Wellish, H. (Ed.) 1972, p. 36) that " . . . the results of classification theory have been neglected or sometimes reinvented in a rather amateurish manner in mechanized information retrieval systems . . .".

One important merit of Dahlberg's work is that it not only includes a short but valuable analysis (40 pages) of modern work in the field of post-coordinated index languages, but the experience gained from this analysis is really put to work in developing the theory of classification. At the same time full use is made of other important sources of relevant knowledge.

Some of these sources are analysed in a detailed (70 pages) study of the history of classification and of the various forms and application fields of classification (including the philosophic, pedagogic-didactic, encyclopaedic and library classifications and the different kinds of thesauri). Another source is the analysis of the philosophic (ontologic) bases of the theory of classification (18 pages), preceded by a new reasonable sound system of definitions concerning the meaning of the main terms involved (such a "concept", "characteristic", "category" etc.), proposed in the introductory chapter (30 pages). A different area of knowledge the impact of which on the theory of classification seems to be a particularly important one is that of the philosophy and theory of science. The, as yet unresolved, problem of the satisfactory organization of the great variety of different fields of pure and applied knowledge obviously is of great importance for the success of the operation of national and international information systems; the solution of this problem essentially depends on the