

DAHLBERG, Wolfgang: *Ordnung, Sein und Bewußtsein. Zur logischen und erkenntnistheoretischen Systematik der Ordnung.* (Order, Being and Consciousness. On the logical and epistemological systematics of order). Frankfurt, DE: Verlag AVIVA W. Dahlberg 1984. XXIV, 641 p., ISBN 3-923935-06-4. Also available via INDEKS Verlag. DM 84,—.

Philosophical works are usually of a very dry and highly conventional nature. This book which was published last year is an exception of this genre and thus exceptional in many ways. The aspect that strikes most readers at the first glance is its very ideosyncratic structure. It follows the well-known literary principle that content and form should be congruous and thus proves quite implicitly that order is the basis of every human activity including the writing of books.

Wolfgang Dahlberg looks at the phenomenon of order from many different points of view and treats it at various levels of abstraction. The main paradigms for the structuring of his chapters are taken from logic, epistemology, linguistics, and first of all from ontology in the widest possible sense. The book offers such an abundance of thoughts leading the reader through almost all philosophical schools — from Kant to Zen — that it would be a distortion of the wonderful synthesis just to pick out a few for the sake of commenting on them within this review.

The enthusiasm and synoeciosis applied to this work reminds me very much of the recent bestseller by Douglas R. Hofstadter "Gödel, Escher, Bach". It also comes down to the very essence of formal structures and while Hofstadter arrives at a braided band, Dahlberg constructs his "quaternate quaternary clarification structure" (cf. his article "The geometry of basic concepts").

The only aspect of human life in which the principle of order plays an essential role, that is hardly represented in W. Dahlberg's book, is the field of art. I regret that this omission was made in particular since religion and art are the prime indicators of human culture and give sense to our being and feeling. Therefore I would like to point out a work which could be read as a supplement to this book since it emphasizes on the philosophical fundamentals of art: it is E.H. Gombrich's "The sense of order".

On the whole, Wolfgang Dahlberg proves in this work to have a lot of ingenuity, linguistic and rhetoric capability and the skill to detect formal structures and to project them upon each other. Thus the book is a quarry of ideas and insights for classificationists and terminologists. It deals with concepts, propositions, knowledge elements and topics and illustrates their interrelatedness. Furthermore it shows their relevance to our thinking, being and consciousness. The isomorphy between these areas has never been so apparent to me before I read this work.

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GREENACRE, Michael J.: *Theory and applications of correspondence analysis.* London: Academic Press 1984, 364 p.

Correspondence analysis is a versatile, mathematical and geometrical technique for exploring the structure and the mutual relationships existing between the different alternatives  $i, j$  of (basically) two qualitative variables  $X, Y$ . (For illustration, we shall use in the sequel an example where  $X$  denotes one of  $I$  libraries  $i = 1, \dots, I$  and  $Y$  one of  $J$  exclusive subject fields  $j = 1, \dots, J$ .) Generally, the input information are some frequency data which are compiled in a  $I \times J$  contingency table  $(n_{ij})$  (e.g.,  $n_{ij}$  = number of books in the library  $i$  pertaining to the subject field  $j$ ). Correspondence analysis (CA) provides a means for representing each alternative  $i$  of  $X$  ( $j$  of  $Y$ ) by a point  $x_i$  ( $y_j$ ) of the plane such that the mutual distances between points  $x_i, x_j$ , describe (optimally) the amount of similarity/dissimilarity (with respect to  $Y$ , the spectrum of subjects) existing between the corresponding alternatives (libraries)  $i, i'$  of  $X$  (similarly for  $y_j, y_{j'}$ ). From an exhibit of the two clouds of points  $\{x_1, \dots, x_I\}, \{y_1, \dots, y_J\}$  which is usually supported by numerical tables containing specific diagnostic values, the practitioner can easily get insight into the structure of  $X$  and  $Y$  and finds answers, e.g., for the following types of questions: Which libraries show about the same composition of subject fields? Is there a natural classification of libraries? Does there exist a natural ordering of libraries (e.g., from fine arts to technology)? How much is the similarity between libraries influenced by the subject field  $j$ ? Which is the position of an additional library in the constellation of  $I$  libraries investigated? How has the structure of libraries changed between 1970 and 1980?

M.J. Greenacre has succeeded in writing an excellent book on CA and its many modifications, generalizations, and ramifications. Actually, this is the most comprehensive publication on this topic today which unifies the several approaches to CA met during the last fifty years. The book combines an illustrative and sensitive way of explaining the purpose and idea of the method and the interpretation of its results to applied researchers and practitioners (without a firm background in mathematics, but some knowledge in matrix algebra) with a rigorous and self-contained mathematical treatment of the topic (where proofs are usually deferred to the end of the chapters). Since many real case and artificial data are analyzed and commented on, the reader gets a fine feeling for the possibilities and the flexibility of the method as well as for the pitfalls to be avoided. With its large bibliography ( $\approx 300$  titles) and a detailed index, the book will be a standard reference text.

The listing of the 9 chapter headings gives a taste of the wide range of topics treated: 1. Introduction (the problem, the method, the rôle of French statisticians) 2. Geometrical concepts in multidimensional spaces (vector algebra for beginners, distances, optimum subspaces) 3. Simple illustrations of CA (several examples) 4. Theory of CA and equivalent approaches (the algebra of CA, different approaches: reciprocal averaging, dual scaling, canonical correlation analysis, simultaneous linear regressions; biplots, block structures) 5. Multiple