Editorial

Classification and Complexity

H.G.Körner assumes (see his Letter to the Editor) that apparently the notation of a book classed according to the Colon Classification was too complicated to deal with effectively because he found too many books misplaced in the reading room of an Indian library and heard also some critical remarks on the difficulty of remembering the notational elements. Likewise, when we realize that there are fewer libraries in India using the CC than we had been told (see the article by M.P.Satija on "The use of the Colon Classification"), we can only infer that something must be wrong - either with the theory or with the practice.

Not only are we living in a highly complex world, but our insight is also constantly increasing every day concerning the complexity of this world of ours. What is our reaction to this insight? Do we feel that we should still try to manage this complexity?

In May 1984, a symposium was organized in Montpellier, France, devoted to the theories of complexity. In his Editorial in the UNU (United Nations University) Newsletter 85-3 (containing a number of articles from this symposium), J.M.Fenton gives us an idea of what the concern of this symposium was by stating:

> The emerging science of complexity seeks to improve understanding of the behaviour of interlinked complex systems, in both the natural and social sciences, and apply it across a broad sweep of the human endeavour - the care of our forests, easing of conflict, management of the economy and alleviation of poverty and misery.

Is there anything for us to learn in terms of mapping the complexity of our world in our classification systems? Perhaps. As we read Ilya Prigogine when he explains that "non-equilibrium is a source of organization, ... the flow of energy through the system can give rise to a new kind of structure - dissipative structure", we ask: Do such structures occur in classification? When Kenneth Boulding in "Learning by simplifying complexity" speaks of images and abstractions, and of language as an abstraction, are we not reminded of our abstract concept systems? Finally, when Orio Giarini concludes with: " the acceptance of uncertainty and complexity is the will to understand and to act, taking the risks which are inevitable as long as there is life, but through which life can continue" - do we not feel quite at home?

One solution to an earlier problem, namely, how to overcome the rigidity of fixed concept combinations in the older classification systems of the last century was the creation of faceted classification systems or faceted thesauri on the one hand and of alphabetical thesauri on the other hand.

Our analytical thinking, which Fritjof Capra explains as derived from the methodology propounded by Descartes, has guided us to believe that we only need to find the constituents of something and know how these fit together, then we discover the key to understanding the thing, whereby we are able to manage it. This analytical thinking guided our great teacher Ranganathan as he based his Colon Classification on the analysis of a theme into its single concepts or components. (He received his inspiration for this when looking at a meccano set - today it would probably have been a Lego set - in a toy shop in London). Ranganathan did exactly what G.W.Leibniz had already intended 300 years ago but was unable to realize in his "ars combinatoria" (of which the participants of the Tenth Annual Conference of the German Society for Classification recently heard in the lecture of Prof.H.Schepers on the "characteristica universalis" - see the report on that conference in this issue).

However, Ranganathan, mathematician and librarian, just as Leibniz, went further with his intentions and provided also the possibility to synthesize the results of the analysis by constructing for each of his main classes a facet formula for the correct combination of its concepts into a conceptual or classificatory statement, or a "classat" - as I call it. Therefore, he called his methodolgy an analytico-synthetic one.

Nevertheless, his concept language of the six CC editions related only to the theme of books, thus, some 6500 single combinable concepts were sufficient for this task at his time. Later he recognized the necessity of developing so-called Depth Schedules (a book review of the Gopinath manual on the construction of Depth Schedules is in this issue). Now we are developing factographic data documentation systems with a still more precise and special vocabulary.

Unfortunately, for the users, the resulting codes of class descriptions –in CC combinations of capital and small letters, numbers and syntactic symbols became so complex– (Webster: "complex" stresses the fact of combining or folding together various parts and suggests that considerable study, knowledge and experience is needed for comprehension or operation") that not everyone could handle them with ease.

The coded language of classification, in its often intricate notations, has kept many a user from applying such a system and has led many a professional to throw overboard classification as a tool for the organization of knowledge altogether. Why do we not learn from systems theory and from the computer field that one need not open one's black boxes before the public? An analytical notation may not be meant to be used by others than the technicians who know it thoroughly and who deal with it daily as their "handicraft". David Bawden writes: "In the future the use of automatic or 'hidden' thesauri .... will predominate". He thinks that this will be necessary for "the performance of information systems, particularly with the growing extent of end-user searching". Similarly, classification systems could be applied in a hidden manner.

The end-user must find - either on the shelf or on the screen - that for which he is looking and what else belongs in that neighbourhood. Classificationists have to think of new ways of how to guide the user in his search without burdening him with odd letter and number combinations. Does not Ranganathan's fourth law state: "Save the time of the reader"?

In 1977, R.Kluth offered a solution for an easy notation of complex cases in his project of a Unified Classification System (Einheitsklassifikation) for the FR Germany. It was, however, not acceptable for reasons outside of the question of notation. We should do some more thinking, on how to solve this riddle in the future for the sake of the users.

For our own sake, however, we should keep in mind that the complexity of this world can only be mastered through highly complex systems for the organization of concepts and their synthesis by syntactically well-defined categories and structures. Therefore, we need to exert more effort in developing such systems, in order to be able to describe conceptually that is, in a highly reduced, controlled and logical way what has been stated verbally

in elaborate books and articles. We have to develop the necessary bridges to help our users to understand what they are looking for and what are the conceptual implications of their problems.

Perhaps we can learn in some way from nature, also, as W.Dahlberg did and shows in his two articles on "Natural Law and Evolution: Towards a Natural Classification of Order" (in this and in the last issue). Notice, for instance, his Scheme 5 and the later extension in Scheme 7: After "necessity", dealing with the causes (hardware) and after "possibility", dealing with finality (software) (at which place beauty can be entered also) he concludes with "reality", dealing with intensionality (the process) - or the realization. Our "hardware" are the existing concepts spread throughout the literature, ever growing in number and to be identified through definitions and definitional systems; our "software" are the rules for the combination of these concepts, their syntax; and our "reality" are the actual cases to be described and classed and thus organized for any retrievability through any kind of interest. These three approaches must also always be kept in mind when developing a classification system and when applying it.

To conclude: The more we understand the complexity of our world and correspondingly the one of classification, the better will we be able to deal and to cope with it. We should indeed try to manage complexity, but we will not be able to manage it on our own. We are only dependent workers, in need of guidance from above. Let us never forget this most important source and inspiration of all our efforts!

Ingetraut Dahlberg

1987 European Meeting of the Psychometric Society Call for Papers

The 1987 European Meeting of the Psychometric Society will be held at Twente University, Enschede, The Netherlands, on June 24-26, 1987. Persons wishing to present a paper should send (1) a title, (2) an abstract for the program book of 150 words, and (3) a summary for review by the Program Committee of no more than 500 words to: Prof.Wim J.van der LINDEN, Department of Education, Twente University, P.O.Box 217, NL-7500 AE Enschede, The Netherlands.

All submissions must include the name(s) and institutional affiliation(s) of the author(s). If possible, please classify your presentation into one of the following areas: Test Theory, Data Analysis, Multidimensional Scaling, Statistical Methods, Structural Models, Correspondence Analysis, Measurement Theory, Multivariate Analysis, Mathematical Models, Factor Analysis, Psychophysical Scaling, Classification, other (specify). If there is more than one author, please indicate who will present the paper. Proposals for symposia should also be sent to the address given above. A brochure with information can be obtained from the same address.

A post-congress tour along the historic cities of Antwerp, Bruges and Brussels (Belgium) will take the participants to the First Conference of the International Federation of Classification Societies, Aachen, West Germany, June 29-July 1, 1987. The deadline for the receipt of paper and symposium proposals is March 1, 1987.

The First IFCS Conference 1987. Call for Papers

The International Federation of Classification Societies (IFCS) comprises the Societies of England, North America, FR Germany, Japan, France and Italy. Its first conference will be held at Aachen, FR Germany, June 29 - July 1, 1987. The theme is "Classification and Related Methods of Data Analysis" and contributions are invited to the following 14 topics:
1. Discrimination, classification, aggregation, and clustering methods. -2. Pattern recognition methods. - 3. Linear, nonlinear, and algebraic methods of data analysis. - 4. Similarity and distance measures, measurement theory, quality of data. - 5. Multidimensional scaling and seriation. - 6. Probabilistic models for data analysis and classification. -7. Graphical representation of structures and classifications. - 8. Biological taxonomy, systematics, microbiological classification (molecules, strings, etc.). - 9. Comparison of classifications, consensus methods. - 10. Analysis of tree- and graph-like patterns. - 11. Classification for information retrieval systems. - 12. Expert systems, data bases, and classification methods. - 13. Algorithmic aspects and software for computers and micro-computers. - 14. Applications in specific fields: Archeology, biology and medicine, chemistry, computer science, documentation and information sciences, economics and marketing, engineering and technology, psychology and social sciences, etc.

Authors intending to present a paper are requested to send an abstract of approximately one page as soon as possible(deadline Jan.15, 1987) to the following address: Prof.Dr.H.H.Bock, IFCS 87. Institut für Statistik und Wirtschaftsmathematik, Technical University Aachen, Wuellnerstr. 3, D-5100 Aachen, FR Germany.

4th Conference on the Scientific Application of Statistics Software

The Zentrum für Umfragen, Methoden und Analysen e.V. (ZUMA) announced its 4th Conference to be held from 23-26 March 1987 at Mannheim. Proposals for papers are invited to be submitted until Sept.1, 1986 to the following topics: Innovations in SPSS, BMDP, SAS a.o.; Program comparisons; Graphic application possibilities; Statistics software in the PC-area; Expert systems in statistics; Statistics software in research and education. - The address: Software-Konferenz. ZUMA e.V., B2,1. Postfach 5969,D-6800 Mannheim 1.Tel.:0621-18004-14.

5th International Symposium "Data Analysis and Informatics"

INRIA, The Institut National de Recherche en Informatique et en Automatique, France, sent out a Call for Papers for its 5th International Symposium which is to take place from Sept.29-2 Oct.1987 at Versailles. Deadline for the submission of abstracts is Nov.5, 1986. For further information turn to: Journees/Symposium. Service des Relations Exterieures. Bureau des Colloques. Domaine de Voluceau - PB 105, F-78 153 Le Chesnay Cedex, France.