Editorial

Cognitive Paradigms in Knowledge Organization

This topic of ISKO's 2nd International Conference in Madras, 26-28 Aug. 1992, seemed at first sight to have troubled prospective authors of papers, but to our great surprise the contributions of the proceedings volume, printed already before the beginning of the conference, showed a very adequate understanding of the challenge this topic had provided.

Actually, speaking of 'cognitive paradigms' when dealing with knowledge organization seems to be a tautology since there is no other way of knowledge organization than by using a conceptual and contents-related approach, which is included in cognition.

Here I would like to quote W. Gödert and P. Jaenecke in their Foreword to the recent proceedings volume of the German ISKO Chapter Conference on "Cognitive Approaches in the Organization and Representation of Knowledge": "The contents orientation prevails in the entire area of knowledge organization... Contents-related information handling is typical for cognitive processes... Contents-related search presupposes suitable subject analysis and representation; it demands an ordering system which groups together and arranges concepts in one place that belong there because of their subject-relationship and not because of the demands of a formal ordering scheme" (1).

But beyond the apparent tautology in the phrasing of the conference theme, the paradigm concept of the historian of science, Thomas Kuhn (2), implies the connotation of a guiding theory prevailing in a *discipline*. This guiding theory dominates the research work within a discipline until it is replaced by another one causing a shift by the new insights developed and starts to take shape in the discovery of new relationships and subsequently change the existing body of conceptual contents and activities entirely and finally also the teaching in a certain discipline or scientific field. Thus, such paradigms are like nuclei in a crystallizing metal; they structure and form the resulting pieces. In a similar way the existing paradigms of a scientific field determine the structures of thinking, arguing, acting, etc. in relation to any relevant scientific work.

In a most interesting article, David Ellis (3) recently dealt with *"The physical and cognitive paradigms in information retrieval research"*. Although I cannot agree with the distinction made in this heading - as a paradigm is never something physical but always an abstract, conceptual 'thing' - it must be mentioned that he took the Cranfield tests of Cyril Cleverdon and others in the fifties as an example for *"a considerable direct and indirect influence on the subsequent direction and development of the field"*. He considered the paradigm set by these Cranfield tests as an example for a physical paradigm in opposition to a cognitive one for the understanding of which he quotes Marc de Mey in his statement:

"that any processing of information, whether perceptual or symbolic, is mediated by a system of categories of concepts which, for the information processing device, are a model of the world" (4).

Ellis explains the distinction made in the following way: "This difference of base between the physical paradigm and the cognitive approach is reflected in the different types of research associated with the two. Research in the physical paradigm is characterised by a homogeneity of purpose and method which contrasts strongly with research in the cognitive approach which has been diverse in its objectives and methods but united by the underlying theme that an information retrieval system should reflect in its operations, in some way or other, the cognitive world of the user. (3, p.53).

What can be regarded as a paradigm in knowledge organization? Let us take as an example the paradigm shift which was introduced into our field by Ranganathan: His detection of the mechano-set and subsequent introduction of the model of general categories and facets into his new universal classification scheme set a first paradigm. It went together with his formula "PMEST" and the idea that any subject needs to be represented according to this syntactic sequence - subsequently to be included in the arrangement of concepts in his Colon Classification. It became an example, a model, a paradigm for the construction of faceted classification systems in many application areas in the world. However, we must also state that this paradigm has not yet replaced all the former ways of constructing classification schemes. Thus, - according to Kuhn - normal scientific research in our field could at this very moment be fully concerned with working along the paradigm lines set by Ranganathan if only the majority of our colleagues had already accepted this theoretical framework. This is only one example of many with which we could continue.

The helpful concept then in speaking of the "cognitive paradigm in knowledge organization" lies in the fact that it should make us consider what the guiding theories in our discipline are and in what way they are able to provide it with the necessary research tasks in elaborating in the "normal scientific way" the body of knowledge in our field.

It has also been declared a characteristic of a paradigm that it will soon find its critics, whose arguments, however, help to clarify the correctness of a paradigm. There may of course also be wrong assumptions, even with a great influence on later developments (to which I would also count the Cranfield tests), but their future will be determined by the lack of success, causing them to be abandoned sooner or later.

It is also a characteristic of a scientific field that its proponents are bound to search for truth. Those arguing against a true and correct paradigm and unwilling to accept that they are wrong, are free to continue, but - and this was the solution for such cases which Kuhn offered - eventually their life will also come to an end and thus their arguing will be stopped. Recently R.Fugmann offered two examples of paradigms that have increasingly been recognized as wrong ones, viz.

"those created in the early Cranfield tests and in the misapplication of Shannon's and Weavers "Information Theory". In the Cranfield tests, the requirements of both, the definability of the search goal and of the predictability of the information repre-