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DIN 32 705: The German Standard on Classification Systems: A Critical Appraisal*

Dahlberg, I.: **DIN 32 705: The German standard on classification systems: A critical appraisal.**
Int.Classif. 19(1992)No.4, p.201-204, 21 refs.
The Gennan standard on the construction and further development of classification systems (CS) is introduced with its background. The contents of its 8 chapters is described. A critical appraisal considers (1) the fact that the standard does not openly deal with the optimal form of CS, viz. faceted CS, but treats them as one possibility among others, although the authors seem to have had this kind in mind when recommending the section on steps of CS development and other sections of the standard; (2) that the standard does not give any recommendation on the computerization of the necessary activities in establishing CS; and (3) that a convergence of CS and thesauri in the form of faceted CS and faceted thesauri has not been taken into consideration. - Concludingly some doubts are raised whether a standard would be the best medium to provide recommendations or guidelines for the construction of such systems. More adequate ways for this should be explored.
(Author)

1. Introduction

In a number of meetings during a number of years a committee of the German Standardization Institute (DIN) discussed and elaborated a standard concerning the problems relating to the establishment or construction and further development of classification systems (CS). The result of this work was finally accepted by the DIN and published in Jan. 1987 under the number DIN 32 705 (1). It may be looked at as one of the standards which are called in German "Verständigungsnormen" - (Standards meant to serve as a common basis for understanding a certain subject). Such standards are defined in (2) as follows: *A standard which for the purpose of a univocal and expedient/rational understanding fixes/defines terminological subjects, signs or systems* (my transl., ID)[1]. In other words, this is a standard which is not meant to serve for the creation of uniform products, as e.g. a standard concerning the sizes of paper.

As there is nothing alike as yet in any other country's standardization program, a translation of this our standard might furnish a valuable contribution to the items to be considered for inclusion in such a national program. There exist of course some textbooks which describe CS in general and with regard to existing systems. Also in some of the textbooks (3-8)[2] descriptive sections on how to establish a CS are given. Such texts, however, will not always find their readers in fields outside of the information sciences. Thus it was felt that a standard for general use might be helpful for everybody in order that the wheel of our classification knowledge would not have to be reinvented time and again, particularly by our colleagues in the area of the cognitive sciences, artificial intelligence and computer linguistics.

I would have liked to present to you the English translation of this standard in print. But, although I made the suggestion for translation many years ago to the officials of the DIN and in an IC Editorial, and again early this year, the DIN has not considered it as yet for translation.

Therefore, in the first section of this paper I will try to give a rough description of the contents of this standard while in a further section I will point to some problems which seem in need of a new look at this standard.

2. Structure and Contents of DIN 32 705

The Standard, called "Classification Systems, Establishment and Development of Classification Systems" consists of the following 8 chapters (I continue to use CS for Classification Systems):

1. Application Area and Purpose
2. Concepts
3. Elements and Structure of CS
4. Typology of CS
5. Class Designations
6. Establishment of CS
7. Considerations Concerning the Form of CS
8. Guidelines for Maintenance and Further Development

In **Chapter 1** it is stated that the standard is meant for all possibilities concerning the organization of knowledge according to contents-related points of view with the help of CS. Application areas have been named, e.g.

library and information science, organization science, problems of personnel and control within business management, statistics, terminology.

It is also said here that the following items can be classed:

* Paper presented at the Joint FID/CR-ISKO Meeting, Madrid, Oct.20, 1992

Services; documents; machine parts; geographic regions and administrative units; institutions; organisms; processes and phenomena; substances, materials, commodities; subject fields, theories, hypotheses and other intellectual products.

Also it is expressedly stated that the standard does not deal with the procedures of numerical taxonomy.

In **Chapter 2**, concerning the relevant *Concepts*, as a requirement in DIN standards, a few of the main concepts of this standard are defined in advance. Further definitions occur later in the text. Here the definitions are given for *object* (Gegenstand), *class*, *characteristic*, *classeme* (classificatory characteristic), *classification system* and *notation*.

Chapter 3 on *Elements and Structure of Classification Systems* is the longest one. It starts in its first section with some general remarks on the purpose of order as a practical, a scientific and an epistemological task and clarifies that, as the elements of CS are concepts and classes of concepts, CS may also be regarded as concept systems.

In the second section of this chapter, therefore, concepts and characteristics are defined and kinds of concepts are distinguished according to their categories, degree of generality and degree of complexity.

The third section treats the structure of a classification system, which is derived from the kinds of relationships which in turn are determined by the principles selected for the arrangement of classes and concepts. The origin of relationships is explained and the kinds of relationships between concepts (hierarchical ones, opposition and functional ones) are described.

A further section deals with structural principles for a rough and for a detailed order of concepts.

Chapter 4 on the *typology of CS* distinguishes between 1) CS according to size and purpose (universal or special CS), 2) CS according to the kinds of objects they are meant to organize (subject fields, or entities/special objects), and 3) CS according to the kind of structure used (hierarchical, faceted, and CS with precombined concepts.

Chapter 5 on *designation of classes* deals with verbal class descriptions and notations (codes to fix the verbal class descriptions and their position within a CS). The structure of a notation is explained as well as its purpose, its requirements, its kinds, and its way of representation. Possibilities of notational combinations are outlined as well.

Compared with chapter 3, **chapter 6** is the second in size of this standard, covering the *principles of CS construction and class formation as well as the steps in elaborating a system*, consisting in the following activities: Collection of concepts and their terms, concept analysis, establishment of facet order, application of concept relationships, arrangement and order of concepts and classes, rules (syntax) for the combination of classes and concepts, and finally, selection of a notation. Sections have also been added here on the establishment of the index to a CS, formulation of guidelines for the users, and the necessity of giving an introduction into the CS as a whole. As an example a survey of the classes 0 - 9 of the UDC is given on one whole page.

Chapter 7 treats the formal *requirements for the printing of a CS*. It gives a few hints on how to best display the CS as a scheme of tables to which is added an alphabetical section, the index. In some of its statements this section refers also to other standards, e.g. the arrangement of a title page as described in DIN 1502, the forming of a running title (DIN 1422), and the establishment of an index (DIN 31 630).

The final **chapter 8** on *maintenance and further development* is the shortest one, consisting of only three paragraphs of one sentence each concerning

- the authority for changes to be made,
- the revision procedure, and
- the responsibility for any revision work of a system.

In an Appendix to the text a list of the 10 standards cited in the text is given, as well as 5 references to other DIN and ISO standards, to the UDC systematic tables of the Medium Edition of 1978 and to volume 1 on Classification Systems and Thesauri of the International Classification and Indexing Bibliography, INDEKS Verlag, Frankfurt 1982.

3. Critical Appraisal

As much as it is to be appreciated that such a document as the described standard exists at all, it is time - five years after its publication - to discuss what may have been the reasons for the DIN not to release it for translation. In enquiring about its sales I was only given to hear that it sold very badly, so it is still available, at least. The original purpose to reach new groups in need of this knowledge may not have been attained. Was the topic one of which everybody thinks to know enough himself? Or would the work have met more interest if it had not been published as a standard but in another document form? Was there inadequate advertising on the part of the DIN itself and its cooperating agencies? To my knowledge there has hardly been any open discussion about this standard in Germany's professional literature. Is this perhaps the reason for its existence as a "Sleeping Beauty"?

I will not go into the details of any weaknesses of this standard as visible in the text, as the text is not available in English for examination. However, I must state that there are some points which have been treated too rough and superficial. They may be understandable to those who know anyhow, but probably not to any newcomer or outsider. And if only more examples had been added to the text, the problems for the reader might have been lessened.

In the following I will discuss three ideas which might be looked at as suggestions for future activities in this regard, be it by a standardizing body or by other groups or individuals.

3.1 Why not straightforward to faceted CS?

When Ranganathan had made his experience with the development of his CC, he thought of letting others share his knowledge and proposed to the FID in 1955 an international summer school on "Designing of Documentary Classification" (9). The FID Council - in 1956 - decided not to hold a summer school but a "Study Conference on Classification", which became a reality in May of 1957 as the well-known Dorking Conference. To meet Ranganathan's expectations, the proceedings volume of this conference (10) was supplemented with a statement on the optimal structure of a classification system to be displayed in a faceted form[3].

It seems to me that it would have been more helpful for the possible users of our standard if it had been recommended from the very beginning that CS be constructed according to the optimal structure, the faceted one, rather than describing somehow the current practice and even to show as an example for the display of a universal CS the main classes and their subdivisions in the UDC.

All of us know that the current universal CS, like DDC, UDC, LCC are still the most commonly used CS in libraries and documentation centers but today they can no longer be regarded as models for any future organization of knowledge.

In reading the standard carefully, every insider will understand, however, especially in chapter 6, that the faceted CS was in the authors' minds when they explained the steps in design and construction of a CS. Why then was this so carefully concealed? If this had been made clear in the very beginning, and the elaboration had been more directly turned to all the requirements for this optimal form together with the necessary examples which are indeed lacking very desparately in this standard, I am sure it would have found much more interest and application. It is striking indeed that the use of faceted classification has been considered in the elaboration of expert systems, see e.g. the article by B.Endres-Niggemeyer and Bettina Schmidt in (13) and also in the SIMPR project under the ESPRIT research initiative, which attempts to facilitate, and to some degree to automate the tasks involved in the construction and use of a faceted schema within technical domains (14).

3.2 Why was computerization excluded?

Already in his German book of 1969, where D.Soergel considered CS and thesauri together, he pointed to possibilities for a more effective and more expedient way of thesaurus construction by using computers (15). In his later - English - book of 1974 which was a greatly expanded and revised version of the German one and now used the summarizing term 'indexing languages' (16), Soergel included machine support as a most natural assistant to the construction work, e.g. for the following tasks:

to pull information from different sources,
to merge records,
to record material,
to work out a detailed structure,
to construct hierarchies,
to take care of semantic factoring,
to sort terms into a subject field and its subfields,
to organize records,
to check cross-references,
to revise entries in the working file,
to standardize spelling variants,
to update a system.

Although the committee, in elaborating the standard, expressed the view that an additional standard or a supplement to it should deal with the computerization of the pertinent work, this necessary task seems to have been forgotten entirely once the standard was published. By now, with the existence of PC and so much available software, it is absolutely necessary to provide the necessary links to the new tools and their possibilities.

3.3 The possible convergence of CS and thesauri

After the idea of constructing thesauri for subject analysis and description was born in the early sixties it became a fashion to elaborate such tools rather than to develop CS any longer in the information field. When, therefore, in 1965, a German Committee on Thesaurus Research was established, its first activity was to consider Guidelines for the Construction of Thesauri. On the bases of papers written, Soergel composed his German book mentioned above (3). I remember still the situation shortly before Soergel left to fly to USA at the Düsseldorf airport where he insisted that the title of the book must include besides 'Thesauri' also 'Classification Systems'. At that time this was very much against the intentions of the Committee members and I had a hard time getting Soergel's desire accepted. The present development shows, however, that he was correct already at that time. Thesaurus development soon turned toward the creation of faceted thesauri, with Thesaurofacet being published in 1969. In 1982, Jean Aitchison received the Ranganathan Award at Augsburg for having given the world a number of models of what a faceted thesaurus should look like (15-17).

Thus it would remain to wipe out the last differences still existing between a faceted classification system and a faceted thesaurus and to start working toward the creation of truly faceted concept ordering systems. The more purely concepts are arranged and displayed in facets, the easier will they be used singly or in combination for subject analysis, representation and later on also in retrieval of subjects and facts.

If one would start to work towards convergence of the two kinds of tools so far still existing, this would then also mean that the existing thesaurus standards, national as well as international, for monolingual or multilingual purposes should cease recommending alphabetical lists of descriptors and their conceptual and semantic relationships and instead start to collaborate with the experts in classsification to create guidelines for the construction of faceted thesauri which are at the same time faceted CS, in one concept: faceted ordering systems.

4. Concluding remarks

The idea of separating concepts or classes according to categories has been dealt with already in the revision work of the UDC since 1895, and later on also by the German librarian Trebst (18). But it was Ranganathan who set the new paradigm and mathematized classification practices by his idea of breaking down a subject field into components belonging to different categories and of arranging them in an order of facets according to a syntactic formula (19, 20). It seems timely to help the paradigm shift to realize itself in socalled 'normal science', which means that the work to be done according to the newly set paradigm should not be delayed. Indeed, professionals in the field of classification and thesaurus theory should collaborate in this regard in the establishment of concept ordering systems, in order that we do not lose sight of our mutual goal, i.e. to master mankind's knowledge in every regard and in every field by correctly determining knowledge units and their place in knowledge organization systems. And it seems to be especially timely and necessary to collaborate in this regard with terminologists, all the more so since for their purposes there just exists no better method of organizing concepts than by categories and their facets in the different subject areas and fields.

I doubt, though, that for this purpose we need standards at all. But we certainly have to create guidelines or other educational materials and we might express recommendations, as has been started already by a Working Group within ISKO, whose members recently published the results of their deliberations in the journal *International Classification* (21). Thus I am hoping that better solutions to meet the challenge of instructing on how to build a knowledge ordering system will be discussed and presented. I am looking forward to see a pertinent document soon which would be simply convincing, clearly written and easy to understand, with many helpful examples in order to support the convergence in the different approaches to the same activities of knowledge organization as done by librarians, information science people, terminologists, AI experts and perhaps many other unknown users of knowledge.

Notes:

1 The definition in German: "Eine Verständigungsnonn ist eine Nonn, in der zur eindeutigen und rationellen Verständigung terminologische Sachverhalte, Zeichen oder Systeme festgelegt werden."

2 The two latter cases are rather directed toward the elaboration of a certain system, here in case (7) the Colon Classification and in case (8) the Russian Rubricator.

2 The classical text reads as follows: 'There is general agreement that the most helpful form of a classification scheme for information retrieval is one which groups terms into well-defined categories, which can be used independently to form compounds, and within which the terms can be arranged in hierarchies where this conforms to the recognized structure of relations between them". (10, p.111-113). The entire text of the recommendation is also included in (12, p.154-167).

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