The León Manifesto

Some relevant proposals regarding the future of knowledge organization emerged during the 8th conference of the ISKO Spanish chapter, which took place in the beautiful, lively atmosphere of the town of León, between 18 and 20 of April 2007 (as usual, Ágnes Hajdu Bárat took nice photos of the whole conference).

These proposals are here labeled as "the León manifesto", and can be summarized in the following points:

- the current trend towards an increasing interdisciplinarity of knowledge calls for essentially new knowledge organization systems (KOS), based on a substantive revision of the principles underlying the traditional discipline-based KOS;
- this innovation is not only desirable, but also feasible, and should be implemented by actually developing some new KOS;
- instead of disciplines, the basic unity of the new KOS should be phenomena of the real world as it is represented in human knowledge;
- the new KOS should allow users to shift from one perspective or viewpoint to another, thus reflecting the multidimensional nature of complex thought. In particular, it should allow them to search independently for particular phenomena, for particular theories about phenomena (and about relations between phenomena), and for particular methods of investigation;
- the connections between phenomena, those between phenomena and the theories studying them, and those between phenomena and the methods to investigate them, can be expressed and managed by analytico-synthetic techniques already developed in faceted classification.

The León conference was devoted to "Interdisciplinarity and transdisciplinarity in the organization of scientific knowledge". It was opened by María José López-Huertas, the current president of ISKO, with a keynote address on "Multidimensional knowledge management in the knowledge organization systems" (in Spanish). Its abstract, published in the proceedings of the conference, is as follows:

> The arrival of new ways of studying reality, as a consequence of postmodernism and the complex thinking, gave place to a new knowledge, that may be called multidimensional knowledge, and its variants multidisciplinarity, interdisciplinarity and transdisciplinarity that cannot be understood, represented nor organized within the traditional indexing and retrieval systems based on disciplines. An analysis is done showing how the Library and Information Science field has reacted to this problem, and proposals that try to solve the inadequacy between the multidimensional knowledge and the indexing and retrieval tools are explained.

In the initial survey of recent trends in knowledge, López-Huertas observes [p 5] that "a perspective change like the one proposed for inter- and transdisciplinarity is going to deeply affect some of the models, claims and methods traditionally established". The inadequacy of existing KOS to treat interdisciplinary knowledge has already been observed and emphasized by several authors, including Clare Beghtol [Knowledge organization, 25: 1998, p 1-12], who has made reference to the focus on phenomena in JD Brown's Subject Classification.

To cope with this "need of making disciplinary boundaries permeable" [p 11], recent KO research seems to be developing three possible strategies:

- adaptation of KOS to new uses,
- creation of alternative hybrid KOS,
- creation of new KOS.

The third solution includes the use of facet analysis to express interdisciplinary themes [Beghtol cit.], as well as Gnoli's proposal [Proc' 9th ISKO conference, 2006, p 11-18] "having as its aim the foundation of bases for the creation of a universal non-disciplinary faceted classification. To this purpose, he reuses concepts of wide tradition in classification research such as phenomenon, facet, integrative levels, as well as predicate logic" [p 11-12]. Other explorations have been carried out by López-Huertas herself in applying domain analysis to an interdisciplinary domain like women studies.

"All these [studies] represent advances, however more investigation is necessary in order to reach a model which corresponds to the real dynamics of interdisciplines as a whole, rather than considering them as a sum of parts, and, starting from here, to suggest actual methods of representation and organization", López-Huertas concludes [p 22].

This open problem was especially addressed the day after in the session on "Implications of interdisciplinarity and transdisciplinarity for knowledge representation". The session was opened by Sylvie Davies with some exploratory considerations on how to organize information science itself in an interdisciplinary context, again making use of facet analysis ("Mediating knowledge across the activity of information science").

Then, Mela Bosch presented her paper, coauthored with Claudio Gnoli and Fulvio Mazzocchi, on "A new relationship for multidisciplinary KOS: dependence" [p 399]:

> Most existing knowledge organization systems (KOS) are based on disciplines. However, as research is increasingly multidisciplinary, scholars need tools allowing them to explore relations between phenomena throughout the whole spectrum of knowledge. We focus on the dependence relationship, holding between one phenomenon and those at lower integrative levels on which it depends for its existence, like alpinism on mountains, and mountains on rocks. This relationship was first described by D.J. Foskett in the context of CRG's work towards a non-disciplinary scheme. We discuss its possible status and representation in three kinds of KOS: thesauri, classification schemes, and ontologies. In thesaural structures, dependence could be one of the subtypes of associative relationships (RT), which should be defined according to several authors in order to enrich their semantic functions. In classification, it could act together with hierarchy as a structuring principle, providing a way of connecting and sorting main classes based on integrative levels. In ontologies, it could be defined as a dependsOn direct slot, expressing the fact that through it a class does not inherit all properties of the other class on which it depends. We argue that providing search interfaces with cross-disciplinary links of this kind can give users more adequate tools to examine the recorded knowledge through creative paths overcoming some limitations of its canonical segmentation into disciplines.

This paper is part of the Integrative Level Classification research project, referred to by López-Huertas above and described in this website. Gnoli et al. conclude observing that "most KOS justify their disciplinary structure by the assumption that users, while searching for information, will follow the disciplinary organization they are familiar with. This may be an effective way to reproduce the literary warrant faithfully. However, the function of KO is not only to represent the existing literature, but also to suggest new paths of research through the discovery of relations in published knowledge. To the latter purpose, cross-disciplinary relations must be representable and made searchable. Projects like Szostak's and ILC go in this direction" [p 406].

The session was indeed completed by Rick Szostak's paper on "Interdisciplinarity and the classification of scholarly documents by phenomena, theories, and methods", as summarized in its abstract [p 471]:

> The paper argues that information science can best serve the needs of interdisciplinary scholarship (which is of increasing importance) by developing universal classifications of the phenomena studied by scholars and the theories and methods applied by scholars. Present systems of document classification are grounded in disciplinary terminology and thus serve interdisciplinary scholarship poorly. The second part of the paper outlines the importance of the recommended type of system of classification, the limitations of present systems, and the effects of this limitations on interdisciplinary scholarship. The third part argues that such a system of classification is feasible, and that it is best developed through a combination of induction and deduction.

After discussing the need for interdisciplinary classification, it is remarked [p 474-475] that "the (until recently) independent efforts of Szostak – drawing on the study of science literature – and Gnoli and colleagues [...] – drawing on the information science literature – have produced similar and entirely complementary approaches to the development of a universal classification of phenomena. While these schemes are in their early stages, the broad outlines are clear, and efforts to classify some literatures have been successfully undertaken (see especially the ISKO Italy

website noted just above). Though not itself an effort at document classification, Szostak [A schema for unifiying human science, Susquehanna UP, 2003] established that the arguments of hundreds of works from across the human sciences could be classified in terms of a simple but universal classification of phenomena. While much more remains to be done, enough has been accomplished to establish the feasibility of the endeavor."

In conclusion [p 476], "this paper is in some sense a manifesto for a radically new approach to document classification. It is both highly desirable and feasible to classify scholarly documents in terms of a universal classification of phenomena, theories and theory types, and methods. If information scientists develop the sort of classifications suggested above, they will greatly facilitate interdisciplinary scholarship. Many scholars at present understand the value of interdisciplinary scholarship but hesitate to engage in this because of its challenges. Given that specialized and interdisciplinary scholarship are mutually supportive, greater efforts toward interdisciplinarity will markedly enhance the quality and productivity of the scholarly enterprise as a whole. In other words, information scientists can at this historical moment have a huge and beneficial impact on the future course of scholarship by developing classifications that facilitate interdisciplinary analysis."

In the concluding discussion, the organizer of the León conference, Blanca Rodríguez Bravo expressed her interest and agreement with the contents of the whole session.

One newly developing, faceted, non-disciplinary general classification scheme, like those wished by various authors, is that described in this website (ILC). Its unities of classification are phenomena, considered as neutral objects of knowledge, independent from any approach or viewpoint by which they can be treated. Phenomena can be freely combined to give a faceted notation. Among the possible facets, some can account for the theories (05) and methods (03) to be represented according to Szostak:

Uu	finance
Uu05x	finance studied by theory X
Uu05y	finance studied by theory Y
Uu059z	finance studied by theories of type Z
Uu03b	finance studied through observational method
Uu03o	finance studied through statistical analysis
Mq03b	animals studied through observational method
Mq03o	animals studied through statistical analysis
Mq05y03o	animals studied by theory Y through statistical analysis

A user searching, for example, for "statistical analysis" will query the system by notation 03o, and retrieve "finance studied through statistical analysis", "animals studied through statistical analysis", and "animals studied by theory Y through statistical analysis". The classification of theories and methods, and their expression in ILC notation, are now expected to be developed better by the integrated effort of Szostak and Gnoli.

In personal discussion during the León conference, it was realized that the general need remarked by López-Huertas can be well addressed by the mentioned research projects, including work on the listing and classification of theories and methods, and on the classification of phenomena and the representation of all dimensions by a freely-faceted notation. These ongoing researches find thus their place in the larger picture that has been described here as the León manifesto.

Comments

To comment and discuss on this manifesto, to subscribe to it, or to propose collaboration, please write to Claudio Gnoli and Rick Szostak <E-mail: rick.szostak@ualberta.ca>.