# Knowledge Organization Systems and Bibliographic Records in the State of Flux. Hermeneutical Foundations of Organizational Information Culture

## Authors

Sonja Gust von Loh
Heinrich-Heine-University Duesseldorf, Dept. of Information Science
Universitaetsstr. 1, D-40225 Duesseldorf
Email: gust-von-loh@phil-fak.uni-duesseldorf.de

Mechtild Stock
Stock - Kerpen
Zum Muehlenfeld 18, D-50170 Kerpen
Email: mechtildstock@aol.com

Wolfgang G. Stock
Heinrich-Heine-University Duesseldorf, Dept. of Information Science
Universitaetsstr. 1, D-40225 Duesseldorf
Email: stock@phil-fak.uni-duesseldorf.de

Abstract. According to hermeneutical findings, all Knowledge Organization Systems (KOS) and all indexing terms in bibliographic records are located in the so-called hermeneutical circle. They are always preliminary and therefore object of permanent change. Understanding is dependent on the fusion of horizons of all involved people (knowledge managers, information architects, and – above all – users). Therefore all these people have to in-teract on KOS and records maintenance. It is a task of knowledge management in companies, administrations, etc. to create an appropriate organizational information culture.

## Ever changing KOS and Bibliographical Records?

"Everything is in a state of flux" (Simplicius of Cilicia, citing Heraclitus). Plato writes, "Heraclitus, I think, says that everything moves and nothing rests" (Cratylus 402a). If these statements are true, all Knowledge Organization Systems (KOS) (Hodge, 2000; Stock & Stock, 2008), e.g., ontologies, classification systems, thesauri, nomenclatures,

and – as a borderline case of KOS – folksonomies, are objects of permanent change (what is accepted in information science) and all subject indexing in bibliographical records (say, catalogue entries in libraries or database records of information services) are in a state of flux as well (what is not widely accepted in information science and practice). We will discuss the panta rhei of KOS and of indexing terms of bibliographical records with special reference to knowledge management in organizations (companies, administrations, etc.). Following a holistic approach, we will point out the importance of hermeneutical findings on the organizational information architecture, on corporate knowledge management and on organizational information culture.

## Hermeneutical Foundations

Communication is based on a shared language used within the frame of a culture (Gadamer, 1975; Heidegger, 1962; see also Capurro, 2008; Hjørland, 2002; Holma, 2005). Language is never neutral, but is always spoken and understood with regard to a special point of view, which forms the individual human horizon (Welthorizont). The horizon of an individual is changing all the time while historical experiences (of the tradition) have an effect on the present horizon. Any social creature is involved in activities of interpretation founded on so-called prejudices (Vor-Urteil) and on pre-understanding (Vor-Verständnis). To understand a document as a whole implies to understand all its parts, and to understand a part of a document implies to understand the document as a whole. In this hermeneutic circle (hermeneutischer Zirkel) the prejudices play a positive role. They give a preliminary understanding of parts and whole at any stage of interpretation and are object of change in every passage of the circle. It is a circular process from the whole to the parts and back to the whole. The documents' interpretation is a dynamic process and results in a fusion of horizons (Horizontverschmelzung) of the document and the reader. It is a learning process in response to need: the way of creation, sharing and circulation of human knowledge inside a human community (Brown & Duguid, 2000). Practice, communication and learning form (gestalten) the people, their identity and their interpretation.

It is possible that different readers (with different horizons) will interpret and understand the same document in different ways. And it is possible that the same reader at different times (with a changed horizon) will understand a document quite different. Of course, the document (say, a scientific article or a monograph) remains stable – it is always the same text – but the usage of the document and its interpretation can (and will) change.

There is a relation between the individual and the tradition, so that social and historical background knowledge interact and create human interpretation. So, language usage is circular. The individual, the tradition and the use of language as well

continuously develop and change in the course of time. This occurs in all life situations, in day-to-day life and within a corporate environment as well. A corporate language and consequently a corporate KOS can neither be free from all prejudices nor get away from pre-understanding. The knowledge of being embedded in this cultural context, of the existence of various horizons, of revealing traditions and of time-dependent language interactions create new possibilities for KOS design (Winograd & Flores, 1986).

Social background, acting and language as means of communication are the foundations of information flows within an organization, of KOS design, and of subject indexing of documents. All these tasks have to be adapted to the continuously changing traditions. For all documents, all KOS terms and relations, and all indexing terms are located in the hermeneutical circle, they are always preliminary. Every indexing activity is a prejudice and hence object of change. KOS and subject indexing are never ends in themselves, but made for the users. The company's employees are engaged in different practices. KOS enables to retrieve the knowledge of the employees and the knowledge fixed in documents. Knowledge management has to look to the practitioners: to their work tasks, work places, needs, languages and social environments. In the sense of the fusion of horizons it is necessary that the users, the KOS designers, and the indexers (maybe these are – especially by adapting folksonomies – users as well) interact permanently. To realize such hermeneutical foundations we have to create a best fitting organizational information culture.

## Organizational Information Culture

Corporate culture and knowledge management cannot be divided. Organizational culture can facilitate or be a big barrier for knowledge management systems and methods (Ciganek, Mao, & Srite, 2008). Without an adequate culture knowledge management cannot be implemented. It is important that we have a knowledge friendly culture which contains positive orientation to knowledge, no fear about sharing knowledge and knowledge management projects which meet the existing culture (Davenport, De Long, & Beers, 1998).

Knowledge management sometimes requires a change in the organizational culture and that is why the knowledge management department is not only responsible for information technologies and methods of knowledge sharing, but for developing an organizational information environment as well. The assumption of having a good knowledge management is that information culture and organizational learning take part in the organizational culture. Information culture can be defined as a culture which is the basis of organizational decision making and the value and the utility of information in achieving operational and strategic success is recognized (Curry &

Moore, 2003). Both information technology (IT) and social methods are crucial for the organizational information culture. It is important that the organizational culture sees information as a considerable resource for achieving strategic and operational aims. The aim of information culture is "that all employees are able to access that information which is necessary for the successful execution of their daily tasks" (Curry & Moore, 2003, p. 98).

In connection with knowledge management it is compulsory to have an open culture, which means that all employees feel good and know that they can count on the management but also on the other employees. Without an open culture it seems to be very implausible to implement a knowledge management system successfully.

Knowledge quality takes part of information culture as well. Knowledge quality contains knowledge management strategies and processes (Jennex & Olfman, 2006) which consist of documents and of KOS. For achieving optimal information flow and communication we need a corporate culture based not only on information technology, information services and social methods, but additionally on a corporate language described by a KOS.

Companies and administrations with different organizational cultures are in need of different KOS. For example, a small or medium-sized company can work with a nomenclature (a flat system of controlled terms without any further relations), a company acting only in one industry and mainly in one country has to implement a (monolingual) thesaurus, and a multinational enterprise will develop a classification system based upon language-independent notations with many different natural language surfaces.

## KOS Construction and Use

There is no doubt that the construction and the use of Knowledge Organization Systems (Aitchison, Gilchrist, & Bawden, 2000) are important tasks for all kinds of organizations. KOS are necessary conditions not only for building up an organizational language but also for indexing and finding information, i.e. to make it possible for the employees to access the right information. For constructing a currently best fitting KOS we have to use the best evidence we are able to find. This is a task of Evidence-Based Library and Information Practice (EBLIP) (Booth & Brice, 2004; Eldredge, 2000), applied on knowledge management (Gust von Loh, 2009).

Evidence-based KOS construction stands for using the state of the art of research and development of both information science and practice (KOS research), and the given discipline or industry. For the selection of terms and relations of the corporate

language the knowledge manager (in the role of an information architect) has to study documents with relevance for the institution and to perform quite a number of user analyses.

User studies consist of analytical tools such as Cognitive Work Analysis (CWA) (Rasmussen, Pejtersen, & Goodstein, 1994; for KOS construction using CWA see Mai, 2008) and – as a part of CWA – means-ends-analysis, and of empirical tools such as information demand analysis, information usage analysis, logfile analysis, customer knowledge management and customer relationship management (Gust von Loh, 2009). An additional method is the use of folksonomies in corporate information services (Peters & Stock, 2007; Peters, 2009). With the users' tags the information architect gets up-to-date hints of the vocabulary of his colleagues. It is possible to detect relations between tags working as "tag gardeners" with tag co-occurrences (Peters & Weller, 2008).

## KOS and Indexing in Flux

All documents with relevance for the institution become indexed (applying nomenclatures, classification systems or thesauri) by professional indexers (intellectual indexing) or by the system (automatic indexing) and/or by users (folksonomy tagging). To realize the hermeneutical findings it is necessary to find tools to change the vocabulary of the KOS and the indexing terms of the bibliographical records. With every output of a document record, the user gets the possibility to evaluate all index terms of the given record (see fig. 1). He can estimate the appropriateness of every term for the corporate KOS and for the searching and finding of the given document. Furthermore, he is able to suggest new index terms for finding the document. By this way, the information architect receives raw material for KOS maintenance (lines 1 and 3 in fig. 1). If an information service works with automatic indexing (i.e., without the possibility that a human indexer recognizes changes in the terminology) this is the only way to maintain the KOS.

The bibliographic entry is an object of chance as well. If many users agree that a given index term (controlled term or folksonomy tag) is not adequate for finding the document (line 2 in fig. 1), this index term has to be deleted. If users agree that there is another index term, which is currently not applied, but is helpful to find the document (line 3), this index term has be added to the bibliographic record.

TERM *XYZ*

Evaluate this term!

(1) Is this term adequate for our corporate language?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|----|

not at all                     medium                    highly usable

(2) Is this term adequate for finding this concrete document?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|----|

not at all                     medium                    highly usable

(3) Would you like to recommend further terms for finding this concrete document?

| no | | yes: | |
|----|--|------|--|

**Figure 1. Form for evaluation of index terms in bibliographical records**

## Conclusion

Our conceptual project is part of basic research in information science; it is not yet tested and evaluated in concrete information services. If we take hermeneutical foundations of information science and practice seriously, we have to state that both knowledge organization systems and subject indexing terms of bibliographical records are objects of permanent change. Knowledge managers or information architects are called upon to form the organizational information culture in such a way that the development of the corporate language is always timely and that all colleagues collaborate in KOS design, maintenance and indexing.

## Acknowledgements

## References

Aitchison, J., Gilchrist, A., & Bawden, D. (2000). Thesaurus Construction and Use. 4th Ed. London, UK, New York, NY: Europa Publ.

Booth, A., & Brice, A. (2004). Why evidence based information practice? In Booth, A., & Brice, A., Eds., Evidence-Based Practice for Information Professionals. A Handbook (pp. 1–12). London, UK: Facet Publ.

Brown, J.S., & Duguid, P. (2000). The Social Life of Information. Boston, Mass.: Harvard Business School.

Capurro, R. (2008). Hermeneutics facing the "information enframing". Ubiquity, 9(8), art. no. 1.

Ciganek, A.P., Mao, E., & Srite, M. (2008). Organizational culture for knowledge management systems: A study of corporate users. International Journal of Knowledge Management, 4(1), 1–16.

Curry, A., & Moore, C. (2003). Assessing information culture – An exploratory model. International Journal of Information Management, 23(2), 91–110.

Davenport, T.H., De Long, D.W., & Beers, M.C. (1998). Successful knowledge management projects. Sloan Management Review, 39(2), 43–57.

Eldredge, J. (2000). Evidence-based librarianship: An overview. Bulletin of the Medical Library Association, 88(4), 289–302.

Gadamer, H.G. (1975). Truth and Method. London, UK: Sheed & Ward.

Gust von Loh, S. (2009). Evidenzbasiertes Wissensmanagement [Evidence-Based Knowledge Management]. Wiesbaden, Germany: Gabler.

Heidegger, M. (1962). Being and Time. San Francisco, Cal.: Harper. Hjørland, B. (2002). Epistemology and the socio-cognitive perspective in information science. Journal of the American Society for Information Science and Technology, 53(4), 257–270.

Hodge, G. (2000). Systems of Knowledge Organization for Digital Libraries: Beyond Traditional Authority Files. Washington, DC: The Digital Library Federation / Council on Library and Information Resources.

Holma, B. (2005). The reference system of relational semantics in knowledge organization systems. In ISKO. Capítulo Espanol. Congreso (7th: 2005: Barcelona) (pp. 296–308).

Jennex, M.E., & Olfman, L. (2006). A model of knowledge management success. International Journal of Knowledge Management, 2(3), 51–68.

Mai, J.E. (2008). Actors, domains, and constraints in the design and construction of controlled vocabularies. Knowledge Organization, 35(1), 16–21.

Peters, I. (2009). Folksonomies: Indexing and Retrieval on the Web 2.0 (Knowledge and Information. Studies in Information Science, Vol. 1). Munich, Germany: Saur.

Peters, I., & Stock, W.G. (2007). Folksonomy and information retrieval. In Proceedings of the 70th Annual Meeting of the American Society for Information Science and Technology.

Peters, I., & Weller, K. (2008). Tag gardening for folksonomy enrichment and maintenance. Webology 5(3), art. no. 58.

Plato (1998). Cratylus. Indianapolis, IN: Hackett.

Rasmussen, J., Pejtersen, A.M., & Goodstein, L.P. (1994). Cognitive Systems Engineering. New York, NY: Wiley.

Simplicius (1954). Aristoteles Physicorum Libros Quattuor Posteriores Commentaria. Ed. by H.Diels. Berlin, Germany: de Gruyter.

Stock, W.G., & Stock, M. (2008). Wissensrepräsentation [Knowledge Representation]. Munich, Germany: Oldenbourg.

Winograd, T., & Flores, F. (1986). Understanding Computers and Cognition. A New Foundation for Design. Norwood, NJ: Ablex.

## Footnotes