Chapter 13
Folksonomy
The Collaborative Knowledge Organization System

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ABSTRACT

This chapter discusses folksonomies as a novel way of indexing documents and locating information based on user generated keywords. Folksonomies are considered from the point of view of knowledge organization and representation in the context of user collaboration within the Web 2.0 environments. Folksonomies provide multiple benefits which make them a useful indexing method in various contexts; however, they also have a number of shortcomings that may hamper precise or exhaustive document retrieval. The position maintained is that folksonomies are a valuable addition to the traditional spectrum of knowledge organization methods since they facilitate user input, stimulate active language use and timeliness, create opportunities for processing large data sets, and allow new ways of social navigation within document collections. Applications of folksonomies as well as recommendations for effective information indexing and retrieval are discussed.

INTRODUCTION

A key problem facing today's information society is how to find and retrieve information precisely and effectively. Substantial research efforts concentrate on the challenges of information structuring and storing, particularly within different sub-disciplines of computer science and information science. In this context, information retrieval studies focus on methods and algorithms to enable precise and comprehensive searching of document collections (Frakes & Baeza-Yates, 1992; Stock, 2007a). In addition, techniques of knowledge representation have been established (Cleveland & Cleveland, 2001; Lancaster, 2003; Stock & Stock, 2008). Most prominent are approaches of document indexing:

Figure 1. An exemplary tag cloud. Tag clouds display the most popular tags within a folksonomy based system. The bigger the font size, the more documents have been indexed with a tag.

collective_intelligence **folksonomy** indexing
knowledge_representation personomy
power_tags   social_navigation   social_network
social_software tagging tags tag_cloud   Web2.0

i.e., assigning content-descriptive keywords to documents. This enhances retrieval techniques and aids users in deciding on a document's relevance. Different knowledge organization systems (KOS) are developed to support sophisticated document indexing. Common examples of KOS include classification systems (taxonomies), thesauri, and controlled keywords (nomenclatures).

Recently, a well-known problem of indexing documents with content-descriptive metadata has been addressed from a new, user centered perspective. Within the so-called "Web 2.0" (O'Reilly, 2005), web users have begun publishing their own content on a large scale and started using social software to store and share documents, such as photos, videos or bookmarks (Gordon-Murnane, 2006; Hammond, Hannay, Lund, & Scott, 2005). And they have also begun to index these documents with their own keywords to make them retrievable. In this context, the assigned keywords are called *tags*. The indexing process is called (*social*) *tagging*, the totality of tags used within one platform is called *folksonomy*. A *tag cloud* is a popular method for displaying most frequently applied tags of a folksonomy visually (Figure 1).

Thus, a folksonomy is an indexing method open for users to apply freely chosen index terms. Peter Merholz (2004) entitles this method "metadata for the masses"; the writer James Surowiecki (2004) refers to it as one example of "the wisdom of crowds." The term "folksonomy", as a combination of "folk" and "taxonomy", was introduced in 2004 by Thomas Vander Wal and cited in a blog

post by Gene Smith (2004). Smith uses the term "classification" for paraphrasing folksonomies. This term arouses a misleading and faulty connotation. The same holds for the term "taxonomy." Folksonomies are not classifications or taxonomies, since they work neither with notations nor with semantic relations. They are, however, a new type of knowledge organization system, with its own advantages and disadvantages.

BACKGROUND
Knowledge Organization Systems

Knowledge representation methods are applied to provide a better basis for information retrieval tools. This may basically be done in two ways: by abstracting the topics of a document and by indexing a document, i.e., assigning content-descriptive keywords or placing it into a concept scheme (Cleveland & Cleveland, 2001; Lancaster, 2003). For indexing documents with content-descriptive keywords, different types of knowledge organization systems (KOS) have been developed. The most important methods – classifications, thesauri and nomenclatures – comprise a controlled vocabulary, which is used for indexing. The vocabulary of classifications and thesauri usually has the form of a structured concept hierarchy, which may be enriched with further semantic relations, e.g., relations of equivalence and concept associations (Peters & Weller, 2008; Weller & Peters, 2007).

Recently, two new developments have entered the spectrum of KOS: folksonomies and ontologies (Weller, 2007). They complement traditional techniques in different ways. Folksonomies include novel social dimensions of user involvement; ontologies extend the possibilities of formal vocabulary structuring (e.g., Alexiev et al., 2005; Davies, Fensel, & van Harmelen, 2003; Staab & Studer, 2004). Both have revived discussions about metadata on the web (Madhavan et al., 2006; Safari, 2004) and have increased the

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