

2016 Satellite meeting - *Subject Access: Unlimited Opportunities*
11 – 12 August 2016
State Library of Ohio, Columbus, Ohio, USA

Defining Usefulness and Facilitating Access Based on Research Applications

Allison Jai O'Dell

George A. Smathers Libraries, University of Florida, Gainesville, FL, USA.

ajodell@ufl.edu



Copyright © 2016 by Allison Jai O'Dell. This work is made available under the terms of the Creative Commons Attribution 4.0 International License:
<http://creativecommons.org/licenses/by/4.0>

Abstract:

This paper defines and conceptualizes the usefulness subject type, and describes means for libraries to enable discovery of resources based on user applications. Subject analysis of usefulness directly relates library resources to user needs. Cataloguing usefulness can be achieved through a combination of abstracting and indexing techniques, including cataloguer- and user-supplied metadata with specialized encoding. Accessing usefulness can be achieved through a combination of data analysis and discovery interface design.

Keywords: Cataloguing, Metadata, Indexing, Abstracting, Crowd-sourcing

Introduction

Classification, indexing, tagging, abstracting, and other instances of subject description capture multiple types of subjects. In addition to topical subjects, things depicted, themes, concepts, and benefits to scholarship are wrapped into subject analysis. Pino Buizza and Mauro Guerrini discussed the “numerous categories of concepts which can be traced in the formulation of a subject.”¹ To encompass this variety, Michael K. Buckland summarized subject analysis as the statement of relationships between discourses, writing, “a subject description assigned to a document says that this discourse (document) relates to that discourse (literature, discussion, or dialogue).”² Essentially, subject analysis provides the nodes, or links, between discourses. To inform this practice, it is beneficial to understand the varieties of subjects.

First, there are the topics and/or concepts that a resource is *about* (e.g., a biology textbook is about biology). Second, there are the persons, places, and things that a resource is *of* (e.g., a photograph that is of a laboratory may be about biology).³ The difference between *aboutness*

and *ofness* is described in the work of Sara Shatford-Layne, and is an important concept in visual resources cataloguing (see guidelines regarding “Representational Subject” in *Cataloging Cultural Objects* (CCO) for details).⁴ Third, there are the forms, genres, and material types that identify what a resource *is*, and which suggest its content (e.g., a certificate of title is inferred to be about a property). Jackie Dooley and Helena Zinkham described *isness* as an important concept in rare materials cataloguing.⁵ Aboutness, ofness, and isness subjects have been articulated and theorized in library science literature. But there is a fourth subject type – one that has been observed and discussed, but not named as such.

This paper aims to formally define and conceptualize the fourth subject type: *usefulness*. It describes the usefulness subject type and avenues for building access to usefulness – through indexing, abstracting, classification, and encoding practice, integration of user-supplied metadata, data analysis, and customized discovery interfaces. The intent of this paper is to draw attention to the usefulness subject type and its benefits, and to document the ease of creating and implementing usefulness metadata.

Usefulness

Analysis of usefulness relates resources to research applications. David Bearman provided an example, where “the records of elementary school matriculation are often used to answer demographic questions about immigration, family size, or life-expectancy.”⁶ Though matriculation records are not about, of, or composed of these concepts, indexing based on demographic features enables research. Snunith Shoham and Rochelle Kedar offer the insight that “‘good’ indexing must faithfully represent the topics of a document, while taking into account the potential use of the document by different users.”⁷ When subject analysis is performed to anticipate research uses, the cataloger describes the usefulness of the resource. Usefulness subjects document why resources are collected, how they relate to curricula and community foci, and how they may be applied in practice.

Usefulness subjects are valuable in any library setting – whether public, academic, or special. For example, in a children’s library, *The Very Hungry Caterpillar* may be described as useful in teaching counting. Or, in a museum library, Homer’s *Odyssey* may be described as useful in researching ancient weaving practice. Usefulness subjects are context-specific, and should resonate with user needs. Decisions regarding what to describe may be based on collection development policies, analysis of reference and circulation statistics, crowd-sourced metadata, focus groups, or campus/community research activities and publications.

The application and function of the usefulness subject can be seen in public use of the hashtag. In addition to collocating posts about events and topics, hashtags are often used to convey emotions, layers of meaning, and the impetus for information capture.⁸ The so-called ‘decorative hashtag’ – one that does not signify a topical subject – is far from superfluous. Through sarcasm and imagery, the decorative hashtag conveys the reason for the appearance of information.⁹ A decorative hashtag may suggest why a tweet was made or how to interpret its content. In a library catalogue, usefulness subjects may similarly suggest why the library has a resource, or how to apply it in research. Thus, usefulness subjects resonate with today’s information consumers, who are accustomed to hashtag culture and the symbiotic interplay of content and metadata.

Cataloguing Usefulness

Libraries can apply usefulness description in cataloguing practice through a combination of abstracting, indexing, and encoding techniques.

Abstracts offer a narrative explanation of content and context.¹⁰ The narrative approach allows the cataloguer to convey complex information, such as historical background, underlying ideologies, and research relevance. This information helps the user anticipate and understand the applicability of resources to their investigation.¹¹ Methodological approaches to abstracting can focus on the content of the work, the process or procedure discussed, the value of the material to the user, or a holistic synthesis of the above.¹²

Hand-crafted abstracts that explain the usefulness of each library resource to its user communities are, obviously, impractical for the average cataloguer. Luckily, libraries can rely on crowd-sourcing to gather abstracts by tapping into various APIs (e.g., Google Books, Good Reads, Library Thing, and Open Library) that supply reader reviews.¹³ This content may actually be preferable to cataloguer-supplied abstracts, because it is written by someone who has read and/or used the resource, and who can speak to personal, discipline-specific applications. In a content analysis of online consumer reviews, Seshan Ramaswami and Susheela Abraham Varghese found that review authors seek to establish their credibility as a reviewer by stating their background and expertise.¹⁴ Thus, review content becomes explicitly discipline-specific – speaking directly to the usefulness of a resource.

Once review functionality is enabled in the catalogue, libraries can encourage users to write reviews through common marketing tactics, such as requests, simplification, incentives, and spotlights. Libraries can ask and remind patrons to review their recent check-outs at the circulation desk, over e-mail, or when they access their library account. Simplifying the review process, by reducing clicks and not requiring a log-on, both encourages reviews and protects patron privacy. Incentives, such as a reduction in fines or gamification features, also encourage reviews. Spotlighting user reviews on the library's homepage, the catalogue interface, and social media both encourages reviews and markets the library's resources. By taking advantage of existing review content and established mechanisms for driving review activity, libraries can deliver a variety of audience-specific abstracts that describe resource usefulness.

Indexing usefulness relates resources to their applications in research and learning. The cataloguer analyses how a resource can be used in practice (e.g., that *Pride and Prejudice* can be used as evidence of patriarchal social norms in the British Regency era). Controlled vocabularies for disciplines, methodologies, and research interests are plentiful and familiar to the average cataloguer. Perhaps less familiar are the encoding standards for mark-up of usefulness terms. The MARC Bibliographic format 658 field is used for "Curriculum Objective," scoped as encompassing "curriculum or course-of-study objectives applicable to the content of the described materials," which may be subdivided by "correlation factors indicating the degree to which the described materials meet an objective."¹⁵ The MARC 658 field relates resources to how they may be used in the classroom, and is intended to be populated by curriculum-specific vocabularies.¹⁶ The MODS subject element has a @displayLabel attribute, which can be populated by any value – including indication of whether a subject signifies aboutness, ofness, isness, or usefulness.¹⁷ The EAD3 subject element has a @localtype attribute, which can be used "if local practice requires specification of the type of subject."¹⁸ Similarly, the VRA Core subject element has a @type attribute.¹⁹ Among common encoding standards used in the library and cultural heritage sector, each has

a mechanism for signifying that a subject is of the usefulness type. That is, the cataloguing community has tools for consistent indexing and mark-up to enable targeted discovery based on usefulness.

Users can also undertake indexing activity. Research shows that social tagging provides timely, audience-appropriate, context-specific terminology for resources. And in considering usefulness indexing, folksonomies are demonstrated to reflect new areas of research and contemporary semantics faster than library controlled vocabularies.²⁰ Elaine Svenonius noted that “free-text terms contribute to precision by virtue of being more specific and more current than controlled vocabulary terms.”²¹ Social tagging can augment library indexing by allowing users to document their semantics and information needs.²² Laura Kane McElfresh succinctly explained that since tag “terms are devised and implemented by actual users ... they reflect the natural language of those users.”²³ And retrieval is improved when the diction of metadata matches that of researchers’ queries.²⁴ Moreover, research has shown that user tags are often task- or project-oriented (e.g., for a particular course or assignment, such as “Psychology 101”), which speaks directly to usefulness.²⁵ Hsia-Ching Chang and Hemalata Iyer referred to this phenomenon as “need-oriented indexing.”²⁶ By enabling social tagging features, libraries can allow usefulness indexing that is contemporary, semantically-meaningful, discipline-specific, and relevant to individual tasks and projects.

Moreover, allowing users to express their organizational and semantic needs through social tagging provides an avenue towards enhanced library-based indexing activity. Folksonomies reflect user community ideas about categorization and intellectual access;²⁷ therefore, analysis and assessment of folksonomies uncovers data regarding information-seeking needs.²⁸ Tags reveal users’ “basic level” of metadata requirements, and suggest appropriate models.²⁹ Folksonomies can inform new thesaurus concepts, taxonomic hierarchies, and cataloguing activity.³⁰

Previous concerns about the quality and utility of user tags have largely been resolved by intelligent system design and the social consensus that occurs at scale. Hongwei Zhu and Harris Wu proposed that we “study the ‘system quality’ of tagging systems in addition to ‘data quality’ of tags” in order to best understand the utility and improvement of social tagging mechanisms.³¹ In a user study of 500 tag creators, Timme Bisgaard Munk and Kristian Mork discovered that meaningful patterns and regularities arise in tagging practice.³² This is because users are not working in isolation. Social factors influence tagging practice, since users are organizing information for and communicating with other participants.³³ Users are motivated by a desire for public retrieval and recognition of their data; thus they find incentive for conformity to bolster recall.³⁴ System design that offers tag suggestions and clustering improves homogeneity of morphemes. And services that allow users to register tags and submit scope notes mitigate the effects of polysemy.³⁵ Through intelligent system design that harnesses the social aspect of tagging activity, libraries can enable impactful usefulness indexing by users.

Accessing Usefulness

Libraries that want to build access to usefulness, but have not previously captured this metadata through abstracting and indexing, can use semantic reasoners to extract new knowledge from available data. An example inference rule might be that resources with topical subject “birds” and form “statistics” are useful to ornithology. As libraries move towards maintaining and using RDF data, they can locally customize inferences using ontology and query languages,

such as OWL and SPARQL. And from here, it is easy to imagine personalized recommendation services based on the usefulness of resources to user communities and individuals.

Once libraries have collected usefulness metadata through cataloguing and data analysis, they can build interfaces that enable discovery based on research, teaching, and learning applications. Examples include search limits that target usefulness metadata fields and attributes, narrowing of search results by usefulness values, and browsing by research topic or discipline. Such application-specific discovery interfaces streamline information-seeking – connecting users directly with the resources that are most meaningful to their work.

Conclusion

This paper has shown that subject analysis in libraries results in the assignment of multiple subject types to resources. In particular, usefulness subjects document why resources are collected, how they relate to curricula and community foci, and how they may be applied in practice. To connect users with relevant resources, it is beneficial to capture and build access around usefulness metadata. Libraries already have the tools necessary to do so: abstracts can provide a narrative explanation of resource utility, and integration of user reviews with the catalogue relieves the burden of abstracting while providing multiple perspectives on usefulness; controlled vocabularies for disciplines, methodologies, and research interests are abundant, and enabling social tagging further promotes usefulness indexing that is timely, audience-appropriate, context-specific, and task- or project-oriented; common encoding standards in libraries, such as MARC, MODS, EAD, and VRA Core, have existing elements and attributes for specific mark-up of usefulness subjects; data analysis techniques, such as semantic reasoning or inferencing, can be used to derive usefulness metadata from existing data; and all of the above can be used to build access based on usefulness through search limits, narrowing, browsing pathways, and personalized recommendations. By focusing attention on the usefulness subject type and its value to users, libraries can deliver streamlined access to relevant, impactful resources.

References

- ¹ Pino Buizza and Mauro Guerrini, “A Conceptual Model for the New *Sogettario*: Subject Indexing in the Light of FRBR,” *Cataloging & Classification Quarterly* 34, no. 4 (2002): 36.
- ² Michael K. Buckland, “Obsolescence in Subject Description,” *Journal of Documentation* 68, no. 2 (2012): 156.
- ³ Sara Shatford, “Analyzing the Subject of a Picture: A Theoretical Approach,” *Cataloging & Classification Quarterly* 6, no. 3 (1986): 39-62; Layne, Sara Shatford, “Some Issues in the Indexing of Images,” *Journal of the American Society for Information Science* 45, no. 8 (1994): 583-588.
- ⁴ Murtha Baca et al., *Cataloging Cultural Objects: A Guide to Describing Cultural Works and their Images* (Chicago: American Library Association, 2006), 219-221.
http://cco.vrafoundation.org/downloads/PartTwo_6-Subject.pdf
- ⁵ Jackie M. Dooley and Helena Zinkham, “The Object as ‘Subject’: Providing Access to Genres, Forms of Material, and Physical Characteristics,” In Toni Petersen & Pat Molholt,

eds., *Beyond the Book: Extending MARC for Subject Access* (Boston: G.K. Hall & Co., 1990).

⁶ David Bearman, "Authority Control: Issues and Prospects," *The American Archivist*, 52, no. 3 (Summer 1989): 289.

⁷ Snunith Shoham and Rochelle Kedar, "The Subject Cataloging of Monographs with the Use of Keywords," *Cataloging & Classification Quarterly* 33, no. 2 (2002): 32.

⁸ Julia Turner, "#InPraiseOfTheHashtag," *New York Times Magazine* (November 2, 2012). <http://www.nytimes.com/2012/11/04/magazine/in-praise-of-the-hashtag.html>

⁹ Melanie Hingle et al., "Collection and Visualization of Dietary Behavior and Reasons for Eating Using Twitter," *Journal of Medical Internet Research* 15, no. 6 (2013). <http://www.jmir.org/2013/6/e125/>

¹⁰ Marlene C. A. van Doorn, "Half a Century of Abstracting at the African Studies Centre Leiden," *African Research & Documentation* 123 (2013): 15-23.

¹¹ For discussion of contextual information, see: Thea Lindquist et. al., "Using Linked Open Data to Enhance Subject Access in Online Primary Sources," *Cataloging & Classification Quarterly* 51, no. 8 (2013): 913-928; Sanna Talja, Heidi Keso, and Tarja Pietilainen, "The Production of 'Context' in Information Seeking Research: A Metatheoretical View," *Information Processing and Management* 35 (1999): 751-763; Daniel V. Pitti, "Creator Description: Encoded Archival Context," *Cataloging & Classification Quarterly* 38 nos. 3-4 (2004): 201-226; Judith A. Overmier and Elaine M. Doak, "Provenance Records in Rare Book and Special Collections," *Rare Books & Manuscripts Librarianship* 11, no. 2 (1996): 91-99; Michelle Light, "Moving Beyond the Name: Defining Corporate Entities to Support Provenance-Based Access," *Journal of Archival Organization* 5, nos. 1-2 (2007): 49-74.

¹² Monica Izquierdo Alonso and Luis Miguel Moreno Fernandez, "Perspectives of Studies on Document Abstracting: Towards an Integrated View of Models and Theoretical Approaches," *Journal of Documentation* 66, no. 4 (2010): 563-584.

¹³ "Google Books APIs" (March 1, 2016).

<https://developers.google.com/books/docs/v1/using#auth>; Good Reads, "API" (accessed May 28, 2016). <http://www.goodreads.com/api>; LibraryThing, "LibraryThing APIs" (accessed May 28, 2016). <https://www.librarything.com/services/>; Open Library, "Developers/API" (October 11, 2013). <https://openlibrary.org/developers/api>

¹⁴ Seshan Ramaswami and Susheela Abraham Varghese, "Reading the Voice of the Consumer: A Content Analysis of Consumer Reviews," *Research Collection Lee Kong Chian School of Business* (2003). http://ink.library.smu.edu.sg/lkcsb_research/1907; Moreover, established reviewer credibility influences the perceived helpfulness of reviews: Hyunmi Baek, JoongHo Ahn, and Youngseok Choi, "Helpfulness of Online Consumer Reviews: Readers' Objectives and Review Cues," *International Journal of Electronic Commerce* 17, no. 2 (2012/2013), 99-126.

¹⁵ Library of Congress, "658 – Index Term-Curriculum Objective (R)" (February 26, 2008). <https://www.loc.gov/marc/bibliographic/concise/bd658.html>

¹⁶ Library of Congress, "Curriculum Objective Term and Code Source Codes" (November 20, 2015). <https://www.loc.gov/standards/sourcelist/curriculum-objective.html>

¹⁷ Library of Congress, "Outline of Elements and Attributes in MODS Version 3.6" (January 28, 2016). <http://www.loc.gov/standards/mods/mods-outline-3-6.html#subject>

¹⁸ Library of Congress, "Encoded Archival Description Tag Library Version EAD3" (April 21, 2016). <https://www.loc.gov/ead/EAD3taglib/index.html#elem-subject>

¹⁹ Library of Congress, "VRA Core 4.0 Element Description" (April 5, 2007). http://www.loc.gov/standards/vracore/VRA_Core4_Element_Description.pdf

²⁰ Louise F. Spiteri, "The Use of Folksonomies in Public Library Catalogues," *Serials Librarian* 51, no. 2 (2006): 75-89.

-
- ²¹ Elaine Svenonius, "Unanswered Questions in the Design of Controlled Vocabularies," *Journal of the American Society for Information Science* 37, no. 5 (1986): 334.
- ²² Chi-Shiou Lin and Yi-Fan Chen, "Examining Social Tagging Behaviour and the Construction of an Online Folksonomy from the Perspectives of Cultural Capital and Social Capital," *Journal of Information Science* 38, no. 6 (2012): 540-557; Mikael Wetterstrom, "The Complementarity of Tags and LCSH: A Tagging Experiment and Investigation Into Added Value in a New Zealand Library Context," *Library & Information Management Journal* 50, no. 4 (2008): 296-310.
- ²³ Laura Kane McElfresh, "Folksonomies and the Future of Subject Cataloging," *Technicalities* 28, no. 2 (March/April 2008): 3.
- ²⁴ Carol Tenopir, "Searching by Controlled Vocabulary or Free Text," *Library Journal* 112 (15 November 1987): 58-59; Jonathan Furner, "User Tagging of Library Resources: Toward a Framework for System Evaluation," paper presented at the 73rd IFLA General Conference and Council, Durban, South Africa, August 19-23, 2007. <http://www.ifla.org/IV/ifla73/papers/Furner-en.pdf>
- ²⁵ Scott A. Golder and Bernardo A. Huberman, "Usage Patterns of Collaborative Tagging Systems," *Journal of Information Science* 32, no. 2 (2006): 198-208; Peter J. Rolla, "User Tags Versus Subject Headings: Can User-Supplied Data Improve Subject Access to Library Collections?" *Library Resources & Technical Services* 53, no. 3 (2009): 174.
- ²⁶ Hsia-Ching Chang and Hemalata Iyer, "Trends in Twitter Hashtag Applications: Design Features for Value-Added Dimensions to Future Library Catalogues," *Library Trends* 61, no. 1 (2012): 251.
- ²⁷ Luiz H. Mendes, Jennie Quinonez-Skinner, and Danielle Skaggs, "Subjecting the Catalog to Tagging," *Library Hi Tech* 27, no. 1 (2009): 30-41.
- ²⁸ Jonathan Furner, "User Tagging of Library Resources: Toward a Framework for System Evaluation," World Library and Information Congress: 73rd IFLA General Conference and Council, 29-23 August 2007, Durban, South Africa.
- ²⁹ Tom Steele, "The New Cooperative Cataloging," *Library Hi Tech* 27, no. 1 (2009): 70.
- ³⁰ Eric Tsui, W. M. Wang, C. F. Cheung, and Adela S. M. Lau, "A Concept-Relationship Acquisition and Inference Approach for Hierarchical Taxonomy Construction from Tags," *Information Processing and Management* 46 (2010): 44-57.
- ³¹ Hongwei Zhu and Harris Wu, "Sloppy Tags and Metacrap?: Quality of User Contributed Tags in Collaborative Social Tagging Systems," *Working Paper, Information Technology, Old Dominion University*. <http://ssrn.com/abstract=1556722>
- ³² Timme Bisgaard Munk and Kristian Mork, "Folksonomies, Tagging Communities, and Tagging Strategies – An Empirical Study," *Knowledge Organization* 34, no. 3 (2007): 115-127.
- ³³ Morgan Ames & Mor Naaman, "Why We Tag: Motivations for Annotation in Mobile and Online Media," *CHI 2007 Proceedings: Tags, Tagging & Notetaking*, conference held April 28-May 3, 2007, San Jose, CA.
- ³⁴ Hsia-Ching Chang and Hemalata Iyer, "Trends in Twitter Hashtag Applications: Design Features for Value-Added Dimensions to Future Library Catalogues," *Library Trends* 61, no. 1 (2012): 248-258.
- ³⁵ Greg R. Notess, "Social Searching with Hashtags, Names, and Unshortening," *Online Searcher* (May-June 2014): 68-70.