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**Playing Tag: an exploration of folksonomy in comparison to LCSH**

804: The Organization of Information

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**Introduction**

Every item in a library is only as useful as it is findable. Taxonomies and other controlled vocabularies are powerful tools in the hands of a skilled searcher, but in an economic, social, and technological context where librarians and patrons may never come into direct contact with each other, it makes sense to look for ways to make library collections more accessible to those without special knowledge. Folksonomic tagging, also called social or collaborative tagging, provides an enticing glimpse of what might be possible if we open our catalogs up to the direct influence of our patrons. In considering the adoption of user-generated tags as a feature of catalogs and OPACs, we imagine how much broader and deeper our patrons' range of access points to the collection might become. Our catalogs can mirror the words patrons actually use to search for items, the language they use to describe the items they find and use, and can become a more flexible, more nimble reflection of both the collection itself and the people who use it.

Nothing about organization is ever that simple, though. By exponentially increasing the number of possible perspectives from which to view a collection, one

risks also exponentially increasing confusion. For all of its numerous potential benefits, folksonomic tagging brings along a similarly numerous assortment of problems and issues. Some problems are simple technical issues – imprecise and ambiguous terms, non-words, the confusion brought about by polysemy and synonymy (Gordon-Murnane, 2006, p. 31). It may well be that, judiciously used and wisely managed, user-generated tagging can refresh patrons' relationships to the library and engage them in the process of developing and sharing its collection with their community and the world. Finding a way to bring tagging to the collection so that it becomes a useful tool, however, will require much careful thought and study on the part of librarians.

This paper will focus on an analysis of the existing tags for a small number of items found on the LibraryThing website, specifically examples that possess a large volume of user-generated tags, as an example of folksonomic tagging in action. The objective will be to examine how user-generated tags correspond to professionally-generated subject information in the form of Library of Congress Subject Headings, which will serve as a basis from which to begin to explore the subject of folksonomic tagging, both as compared to professionally-generated taxonomies, and in its potential as a search and discovery tool in its own right.

### **The pros and cons**

Controlled vocabularies are an indispensable tool for librarians and skilled searchers. Professionally-generated metadata is an authoritative, high-quality resource that provides the knowledgeable user the most efficient and thorough

entry point to a collection. But it is also very expensive to produce, difficult to scale, and can itself become an obstacle to searching for less knowledgeable users. Use of any controlled vocabulary requires some existing knowledge of the subject as a prerequisite; and especially when working in technical or specialized fields, the language used by trained professionals may have little in common with the words used by laymen. Furthermore, the rise of search engines like Google have brought about an assumption that searching is and should be possible using a nearly limitless array of keywords. And if, finally, the ultimate aim of any organizational system is to promote access to information, then increasing the number of points of entry through the use of an expanded vocabulary of subject terms may prove to be a worthy ambition. As noted by Trant (2008) “within an environment with an excess of content, findability becomes a critical value” (p. 2).

One of the most theoretically elegant and appealing possibilities for achieving this objective is the use of folksonomic tagging. While it is all but impossible for any professional system to predict and apply all of the myriad terms that a user might attach to a given item or subject, the users themselves, given the right tools, can accomplish much the same goal with relative ease. Tagging has become a standard part of the landscape for users of the Internet, with social services like Flickr, Facebook, Pinterest, Twitter, del.icio.us, StumbleUpon, *etc.*, *ad infinitum*, incorporating tagging features into their platforms. The world of book lovers has its own social tagging platforms in the form of Goodreads and LibraryThing, with the latter particularly making use of tags as a primary means of organizing both the private collections of users, and the collective knowledge base.

Tagging has become a major tool by which the digital population organizes its own information. It could provide an incredible amount of useful insight to library professionals, and also serve to give patrons a new, direct, easily accessible way to engage with libraries and the knowledge they represent. Allowing users to generate their own vocabulary for describing items could also potentially help to address bias in library catalogs, although folksonomies can also yield biases: “the crowd is not always wise” (Bates, 2011, p. 444).

And yet, folksonomic tagging is as problematic as it is promising. While professionals devise and develop subject terms specifically for the purpose of accurately describing the content of an item, non-professionals have a range of reasons for tagging, and most of them little to do with content. Zollers (2007) identified six user objectives in tagging: future retrieval, contribution and sharing, attracting attention, play and competition, self-presentation, and opinion expression. Which is to say that people tag with their own needs in mind, and not the needs of the broader community. The information needs of the individual and the needs of the collective are not, of course, mutually exclusive, and oftentimes it is the expression of those individual needs that provides the most useful insight. As Spiteri (2007) notes, “folksonomies follow desire lines, which are expressions of the direct information needs of the user” (p. 14). On the other hand, inviting users to engage in tagging can become a problem of “trying to serve two masters at once: the personal collection, and the collective collection” (Guy, 2006, p. 12).

How, then, are we to balance these two competing sets of interests? If we favor precision, we risk leaving many searchers cut off from much of our collections;

but if we broaden our vocabularies too much, we risk inviting taxonomic chaos into our catalogs. Is it possible to find a productive medium between too broad an array of subject terms and too narrow? And if so, how do we find it? Determining exactly where the divisions lie between professionally developed controlled vocabularies and folksonomies is a useful first step. Taking the Library of Congress Subject Headings as an example of the former, and tag clouds created by users on the website LibraryThing as an example of the latter, we can compare these two strategies of organization and begin to analyze the tensions and harmonies between them.

## **Methodology**

The primary goal of this analysis will be to determine the amount of overlap that already exists between user-generated tags for specific items in LibraryThing, and the LCSH subject terms applied to those same items in their MARC records. The 20 most-used subject tags in each item's LibraryThing tag cloud will be compared to the existing Library of Congress Subject Headings, both for commonality between item records and the presence of each term within the LCSH, even if it has not been applied to the item in question.

The selection of items for analysis was the first issue to be addressed. As described in Golder (2006), patterns in tagging tend to stabilize as the number of users tagging an item increases and as the total volume of tags attached to the item expands. Which is to say, the more tags and the more taggers, the more likely the resulting cloud is to accurately reflect users' language in describing it. Therefore,

items with relatively large tag clouds were preferable, which generally correlates to popular items. And while the potential for ambiguity in the subjects of fictional works is an interesting challenge for this kind of analysis, for the purposes this exploration, item selection was limited to non-fiction works only. The items ultimately selected for this analysis were as follows: *A Short History of Nearly Everything* by Bill Bryson (2003); *The Omnivore's Dilemma: A Natural History of Four Meals* by Michael Pollan (2006); *Guns, Germs, and Steel: The Fates of Human Societies* by Jared Diamond (1997); and *Musicophilia: Tales of Music and the Brain* by Oliver Sacks (2007).

In approaching the tag clouds for each of these works as presented in LibraryThing, a basic methodology for analysis had to be devised. A given work, especially if it has proven to be popular, can elicit thousands of unique tags among users. Many of these tags are only intended to be personal notations for an individual reader, and are not meaningful to other users. By excluding all terms that have been tagged to a given work only once, and which we can therefore safely conclude have meaning for few users, we can reduce the total number of tags by typically 75-80%.

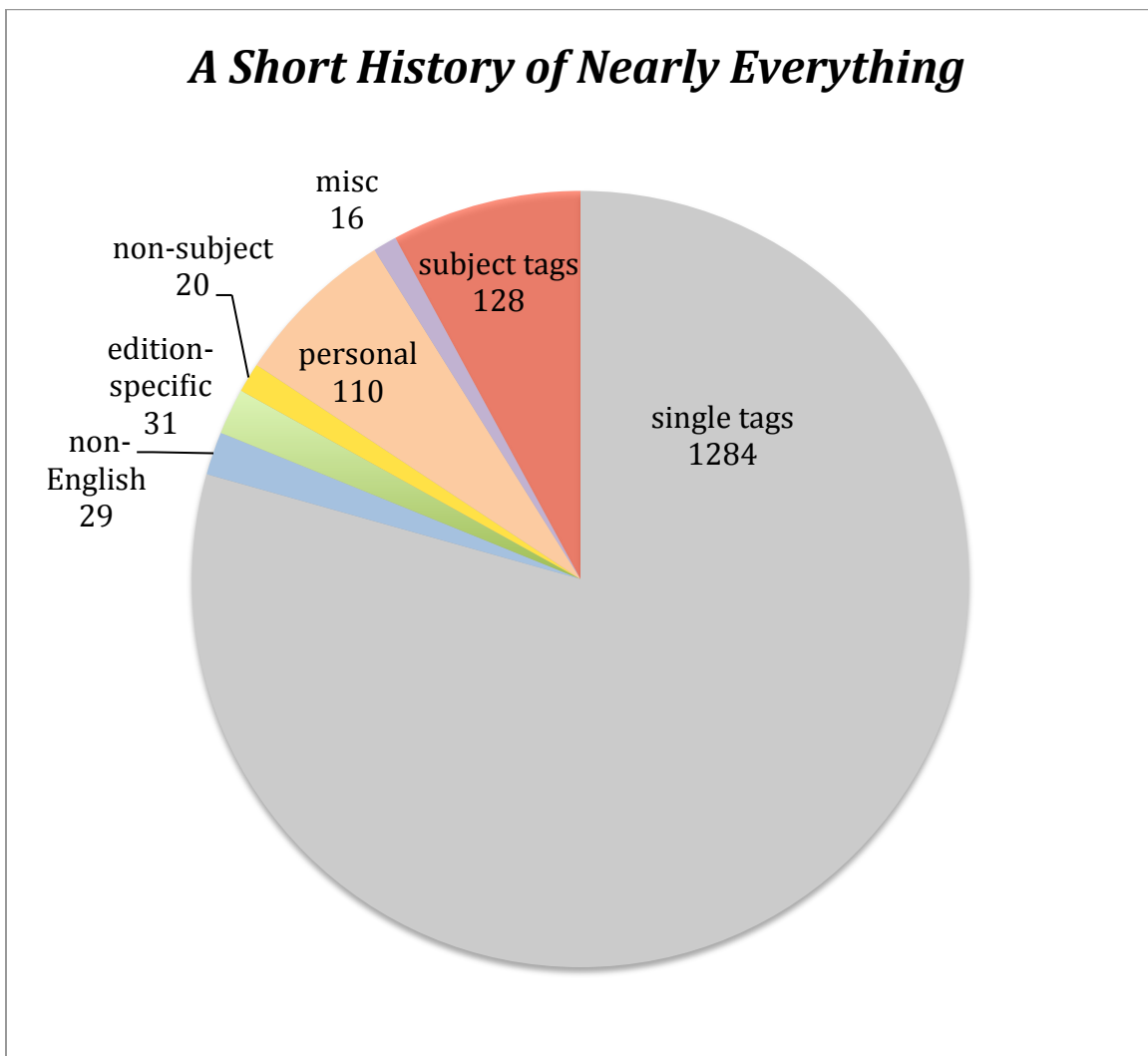
The next step was to exclude all non-English terms, all terms that were specific to one particular book or edition of the book (e.g., "kindle," "signed first edition") and all terms that were clearly intended as personal notations, though still general enough that they could apply to multiple readers (e.g., 155 uses of the tag "read".) The remaining tag cloud retains a few tags that can be excluded due to lack of clarity (e.g., "d1" or "303.4") or because they described aspects of the item other

than its subject (e.g., “essays” or “Pulitzer Prize winner.”) This winnowing procedure reduces the total tag cloud to a group of tags that possess the following attributes: 1) demonstrated meaning to multiple users, 2) general applicability to the item in question, and 3) clear intent to describe some aspect of the item’s subject. This select group of tags can then be compared to Library of Congress Subject Headings to determine the degree of overlap between these two sets of subject terms.

A note on LibraryThing’s own practices for managing tags: all moderation of tags is conducted by users of the website, but some moderation does occur. Most significantly, users can request that variants of common tags, including misspellings, abbreviations, non-English equivalents, and structural variants (e.g., “non-fiction” vs. “nonfiction”) be combined under the most common variant of the term. When such a request is made, other users may vote to make the change, with a supermajority of voters required to put it into effect. Therefore, the term “science” actually represents 123 different variants of the tag, with a list of all included variants accessible through the tag itself. This does not imply, however, that all 123 variants have been tagged to any individual item. Furthermore, since such changes are only initiated and voted upon by users, there is a degree of inconsistency in how these standards are applied across the entire LibraryThing tag cloud. The number of tags represented in a term, as an indication of how many users have applied the term or one of its variants to an item, remains consistent regardless of whether those terms have been “condensed” into a single tag or not.

## Individual analysis : Bryson

*A Short History of Nearly Everything* by Bill Bryson was published in 2003 and went on to become a bestselling work of popular science in both the US and the UK. At its heart it is a history of scientific thought and discovery, but it also serves as a brief introduction to many key scientific figures and concepts. In its MARC record, the 650 field includes the term "Science-- popular works". In LibraryThing, the book has been added by 13,176 users, who collectively have tagged it with 1,618 unique tags (LibraryThing entry *Short History*, 2012).





The tag cloud for the book yields a total of 128 tags that meet the basic criteria for potential usefulness. Of these, the 20 most common are:

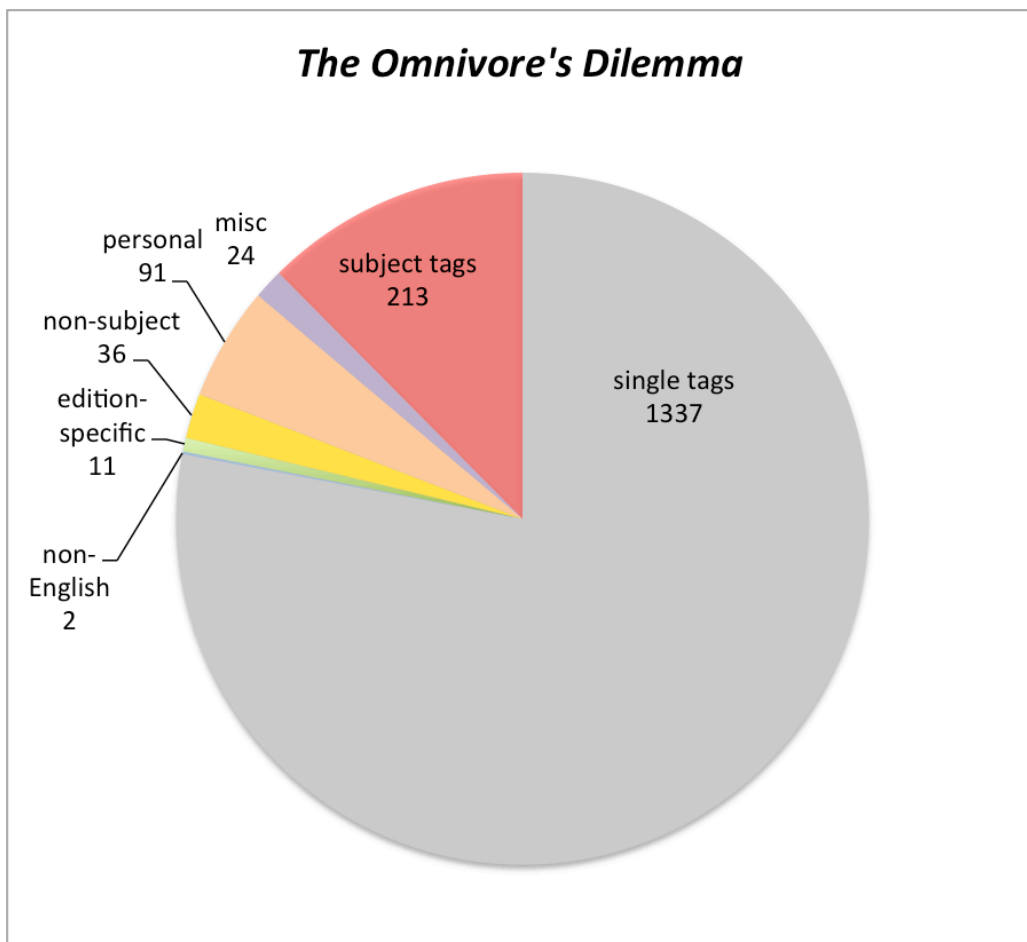
science (2064)	earth (33)
popular science (275)	universe (31)
history of science (236)	anthropology (20)
physics (185)	paleontology (18)
evolution (144)	world history (18)
geology (135)	world (17)
biology (121)	general knowledge (15)
astronomy (105)	knowledge (15)
chemistry (87)	scientists (15)
cosmology (75)	philosophy (13)

Of these 20 tags, almost all correspond directly to an LCSH subject term. The notable exceptions are “popular science,” which is arguably a more familiar version of the LCSH’s “Science-- Popular works”, “history of science” which corresponds closely to “Science-- history” and a few of the most general terms, such as “world” and “knowledge.” But the amount of overlap between the 126 clear subject tags and the LCSH remains high, with almost all the tags either appearing verbatim in the LCSH, or else being essentially synonymous with LCSH subject terms. The pattern extends beyond the top 20 subject terms, with tags such as “astrophysics,” “darwin,” and “quantum physics” – all closely corresponding to LC subject headings –

appearing at even the lower end of the frequency-of-use range. Tags that appear as LC subject terms are generally narrower than the terms listed in the MARC record.

### Individual analysis: Pollan

*The Omnivore's Dilemma: A Natural History of Four Meals* by Michael Pollan was published in 2006 and spent a total of 156 weeks on the New York Times Bestseller list. An examination of the issues surrounding industrial agriculture and food, its MARC record includes in the 650 field the terms "Food habits" and "Food preferences." It has been tagged by 8,506 LibraryThing users with a total of 1,714 unique tags (LibraryThing entry *Omnivore's Dilemma*, 2012).



This tag cloud yields a total of 213 tags that meet the criteria for potential usefulness. Of these, the 20 most common are:

food (1456)	ecology (86)
agriculture (257)	corn (86)
health (195)	diet (83)
nutrition (186)	culture (75)
environment (161)	politics (60)
farming (161)	food industry (54)
sustainability (148)	food writing (53)
science (132)	hunting (44)
history (120)	sociology (44)
organic (116)	food politics (42)

Here, the overlap remains, but the ambiguity of the situation is more apparent. Many of these terms correspond closely to LCHS, appearing as subject headings either verbatim or with small changes. However, here we can begin to see the potential pitfalls of tagging. Consider, for example, the term “hunting.” The book does indeed contain extended passages on the topic of hunting as a means to procure non-industrial food, and so the term “hunting” does describe, in part, the book’s subject content. But for most users searching with the keyword “hunting,” the book is likely to be of limited relevance. Combined with other terms that appear

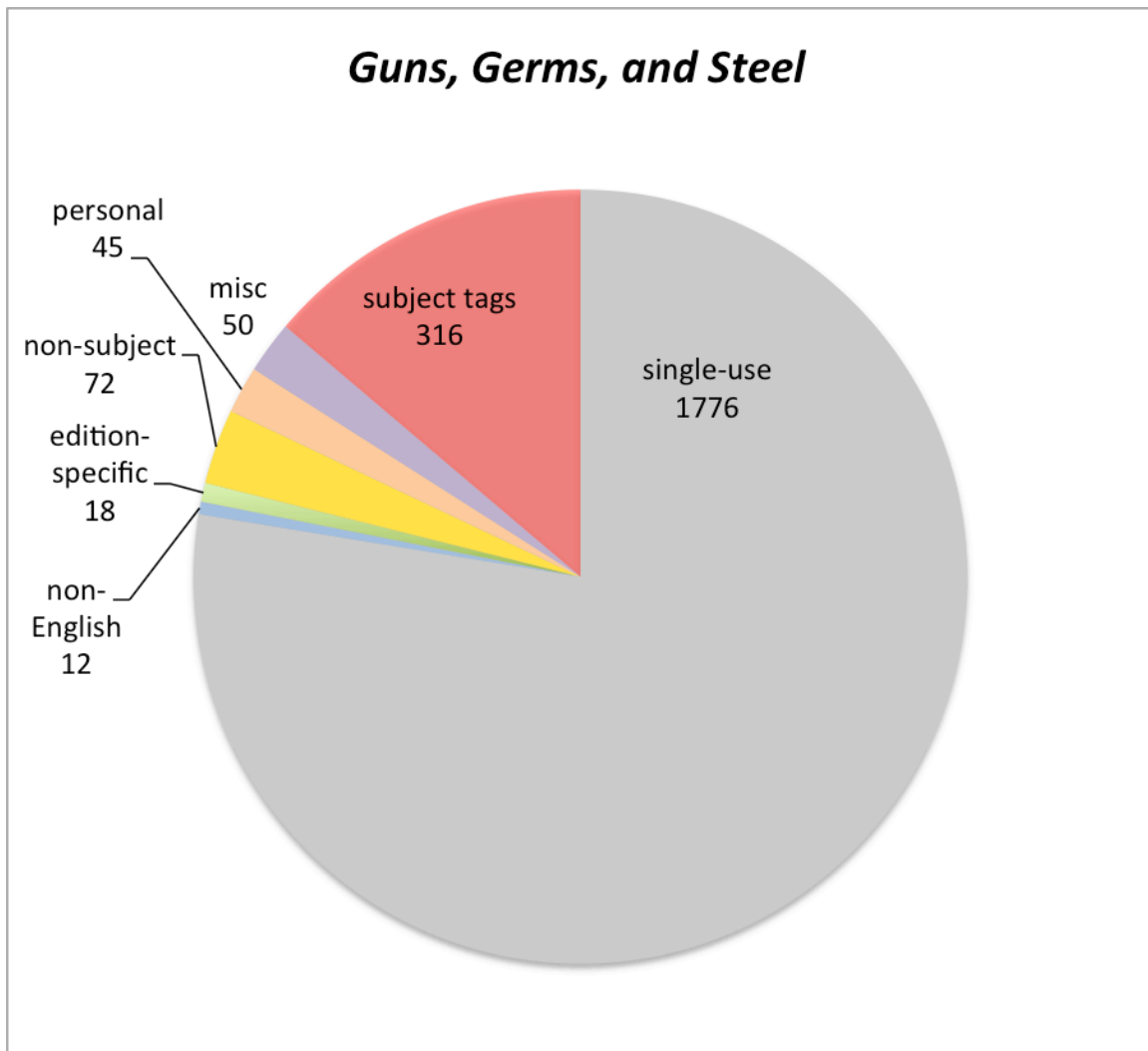
in the book's tags – “food industry”, “sustainability”, “foraging” – the term may be more useful.

On the other hand, this tag cloud also reveals the use of the term “locavore” to describe the book, which is exactly the kind of reflection of language that folksonomies do so well. The word “locavore” appears nowhere in the LCSH, and yet the term aptly describes a major aspect of the book's subject, and also reflects a growing trend in the culture. While the LCSH changes too slowly to reflect these changes in language as they happen, folksonomies can accommodate them easily. Also worth noting in the tag cloud is the presence of both LC subject terms appearing in the MARC record, “food habits” and “food preferences.” This brings up another interesting question: do taggers also attempt to mirror existing controlled vocabularies? These particular tags, sounding somewhat strange when compared to common usage, provide particularly glaring examples. But it may be that many of the terms being used as tags are borne of a desire on the part of users to label items “correctly,” the way a professional might. This adds a hint of chicken-or-egg uncertainty to the relationship between controlled vocabularies and folksonomies.

### **Individual Analysis: Diamond**

*Guns, Germs, and Steel: The Fates of Human Societies* by Jared Diamond was published in 1997, and the next year won the Pulitzer Prize for general non-fiction. The book makes a case for environmental differences as the root cause of social and technological gaps, which in turn lead to the advantages some societies have over others. Its MARC record has a relatively extensive list of terms in the 650 field:

“social evolution,” “civilization—history,” “ethnology,” “human beings—effect of environment on,” and “culture diffusion.” In LibraryThing, it has been added by 14,432 users, and tagged with 2,290 unique terms (LibraryThing entry *Guns, Germs, and Steel*, 2012).



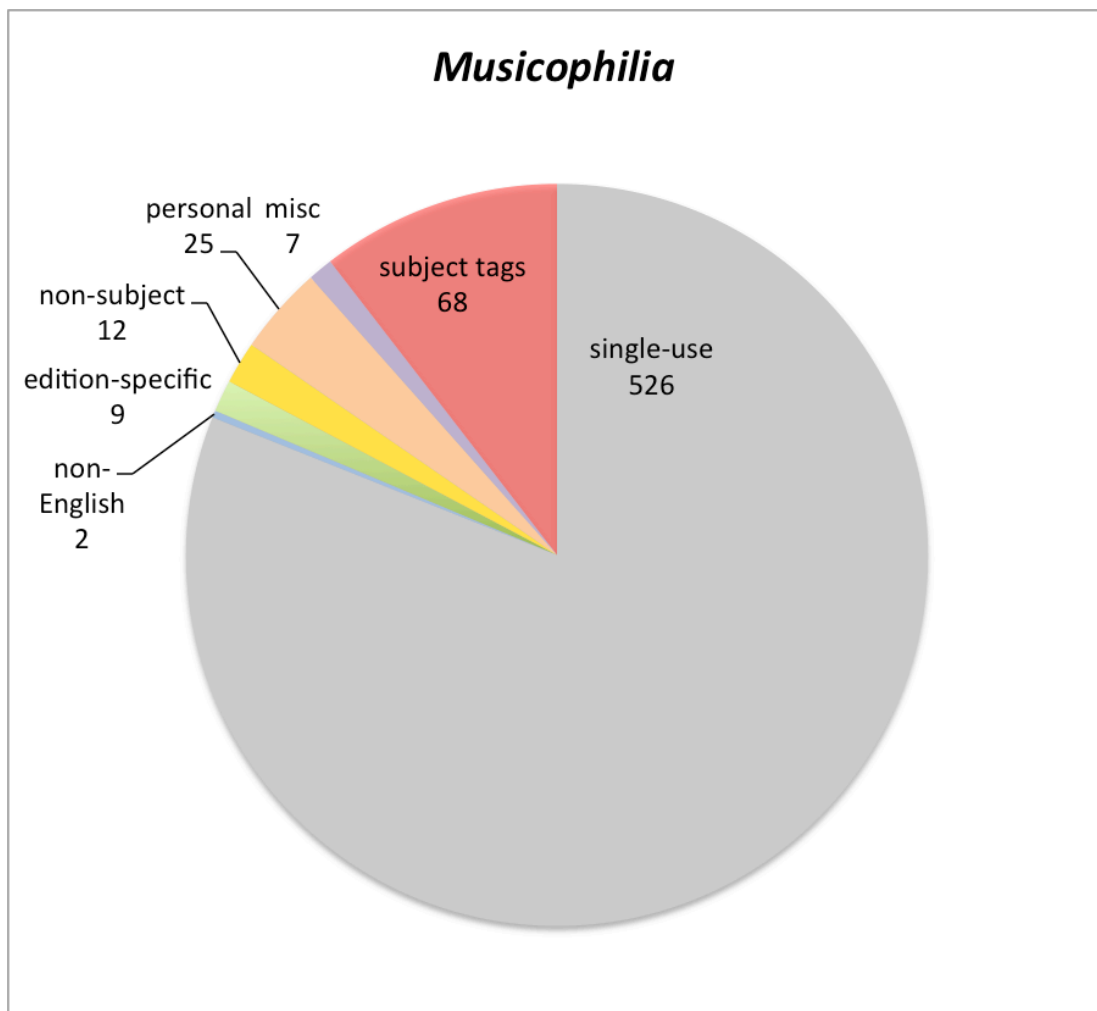
This tag cloud yields 316 tags that meet the criteria for potential usefulness. Of these, the 20 most common are:

history (2626)	biology (128)
anthropology (1026)	social evolution (107)
science (781)	technology (107)
sociology (451)	economics (104)
civilization (370)	environment (101)
world history (284)	ethnology (95)
geography (278)	ecology (94)
evolution (217)	archaeology (93)
culture (217)	social science (90)
society (156)	agriculture (77)

Of these 20 terms, almost all appear verbatim as Library of Congress subject headings, with the exceptions of “social science” (which appears as “social sciences”) and, again, “environment.” As with the previous examples, however, the breadth of these terms is itself problematic. Technology, archaeology, and science all appear as aspects of the book’s subject, but the book is not “about” any of these subject *per se*. The term “history” is perhaps the broadest possible term that could be accurately applied to the subject of this book, but is in itself too general to be very useful as a search term. Tellingly, the word “history” appears as part of 21 other tags, ranging from “big history” to “metahistory.” The term “history,” in combination with other terms, is then clearly part of the language that users most associated with this work.

## Individual analysis: Sacks

*Musicophilia: Tales of Music and the Brain* by Oliver Sacks was published in 2007, and was featured on NPR's *All Things Considered* and later adapted into the NOVA program "Musical Minds" in 2009. The book explores the intersection of music and neurology, using the stories of individuals to examine the ways in which the mind processes and understands music. Its MARC record lists the single term "Music-- psychological aspects" in its 650 field. In LibraryThing, as well, this item is the least extensive among our selections, having been added by 2,488 users and tagged with 649 unique terms (LibraryThing entry *Musicophilia*, 2012).



This tag cloud yields 68 tags that meet the criteria for potential usefulness. Of these, the 20 most common are:

music (560)	medical (16)
psychology (252)	mind (16)
science (160)	popular science (13)
neuroscience (125)	music therapy (11)
neurology (124)	cognition (9)
brain (123)	art (7)
medicine (55)	synesthesia (6)
cognitive science (20)	therapy (6)
case studies (19)	arts (5)
biology (17)	health (5)

As the total volume of tags decreases, the overlap between tags and LC subject headings becomes more hit-or-miss, with a higher degree of repetition appearing among the terms that users are applying to the item. Many of these terms still appear as LC subject headings, but a greater proportion do not. Of those that do, it becomes easier to see how casual users and professionals apply these terms differently: LibraryThing users include both “art” and “arts” seemingly interchangeably, whereas in the LCSH, these terms have distinct and separate meanings, neither of which would apply to this work.



But this serves to underline the point that tags and subject headings are not intended to be used in the same way. While subject headings are developed to define the entire “aboutness” of a given item, tags are chosen to describe only aspects of the item’s subject, and the picture is completed only by taking the tag cloud as a collective whole. In this way, subject headings and tags can be seen as the products of two different approaches to the organization of information: hierarchical systems for subject headings, and faceted systems for tags. And this particular work demonstrates the strengths of faceted systems for item discovery. For example, while this book is “about” neither dementia nor music therapy individually, in combination those terms could prove useful in a search for information about how music can be used to help and comfort dementia patients, a subject that could be of significant interest to many users. Likewise the term “synesthesia”: this item is one of a small number of non-clinical works discussing the phenomenon in detail, but the term appears nowhere in the MARC record. Making the tag available as a search term creates an entry point to this very relevant item for users seeking information on synesthesia.

### **Further questions to ponder**

From the brief item-by-item analysis above, a few patterns become apparent. Once a minimum tag volume threshold has been met, the proportional makeup of the tag cloud in terms becomes remarkably consistent, with a large percentage of the most popular tags consisting of subject terms describing a given item. Of the most popular subject tags chosen by users, a surprising large degree of overlap

exists with LC subject terms as defined in the LCSH. And while these most common tags cannot be taken as direct equivalents to subject headings in as much as they describe only facets of an item's subject rather than attempting to define it entirely, the harmony that exists between tags and subject headings suggests that these two sets of metadata could – perhaps should – be combined to enhance user access. “The comparison... shows that library catalogs do not take full advantage of all the elements already present in the subject headings system” (Rolla, 2009, p. 182).

Another point to consider is the nature of the relationship of the tagger to the item in comparison to that of the cataloger. Professional catalogers, as a function of the sheer volume of their work, typically must glean the subject of an item from information provided by the publisher or other source, or perhaps from a brief perusal of the item. Taggers, on the other hand, are typically people who have read the book in part or in its entirety, and are subsequently sufficiently engaged with the work to go to the trouble of entering and reviewing it of their own volition (DeZelar-Tiedman, 2011, p. 227).

And while the only tags that we have considered in this discussion have been specifically subject-descriptor tags, it is worth noting that personal tags can potentially also be useful to users other than the original author of the tag (Rolla, 2009, p. 178). A university student, for example, might tag a work with the name or number of a course in which it is being used, providing other students an additional tool for locating books from the course list in the future.

In general, however, academic libraries could prove to be among those receiving the least benefit from incorporating tagging into their catalogs. Since their

patron bases tend to be smaller, they may not be able to generate a volume of tags large enough to create the stability and usefulness exhibited by extensive tag clouds. Furthermore, since their patrons also tend to be better-trained in their fields and more skilled at searching in general, tags may not add as much to their search experience as for the general population. And finally, beyond the confusion caused by synonymy and polysemy, there are also other practical issues involved in creating useful folksonomies. Tags can be irrelevant, incorrect, and even contradictory to an item's actual subject data (Peterson, 2006, p. 5). User-generated tags can also be intentionally falsified in an effort to manipulate search results, a practice known as "spam tagging" or "spagging" (McElfresh, 2008, p. 5).

Yet even with this complement of problems in tow, libraries are working to find ways to incorporate tagging into their catalogs. Some libraries, like the Nashville Public Library, incorporate their own tagging platforms into their OPACs, while others choose to make use of third-party services such as LibraryThing For Libraries. The latter brings the benefits of an extensive collective tag cloud and a body of contributors that few libraries of any size could hope to muster on their own, bypassing one of the first hurdles toward adoption of tagging in a catalog. WorldCat has even added tagging to its interface, although as of 2008 OCLC had tags had not begun to factor tags into search results, citing the need for the tag volume to grow large enough to be useful (Library Journal, 2008, p.21). As of 2012, the tag cloud on WorldCat remains sparsely populated, illustrating how difficult generating such a resource from scratch can be.

But most efforts to “tame” tagging in order to make it fit comfortably inside a library catalog or OPAC tend to focus on reducing tags until they become little more than a crowd-sourced version of subject headings. Another proposed solution is to make efforts to educate users on standards and practices for tagging (Guy, 2006, p. 5), but this also seems somehow contradictory to the reasons for adopting tagging in the first place. The very aspects of a folksonomy that make it such an attractive idea – its breadth, flexibility, responsiveness to change, and connection to the minds of information users – also make it a cumbersome, chaotic influence in the library, and one that “threatens to undermine its own usefulness” (Petersen, 2006, p. 5).

## **Conclusions**

There is a great deal to be said in support of bringing folksonomic tagging into our libraries. They give us access to insights into and perspectives on our collections and our patrons that we would be hard-pressed to find elsewhere. They have the potential to fill a real need in the library. And there’s sufficient common ground between the tags generated by users and the subject terms developed by professionals that we instinctively feel there must be some way to incorporate them into the systems and structures that have worked so well for so long.

But even a cursory analysis of the practical issues surrounding tags reveals a host of problems and questions that have yet to find any useful solutions. The basic assumptions underlying these two approaches to organizing information are so diametrically opposed – hierarchy and precision on one side, a flat array with a high noise-to-signal ratio on the other – can leave us with the conclusion that the only

way to make use of both is to avoid using them in combination. And yet the ideal situation would be to keep the strengths of both, thereby mitigating their weaknesses.

For now, perhaps the best that can be realistically achieved is to create subject headings that are a bit more broad and reflective of the common language of our patrons, and to cultivate our tag clouds to be a more selective precise. As we experiment further and grow more adept and balancing these two approaches to organization, we may find better solutions and better tools. But for now, folksonomic tagging remains a promising idea with a lot of complications.

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