Emerging Motivations for Tagging:
Expression, Performance, and Activism

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ABSTRACT

Social tagging systems have generally been designed and used for personal information organization and retrieval. People use a variety of sites to tag photos, websites, blogs, and videos. Recently, commercial websites such as Amazon.com, have also implemented tagging on their websites. This type of tagging is not only social, where users can view other's tags and resources, but collective or collaborative, where any user can tag any resource. By analyzing the tags of two sites that implement free-for-all tagging - Amazon.com and Last.fm - this paper describes emergent social motivations for tagging. The motivations that were found in the systems include expression, performance, and activism.

Categories and Subject Descriptors

H.1.2 [**Information Systems**]: User/Machine Systems - *Human Information Processing*

General Terms

Design, Human Factors

Keywords

Social Tagging, Motivation, Del.icio.us, Flickr, Amazon.com, Last.fm, Opinion Expression, Performance, Activism

1. INTRODUCTION

Social tagging can be defined as a community of users applying free-form tags to digital objects. Social tagging originated with sites such as Del.icio.us and Flickr. These sites were specifically designed for the storage, organization, and later retrieval of personal resources such as links or photos. Thus, the type of tagging that occurs on these systems can be characterized as "self-tagging, where users only tag the resources they created," [7][1]. The "social" in social tagging comes from being able to view and share resources with other users of the system. For example, in Del.icio.us, as soon as a user assigns a tag to an item, she sees the number of people who have also bookmarked the site, as well as the cluster of items carrying the same tag, and any additional tags that other people have used to describe the site. Del.icio.us and Flickr also have build in social networking components, that allow a user to recommend resources to others, add and follow contacts, as well as track specific tags.

The motivation for tagging on Del.icio.us and Flickr is, not surprisingly, organizational and social. In their study of Del.icio.us, Golder and Huberman [4] identified 7 functions of tags. Table 1 lists the tag functions, with possible motivations that were extrapolated from Marlow et.al. [7].

Table 1. Tag Functions and Motivations

Tag Functions	Possible Motivations
Identifying what or who	organizational, attract attention
Identifying what it is	organizational
Identifying who owns it	organizational, contribution and sharing
Refining categories	organizational, play and competition
Identifying qualities or characteristics	organizational, express opinion, play and competition
Self-reference	organizational, self-presentation
Task organizing	organizational

As more websites which were not originally designed for the storage and retrieval of personal resources - such as commercial, news, audio, and video websites - incorporate tagging into their systems, increasingly social motivations for tagging tend to emerge. Unlike the self-tagging systems of Del.icio.us and Flickr, these sites allow "free-for-all tagging, where any user can tag any resource," [7]. Although the conditions for free-for-all tagging, such as the ability to delete tags, may vary by system, all the tags for a resource are visible to everyone. Thus users are aware (or may perceive) an audience for their tags. In the context of an audience, tagging a resource is no longer primarily a self-serving activity for the organization of personal information, but also a social act that impacts the entire community of visitors to the website. Therefore, the nature of the tags and the act of tagging itself becomes a social or even collaborative activity.

The study presented in this paper analyzes two free-for-all systems: a commercial site (Amazon.com), and a music site (Last.fm). The analysis shows emerging social motivations for tagging which include opinion expression, performance, and activism. The various motivations for tagging in turn affect the nature of tags which themselves exhibit signs of sociality, as evidenced by their length and magnitude.

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[1] Even though Flickr does allow users to tag their friend's photos, the feature is generally not used [7], thus for the purposes of this paper, Flickr will also be considered a self-tagging system.

2. RELEVENT WORK

The introduction of the tag metaphor versus the folder metaphor was a significant step in information organization. Tags freed users from having to categorize objects in the traditional hierarchical manner often found in library classification systems. Library classification systems are designed to be hierarchical because of physical constraints. Even if a book can be categorized under several topics, it can only physically occupy one shelf. So for organizational and retrieval purposes "a book has to be declared to be *about* some main thing. A book which is equally about two things breaks the 'be in one place' requirement, so each book needs to be declared to about one thing more than others, regardless of its actual contents," [14].

Initial organization of the web was also based on a library classification system. At its inception, Yahoo!, attempted to categorize the web using a hierarchical directory. As the Web expanded, however, Yahoo's designers realized that it was going to be increasingly difficult to maintain the value of their hierarchical directory, "so they hired a professional ontologist, and they developed their now-familiar top-level categories, which go to subcategories, each subcategory contains links to still other subcategories, and so on" [14], See Figure 1.

Figure 1. Yahoo! Categories in 1998

Although Google entered the search engine arena much later than Yahoo! it rose to dominate the field because it did not attempt to categorize websites *a priori*. Rather, Google allowed categories, and relationships among categories, to evolve organically, through connections made by users. The Google PageRank algorithm analyses the link structure of the web to determine which web pages are most linked, and thus most authoritative [11].

As the success of Google demonstrates and as Shirky [14] rightly points out, when it comes to digital information, "there is no shelf". In the digital world, there is no physical constraint forcing us to continue to use hierarchical classification. Thus tags, "which are free-form labels assigned by the user and not drawn from any controlled vocabulary" [5], allow for the creation of a flat namespace which contains "no hierarchy, and no directly specified parent-child or sibling relationships between … terms"

[8]. Much like links, co-occurrence relationships between tags begin to surface, enabling the emergence of a folksonomic structure.

Bottom-up classification also frees individuals from the personal, class, and cultural biases inherent in top-down hierarchical classification systems. For example, the Dewey Decimal System (DDC) is the most widely used classification scheme in the world today, and is increasingly being used to index collections of URLs [10]. However, cultural biases are immediately visible in the scheme, as are Melvil Dewey's Western values. As demonstrated in Figure 3 below, the DDC places the Religion class at 200, with Christianity ranging from 220-280, while all the other religions are relegated to one section of 290.

Figure 2. Dewey Decimal System

Thus, one of the greatest advantages to tagging is that it "lets us organize the vastness of the Web … using the categories that matter to us as individuals," [12]. When tagging is situated in a social system, such as Del.icio.us, an individual's world view is socially constructed through the communal negotiation of tags and their meanings [8]. The power to construct your own reality through social classification creates connections among people. Communities spring up around specific tag usage or similar interests, while perception is constantly reconfigured through exposure to the tags of others

3. THE STUDY

In this study, the researcher hypothesizes that the power to order one's own world in a public context motivates people to utilize tags for social purposes other than folksonomic information organization. The researcher further hypothesizes that the use of tags in systems that were not originally designed for information organization will exhibit greater signs of sociality.

Golder and Huberman [4] examined the tags in Del.icio.us to understand the various distinctions in meaning or sense-making of tags, and were able to identify seven functions of tags. Marlow et. al. [7] extrapolated six motivations of tagging by examining a multitude of systems including Flickr, Last.fm, ESP Games, and Yahoo! Podcasts. Following from the example of the researchers mentioned above, this exploratory study examines tags found on two websites - Amazon.com and Last.fm - which implement free-for-all tagging. Amazon.com is a commercial website attempting to sell products, while Last.fm is social music website that creates connections among users with similar music tastes. The websites were specifically chosen for their diverse content and purposes in order to gain a broad perspective on user motivations for tagging. Unlike Del.icio.us where users produce their own data in the form of bookmarks, tagging on Amazon.com and Last.fm requires only

the consumption of the data already present on the site. The consumption centric system creates a different dynamic between the users and the system, and perhaps elicits new motivations for tagging since the users are no longer tagging the content that they produce, but rather predefined content already available on the site.

The researcher began the exploratory study by looking at each website's tag cloud of the most popular tags, and then proceeded to investigate specific tags. The tags that were examined further presented characteristics that went beyond simple noun description for organization purposes, but rather displayed signs of sociality such as opinion expression. To understand the range of tag types and motivations, the researcher utilized click-throughs of co-occurring tags in a snowball sampling technique. Once evidence of socially motivated tagging was found, the researcher went back to the sites and performed a statistical analysis to get an understanding of the characteristics and prevalence of socially motivated tagging practices. The small sample sizes present throughout this study are attributed to the researcher's time and resource constraints. The entire study was conducted during one week in February of 2007. The researcher plans to conduct much more extensive work on this topic in the future. Therefore, the study presented here is intended to be an initial exploration into the area of socially motivated tagging practices.

3.1 SAMPLE

3.1.1 Amazon.com
In November of 2005, Amazon introduced tagging on their website. It is estimated that Amazon currently has 1.3 million tags, which is s small figure compared to sites such as LibraryThing.com, which contains an estimated 13 million tags [15]. The relatively small number of tags found on Amazon is attributed to the fact that the tagging feature is not given much prominence on the ever expanding Amazon product page. Additionally, the main purpose of the site is commercial and not organizational, so users might not be as motivated to tag content. In order to explore the motivations for tagging that do exist, a random selection of 25 books and 25 music products were obtained from the Amazon website. Although the Amazon website contained more than eight million books and over one million music products, the website is designed to only display a maximum of 100 pages with 24 products per page. Thus, the random sample was pulled from 4,800 book and music products which were sorted by "Bestselling". Given the other options for sorting products, namely alphabetical, price, or release date, the researcher believed that the bestselling items would produce a much more diverse selection of products, as well as guarantee a higher probability of the presence of tags.

3.1.2 Last.fm
Last.fm is an internet radio station and a music recommendation system. In August of 2005, Last.fm merged with Audioscrobbler and began supporting tagging of artists, albums, and tracks.

The tags for each album, artist, and track are visible to everyone on the site. In 2006, Last.fm reported 15 million unique active monthly users, 65 million album tracks, and 7 million different artists [9].

Unfortunately, Last.fm does not provide a way to randomly select artists, albums, or tracks. The website does not have unique numerical identifiers that could be utilized to randomize a sample. The data is simply represented in the system by name, for example, in order to find information on The Beatles, one would just use the following url: http://www.last.fm/music/The+Beatles. The site does however provide a random sampling of users. Subsequently, 50 users were randomly selected for the study, and the users' listening data was further randomly sampled for 25 artists and 25 tracks. The researcher utilized the Audioscrobbler API in order to obtain the tag data. The API only provides tag data for artists and tracks, therefore albums were not sampled.

3.2 OPINION EXPRESSION
Golder and Huberman [4] found evidence of opinion expression on the self-tagging site Del.icio.us. The researchers mentioned tags such as **scary, funny, stupid, and inspirational**. Although the tags are expressions of opinion, they were mainly utilized to further describe or characterize the resource for personal retrieval in the future. They opinion tags did not possess any social element as they were mainly used for resource characterization. The tags could have easily been substituted for co-occurring words without losing any value; for example, humor could be substituted for funny. Additionally, all of the opinion expression tags found in Del.icio.us co-occured with description tags rather than other opinion tags. For example, the tag **funny**, which appears in the popular tag cloud, co-occurred with **humor, video, youtube, blog, comic, jokes, webcomic, comics, web, and videos**. Thus, there is little evidence to suggest that opinion tags used in Del.icio.us were motivated by a desire to express an opinion to a perceived audience. Instead the motivation appears to have been organizational in nature.

On the other hand, in free-for-all systems like Amazon.com and Last.fm, socially motivated expressions of opinion were found, as opposed to retrieval motivated expressions. Table 2 lists a sample of opinion tags found on Last.fm. Last.fm provides 19 co-occurring tags for any given tag, thus it is not clear how many tags are actually co-occurring. Of the tags provided, the co-occurring opinion tags are listed in the table. Table 3 lists a sample of opinion tags found on Amazon.com. Due to the large number of co-occurring tags found on Amazon.com (averaging over six thousand), only the most popular opinion tags were listed in the table. All of the opinion tags found on Last.fm and Amazon.com also co-occurred with noun tags which described the resource that was being tagged. However, unlike Del.icio.us, the opinion tags used in these systems not only characterized the content, but actually provided expression. The large magnitude of co-occurring tags might be part of the effect of opinion expression in a free-for-all tagging system. Additionally, it is possible to see that the expressed opinions also work as recommendations either for or against a resource. For example, tags such as **ripoff, overrated, don't bother,** and **bad music** all attempt to communicate a recommendation to a perceived audience.

Table 2. Sample of Opinion Tags found on Last.fm

Opinion Tag	Tag Data	Most Popular Co-occurring Opinion Tags
awesome	7,034 people used this tag 36,363 times	angelic, great, gr8, rocks my socks off
beautiful	6,865 people used this tag 38,510 times.	blissful, stellar, talented
great	2,028 people used this tag 7,756 times.	awesome, balls to the wall, gr8, super
crap	1,520 people used this tag 4,950 times.	annoying, bad music, corny, loser music, overrated, shit, shite, sucks
shite	102 people used this tag 242 times.	annoying, corny, crap, sexy
horrible	182 people used this tag 383 times.	crap, dreadful, terrible
gay	2,138 people used this tag 8,146 times.	cheesy, losers, posers
gr8	21 people used this tag 157 times.	awesome, great, ashamed, bad singers

Table 3. Sample of Opinion Tags found on Amazon.com

Opinion Tag	Tag Data	Most Popular Co-occurring Opinion Tags
awesome	691 customers used this tag on 855 items	amazing, fun, great, excellent, cool, great product, funny, crap, garbage, love it, interesting, beautiful, junk, overrated, bad, fantastic, brilliant
beautiful	299 customers used this tag on 356 items	amazing, awesome, boring, excellent, fantastic, interesting, great, inspiring, horrible, incredible, love it, must read, brilliant, lovely
cool	404 customers used this tag on 574 items	awesome, fun, great, crap, funny, interesting, evil, great book, excellent, garbage, junk, wonderful
crap	663 customers used this tag on 698 items	garbage, junk, trash, horrible, bad, awesome, awful, evil, great, boring, stupid, overrated, worthless, lame
garbage	433 customers used this tag on 391 items	crap, junk, trash, awesome, worthless, bad, horrible, stupid, useless, ripoff, waste of money
great	461 customers used this tag on 866 items	awesome, good, amazing, crap, excellent, great book, fun, funny, must read, trash, best, good read
lame	138 customers used this tag on 166 items	crap, garbage, horrible, awful, bad, boring, junk, trash, amazing, disgusting, pathetic, don't bother

The results of the random sample of 25 artists and 25 music tracks on Last.fm revealed that the majority of artists were tagged with the maximum (as provided by the API) of 100 tags. Twenty-two artists had 100 tags, one artist had no tags, and the remaining two artists had 96 and 19 tags respectively. Tracks, on the other hand, had an average of 46 tags (SD= 40). The average character length for artists tags was found to be 9 (SD= 3), while average track tag length came in at 10 (SD= 3). Spaces were counted in all the tag length measurements presented in this study. The character length of the tags suggests that tags are often expressed as single words, or very short phrases.

Moreover, there was an average of 34 artists opinion tags (SD= 15), while tracks contained an average of 31 opinion tags (SD= 32). From this data it can be inferred that on average, 36% of the tags found for artists and 67% of tags found for tracks were opinion tags. This indicates that opinion tags are fairly prevalent on Last.fm, especially for individual music tracks. However, organizationally motivated tags such as nouns and descriptors still make up the majority of the tags on the site. This finding is not surprising because part of the site functionality is the personal organization of music for the purpose of sharing and connecting with other users who have similar tastes. Therefore the site elicits organizational tagging practices. Still, given the prevalence of opinion tags, it can be inferred that opinion expression is an emerging motivation on Last.fm.

The random sample of 25 books and 25 music products on Amazon.com revealed that books were tagged with an average of 15 tags (SD = 13), and that music products averaged 10 tags (SD= 8). Additionally, the average tag length for book products was found to be 11 characters long (SD = 11), while music tags were on average 10 characters long (SD = 3). The character length of the tags for both books and movies suggests that tags are often expressed in the form of phrases, however the large variance present in book tag length also points to the use of single words as well as sentence-long tags.

Furthermore, books contained an average of 5 opinion tags (SD= 5), while music contained an average of 4 opinion tags (SD= 5). Thus, we can conclude that on average, 1/3 of the tags found on book products were opinion tags, while 40% of the tags found on music products were opinion tags. This indicates that opinion tags are prevalent among book and music products at Amazon.com. This study confirms similar finding by Spalding [15], who also found "a surfeit of opinion tags" on Amazon.com.

Since the main purpose of this website is commercial, there is a very low incentive for organizational tagging. However, Amazon.com does have a culture of opinion as cultivated by its now-famous review features. Therefore, opinion tagging is perhaps utilized as another method of reviewing products.

3.3 PERFORMANCE

Performance studies "can be construed as a 'broad spectrum' or 'continuum' of human actions ranging from ritual, play, sports, popular entertainments, the performing arts, and everyday life performances to the enactment of social, professional, gender, race, and class roles, and on to healing, the media, and the internet," [13]. Performance is specifically defined as the activity of a participant, on a given occasion, which in any way influences other participants [13]. Performance is different from opinion expression in that it is contextually dependent and interpreted, with the goal of accomplishing an informational exchange, speech act, or interpersonal bonding [1]. Due to their generic nature, digital interfaces often do not convey a sense of context. Thus people rely on "artifacts of performance [to] create the context of

a digital environment," [1]. This is most evident in social network sites such as MySpace where users often utilize their profiles for performance. However, it is also evident on the free-for-all social tagging sites. People perform for a perceived or intended audience by playing with tags. According to Schechner [13], the internet allows people to be "both readers and authors. Identities are revealed, masked, fabricated, and stolen. This kind of communicating is highly performative. It encourages senders and receivers to use their imaginations, navigating and interpreting the dynamic cloud of possibilities surrounding each message."

In everyday life "to perform is to show off, to go to extremes, to underline an action to those who are watching," [13]. This study found that users who engage in performance tagging often create extremely long, witty, or sarcastic tag phrases. Although the phrases often express opinion about the resource being tagged, they are articulated through the creative and sometimes extravagant use of language. Tables 4 and 5 provide samples of performance tagging from Last.fm and Amazon.com respectively.

It is obvious that the tag authors intended the tags to be read and interpreted by an audience. Occasionally, the tag meaning is not even comprehensible unless the audience member has some previous subcultural literacy. Subcultural literacy is defined as a "hyper self-reflexivity about the nature of pop culture" [2], with an "awareness of and referentiality to everyday events, styles, and ideas, expecting that audiences will 'get it', too," [6]. For example, the tag **aka vogon poetry** assumes that the audience is familiar with Douglas Adams' Hitchhiker's Guide to the Galaxy, and is perhaps a fan of that genre, otherwise neither the reference nor the expressed opinion would make any sense.

Table 4. Sample of Performance Tags found on Last.fm

Performance Tags	Tag Data
Stuff im not responsible for	9 people used this tag 123 times.
Crime against humanity	23 people used this tag 55 times.
The worst thing ever to happen to music	78 people used this tag 1,980 times.
But the hero had left the beach and not a word about swimming underwater with his eyes open	9 people used this tag 66 times.
Maybe that is why i sometimes still don t feel like a grown woman-music	2 people used this tag 31 times.
beepy beep beep bands yes this is the new sound kiddies get on the boat	6 people used this tag 23 times.
ch-ch-check it out	2 people used this tag 7 times.
music appropriate for 50 unwashed kids too close together in a basement	4 people used this tag 8 times.

Performance tagging was found to be prevalent on Last.fm. For artists, an average of 13 performance tags were found (SD = 11), while for tracks performance tags averaged 17 (SD = 18). The average character length of performance tags for artists was 12 (SD =5) with tracks averaging 14 (SD= 11). Perhaps the

performative and emotional nature of music elicits creative or playful tagging practices. This is especially apparent in the tagging of specific music tracks versus artists, where users not only provide more performance tags for individual tracks but the track tags also exhibit greater character length.

Table 5. Sample of Performance Tags found on Amazon.com

Performance Tags	Tag Data
craptacular	30 customers used this tag on 274 items
music to make you long for the sweet release of death	17 customers used this tag on 3 items
horrible stupid bad evil worthless rotten stinky retarded	7 customers used this tag on 22 items
aka vogon poetry	7 customers used this tag on 3 items
waste of time and money	50 customer used this tag on 53 items
wake up call	5 customers used this tag on 5 items
violation of geneva convention	1 customer used this tag on 10 items
audible hemmorage	2 customers used this tag on 2 items
as memorable as a visit to the proctologist	1 customer used this tag on 1 item
make it stop	1 customers used this tag on 2 items
makes me wanna smash the radio	1 customer used this tag on 153 items

Compared to Last.fm, performance tagging was not as common on Amazon.com. The random sample found that on average both book and music product tended to display only 1 performance tag (SD= 2), and exhibit a character length of 16 (SD= 9). Interestingly, the performance tags that were found exhibited a very large character length, which might be an indication of very creative expression.

3.3.1 Self-Presentation
Part of performance is self-presentation. Marlow et. al [7] stated that self-presentation is used to "write a user's own identity into the system." Table 6 provides examples of self-presentation on Last.fm, while Table 7 presents examples from Amazon.com. In general, Last.fm showed a much greater prevalence of self-presentation compared to Amazon.com. Only 6 self-presentation tags were found for the entire Amazon.com sample, while Last.fm artists averaged 4 self-presentation tags (SD = 2), and tracks averaged 2 self-presentation tags (SD= 3). We could speculate that the context of the music site elicits self-representation behavior since music tastes are often associated with social identity.

Table 6. Sample of Self-Presentation Tags on Last.fm

Performance Tags	Tag Data
on repeat	150 people used this tag 1,952 times.
seen live	33,827 people used this tag 447,458 times.
songs from my youth	39 people used this tag 231 times.
my music	659 people used this tag 6,682 times.
I have run sound for	3 people used this tag 12 times.
peopleiknow	2 people used this tag 6 times.
my favorite	268 people used this tag 2,831 times.
recommended if you like records	3 people used this tag 15 times.

Table 7. Sample of Self-Presentation Tags on Amazon.com

Performance Tags	Tag Data
dad chrismukkah	2 people used this tag 4 times.
for me for xmas	6 people used this tag 21 times
kellys books	1 person used this tag 1 time.
gift for cy	3 people used this tag 1 time

3.4 ACTIVISM

Recent years have seen a tremendous growth in popularity of social sites and practices that emphasize social connections, collaboration, and sharing. As the landscape of the Internet has changed, so have the forms of online activism. One of the emerging practices utilizes tagging as a form of activism.

On October 26, 2006, an anti-Digital Rights Management (DRM) group called Defective by Design [3], part of the Free Software Foundation, launched a campaign whereby they asked supporters to tag products that contained DRM on Amazon.com with the tag **defectivebydesign**. Since the campaign is unique to Amazon.com, and this study did not sample the site for technological products, statistical data for activist motivations is not available. However, as of February 2007, it was found that 480 people tagged 1054 products on Amazon.com with the **defectivebydesign** tag.

For the Microsoft Windows Vista public release, the group protested in real space as well as encouraged supporters to go back to Amazon.com and label the program as **defectivebydesign** and **badvista**. When tagging is used for the purpose of activism, it has the effect of reconfiguring normality and reality and serving up fresh points of view. This is one of the biggest strengths of tagging - everyone's perspective can be represented.

The only problem with this campaign is, again, the assumption of subcultural literacy. In order for other Amazon.com customers to understand the meaning of the tag **defectivebydesign**, they must first know of the organization and its purpose, as well as have a comprehension of DRM. In order to help alleviate some of this confusion, supporters have also tagged **defectivebydesign** items as **crippled, user hostile, drm, infected, drm infected,**

defective, defectivebydesign drm nonfree, evil, bad, user lock-in, and treacherous computing. The activist campaign has been successful because **defectivebydesign** is one of the most popular tags on Amazon.com. See Figure 3 below.

Amazon.com Tag Cloud

Figure 3. **Popular Amazon.com Tags**

4. CONCLUSION

Utilizing a snowball sampling technique and random sampling, this study explored two free-for-all tagging websites, Amazon.com and Last.fm. The study found three emerging social motivations for tagging which include opinion expression, performance, and activism. Even though all three motivations were fairly prevalent on both sites, Last.fm was found to have much more performance tagging than Amazon.com. This is attributed to the design, content, and community of the respective sites. While both systems require users to tag data that is already present on the system, Last.fm encourages users to organize their music while Amazon.com promotes the consumption of products. Music is already associated with a performative aspect, and so elicits performative tagging behaviors. Amazon, on the other hand, has a strong community centered on the reviewing of products, and so elicits motivations for utilizing tags for opinion expression. Finally, the tags themselves exhibit signs of sociality. When the motivations for tagging are rooted in social processes, tags tend to exhibit increased character length, indicating the use of tag-phrases, and also contain significantly more co-occurring tags.

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