

Use and Reuse of Shared Lists as a Social Content Type

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ABSTRACT

Social networking sites support a variety of shared content types such as photos, videos, or music. More structured or form-based social content types are not mainstream but we have started seeing sites evolve that support them. This paper describes the design and use of structured lists in an enterprise social networking system. As a major feature of our shared lists, we introduced the ability to reuse someone else's list. We report the results on the use and reuse of shared lists based on three months of usage data from 285 users and interviews with 9 users. Our findings suggest that despite the structured nature of lists, our users socialize more around lists than photos, and use lists as a medium for self-representation.

Author Keywords

Social networking, shared lists, collaboration, reuse, memes.

ACM Classification Keywords

H5.3. Group and Organization Interfaces: *Collaborative computing, Evaluation/methodology, Web-based interaction*

INTRODUCTION

Social networking sites such as Facebook, MySpace, Flickr, and YouTube attract millions of users. These services are free and provide an easy-to-use platform for self-expression; everyone can participate and the site becomes a playground for the creativity of millions. These sites connect people with each other through content and profile sharing and communication around those. Some sites focus on a single content type and create communities around them, for example, photos or videos (e.g. Flickr; YouTube). Other sites focus more on profiles (e.g. Facebook, MySpace) and allow sharing of many content types as a

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way to both drive traffic and provide multi-faceted descriptions of people through the multiple content types users share.

The Beehive research project within IBM explores how a social networking site inside the enterprise provides value for business users. Beehive is an opt-in social networking site that was built with the goal of aiding corporate users with various people-related challenges in an enterprise. These challenges include discovering people with the right skills, staying in touch with team members and former colleagues, approaching people, and learning about ongoing projects.

When we designed Beehive, we evaluated many existing social networking sites. Our goal was to identify content types for Beehive that would not only connect people socially but also provide business value. Many existing sites offer media sharing, such as photos and videos, which are easy to create and upload and often draw traffic because of user curiosity. For specialized communities of interest, such as photographers and journalists, these sites are also of professional interest. In a business setting, we thought that photos could be valuable to reveal personal and social information, for example, photos of business-related events, vacation, or life events, but might be less effective at sharing knowledge and information.

Inspired by Top 10 travel guides [9] and Amazon's ListMania [15], we thought that shared lists could be an interesting content type for an enterprise social networking site. We hypothesized that lists in an enterprise would be used to discuss opinions and share information related to the work context, e.g. "My favorite RSS readers," "Best lunch places," or "Useful web design principles." Since lists allow users to express preferences and opinions, and put items into an order, we envisioned that they would spark controversy between users and provoke social interaction. This type of communication around shared content is typically supported through comments.

However, when we designed the shared lists, we thought that users, when reading a list, might feel compelled to create their own list about the same topic, either because they disagree and want to create a list with different items and ordering, or the topic inspired them to share something similar. In order to support and track this kind of behavior,

we decided to explicitly support “reuse” of lists in Beehive, i.e. based on another list, a user can create their own list on the same topic linked back to the original list. If lists as a content type indeed stimulate social interaction and incentive reactions, we hypothesized that reuse would offer a distinctly different way of reacting as compared to just commenting. Also, explicit reuse creates a collection of lists linking content about the same topic from multiple users. We may be able to derive useful information about both the group of people created through reuse and the aggregated information contained in reused lists of the same topic.

This paper presents usage data and observations of social list sharing as a content type on the Beehive social networking site. We provide a detailed look at three months of use by a community of 285 users. There are two major questions we are trying to answer with our research.

1. How are structured shared lists used as a social content type? We are interested in understanding if and how people socialize around lists, what kind of content they create and how lists compare to other mainstream content types such as photos.
2. Does an explicit reuse feature, as an alternative way of reacting to a list, positively influence social interaction around lists and encourage sociability [7], i.e. does reuse support reaching out to connect to others?

As we will show later, we were not only surprised by the type of content our users created but also by the social dynamics and the various motives for reusing lists.

The remainder of the paper is structured as follows. We begin our report by discussing related work. Then we briefly describe the Beehive system followed by a detailed description and discussion of the design of the list sharing feature of the site. The main part of the paper sheds light on the above questions and presents some surprising data based on an analysis of the log files of 285 users and interview data from 9 selected users.

RELATED WORK

Online list sharing comes in many facets. A common use of lists is for managing personal tasks, to-dos, or reminders (e.g. [14, 18, 23]). These sites also often support the sharing of task or check lists with other users. However, these lists cannot be reused and often cannot be commented on. Other sites use lists as a secondary content type to allow users to create preference orders of primary content types such as products with Amazon’s ListMania [15] or places in Yelp [28]. Again, these lists do not support reuse and commenting, and list items are limited to a predefined content type.

When we designed lists in Beehive, none of the social networking web sites we were aware of offered shared lists as a primary, multi-purpose, social content type. Recently a number of new web sites launched social list sharing capabilities similar to the social list sharing described in this paper. Dig a List [6], OnMyList [22], ListBums [17],

and ListAfterList [16] all support sharing of free-form lists as a primary content type with comments. However, unlike our shared lists, these sites do not support reuse and aggregation of reused lists, and we could not find any descriptive reports on usage of those sites.

Most related to our study of shared lists as a social media type are studies on photo, video, music, and blog usage. Photo usage has been extensively studied and research shows that sharing photos is done mostly for sharing experiences and that photos act as memory aids and springboards for stories. Frohlich et al. [11], Balabanovic et al. [1] and Chalfen [4] all provide evidence that a major use of photos is sharing and communicating experiences with others. Schiano et al. [24] studied photo use among teens and found that photos are used to reminisce about past events. Bentley et al. [2] compare consumer use of photos with music and find many similarities. They also provide a good overview of photo and music usage. Online video sharing on a popular video site has been analyzed by Halvey and Keane [12]. They conclude that a large number of users do not make use of the social interaction features that surround video sharing, i.e. the number of lurkers is extremely high and very few people comment, explicitly connect to others, or create videos. However, a small number of frequent users create social networks within the video sharing service.

Weblogs or blogs are the content type most similar to social list sharing as described in this paper. Blogs are public online journals [25] with mostly textual content whose main purpose is to share thoughts with a large anonymous audience and get reactions in the form of comments. Blogs are different from lists in that they provide no structure but rather a “blank page” approach for the creation of content.

Nardi et al. [21] studied motivations for blogging and the social interactivity around blogs. They describe various activities in blogging such as updating others on activities and whereabouts, expressing opinions to influence others, seeking others opinions and feedback, thinking by writing, and release of emotional tension. Nardi et al. also describe how people reach out to connect into other peoples’ social spaces. Chin and Chignell [5] describe a method and model to discover virtual communities between bloggers using network analysis. Huh et al. [13] describe the use of blogs in a business setting. Their research suggests that blogs can increase cross-community collaboration and facilitate access to tacit knowledge and important resources. Using information retrieval techniques, Tirapat et al. [26] analyze opinions and trends in blogs. Their work indicates that there is a correlation between the buzz a movie gets and its financial success.

Blogs do not directly support reuse, although linking blogs together through memetags is similar [20]. A memetag is a blog tag that is included in all posts that reference a meme (a fad or idea that spreads [19]). Usually bloggers invite other bloggers to a meme, e.g. “top songs 2007”, and as

bloggers publish their take on the meme, they include the memetag in their posting to reference back to the creator of the meme. Related by name are meme tags from Borovoy et al. [3]. They studied wearable tags in a conference setting. They observed how meme flow connects people and that the tags helped people feel more comfortable about approaching others they otherwise would not have.

BEEHIVE

The social list sharing feature described in this paper is integrated as a content type into the Beehive system, an opt-in social networking site for enterprise users. In contrast to existing services inside the company with employee profile pages, Beehive provides media-rich, customizable profiles that allow users to control how they are represented inside the enterprise, giving them a means for impression management. Beehive users can gain a sense of who someone is by seeing how people describe themselves through free-form “About Me” entries and through the media content they create on the site, the connections they make, and the people they communicate with. Beehive supports two different content types: photos and shared lists. Lists, which are called “hive fives” in Beehive, are described in more detail in the next section of this paper.

Communication between users in Beehive is done through comments on any content type and on the profile pages of Beehive users in a “buzz” section. The buzz also includes actions related to the profile owner giving visitors a more complete picture of what this person is doing in Beehive. Also displayed on a user’s profile page is a list of connections (“friends”) within Beehive. A more detailed description and user study of Beehive will be published separately and is beyond the scope of this paper.

SOCIAL LIST SHARING IN BEEHIVE

List Creation

Lists in Beehive are a structured, customizable content type that allows users to share opinions, ideas, and information. To create a list (as shown in Figure 1), a user provides a title and optionally a description, tags, and the list visibility. The visibility defaults to everyone inside the company, but can also be set to be visible to only the user’s connections in Beehive. The thumbnail for the list, which will appear beside the title of the list throughout the site, can be customized by the user, by choosing from a number of default icons, from the user’s own Beehive photos, or from a URL to any image on the Internet.

To create the main content of the list, the user provides up to five items related to the topic of the list. These items are entered into numbered text areas that allow HTML. In addition, users can also insert any of the photos they have shared elsewhere on Beehive, through a graphical chooser utility.

The decision to allow users to enter only five items was initially inspired by the bee theme of Beehive: we call the lists hive fives (or hive5s). When we discussed the benefit

of unlimited versus limited numbers of items, we decided a bounded list (whatever the number of items) had certain benefits. Specifically, providing some structure to the users, rather than allowing a completely open-ended list, could aid both in list creation (particularly in knowing when one has completed a list) and in the consumption of lists by other users (particularly in aiding scanability and short reading times). There are no requirements that all five items be filled in or that the content fit any specific format. As we will discuss in the Results section, our users had interesting and creative reactions to this design.

create a hive5

A hive five is a list with 5 items. The list can be on any topic and the items can contain any type of text, including links and photos. For inspiration, check out some recent hive5s for examples.

Click here to select an icon for your hive5

hive5 title

Some ideas for hive5s:

- My Teammates / My Managers / My Officemates
- My Last 5 Projects/Jobs/Companies
- Five Surprises, Successes, or Failures with Clients
- Five Innovations I Am Proud Of
- Five Technologies I Can't Live Without

enter your choices for 1 through 5

1 add beehive photo add link (we allow html)

2 add beehive photo add link (we allow html)

3 add beehive photo add link (we allow html)

4 add beehive photo add link (we allow html)

5 add beehive photo add link (we allow html)

hive5 description (optional)

hive5 tags (optional)

who can see it?

everyone only your direct connections

save cancel

Figure 1. The list creation page in Beehive.

List Presentation Across Beehive

Once a list is created, it can be discovered by other users at various places in Beehive. A list is visible on a collection page of recently created lists in Beehive, on a collection page of all the lists of a selected user, and within site-wide search results, derived from a tag-based search of Beehive content. On top of every page in Beehive recent public user activity is shown, allowing for serendipitous discovery of people and content. If a publicly shared list has been created recently, the photo of the list creator is shown with links to both the creator’s profile and the new list.

Lists also appear on the users’ profile pages. The last three lists created by a user are shown along with a link to all of the user’s lists. A list can also be selected as a “featured item,” which is a single content item of particular interest, on a user’s profile page.

Viewing the List

When users are viewing a list, the creator is shown in the left hand side of the page, along with the tags associated with the list. In the central portion of the page are the title, description, thumbnail, visibility, creation date, and the five list items, as shown in Figure 2. In this example, the user has created a list titled “5 cars I’m interested in” and has shared the names and pictures of the cars she is considering purchasing. At the bottom of the page is a comment section, called “the buzz,” where all users can discuss this list (Note that a photo content page in beehive follows a similar layout except that the central area shows a single shared photo instead of the five list items).

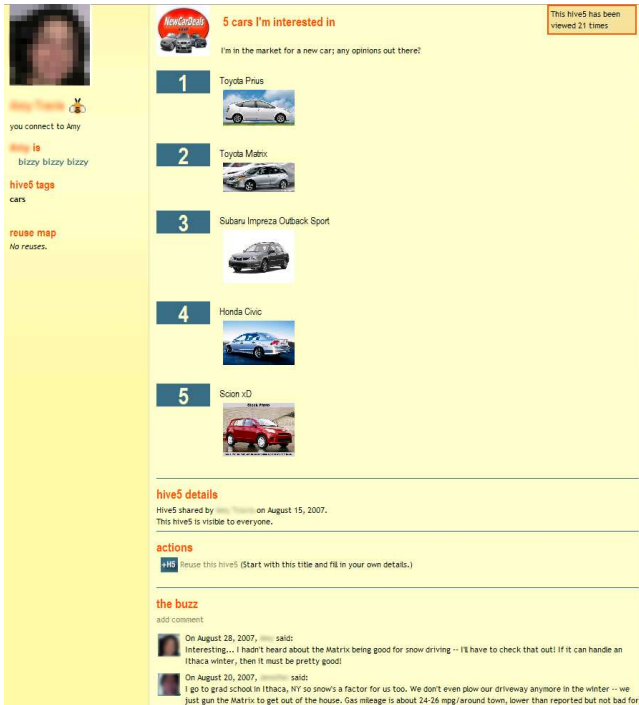


Figure 2. An individual list page in Beehive.

Reusing a List

On every list, all users are given the option to “Reuse this hive5,” as shown in the detail in Figure 3. When a user decides to reuse a list, they are taken to the create page in Figure 1 and presented with the same title as the reused list. A pointer back to the original list is stored and every time this list is presented on the site, it states who it was reused from.

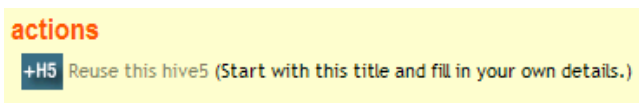


Figure 3. A detail of the reuse action shown on every list page.

When viewing a reused list, on the left-hand side of the page is a “reuse map” which presents the history of reuse in

a “tree” of reuse. As can be seen in the detail in Figure 4, the image at the top of the map is the original list creator, and below that are the owners of the lists at the different levels of the tree with each row representing one generation of reuse. Hovering over any of the owners’ photos provides further details about the list, along with whose list that person reused and how many times this list has subsequently been reused. The list currently being shown in the central area of the page is highlighted in the reuse map with a star graphic, instead of a face, and the parents and children of this list are highlighted with a black border. The purpose of the reuse map is to provide, in one glance, information about who reused a list topic and to allow for easy discovery of the other reused lists in the tree.



Figure 4. A detail of the reuse map shown on the page of a list that has been reused.

To encourage list creation (and reuse) an announcement of some of the list features were highlighted in the news section of the Beehive “home” page. A link to the most reused high5s was provided to encourage active browsing of lists created on the site.

RESEARCH METHODS

The data we used for this study is based on the Beehive database and server access logs for a period of three months between May 31 and August 31, 2007. The data set contains 285 active Beehive members, 735 shared photos, and 370 shared lists. Beehive was launched at the end of May 2007 to a group of 50 people in our department and in associated divisions of IBM. In this initial beta launch, we did not open the site up to all employees, but sent invitations to join to additional people that Beehive users requested that we add into our beta trial. Through this social network adoption scheme, 285 users signed up and used the site by the end of August. While our initial selection of 50 people lacked diversity across the company, of the final 285 users, 48 different departments, 72 different office locations, and 18 different countries were represented, and the majority of our users (67%) were not from the research division. We removed members and content of our own team from the data set.

Our second source of data was interviews with nine of the users on the site. We chose these nine based on their total number of lists, their number of reused lists, and their number of lists reused by other people. We believe that these high-use early adopters can provide important feedback about the use of lists. The nine chosen were not affiliated with our project nor were they part of our department. Two members of the team conducted these interviews over the phone. During the interview, the subject and the interviewer would review the subject's lists by browsing the site together.

RESULTS

Both the interview and quantitative data are organized into two sections: Results related to the usage of shared lists in general and those related specifically to the reuse feature.

Using Lists

Lists versus Photos on Beehive

To understand how shared lists are being used as a social content type, we first compared the use of lists to the use of photos in Beehive. Lists were created by 40.7% of users (116 people) on Beehive. And photos were shared by 44.2% of users (126 people). Our first surprise was to see that the total number of photos on Beehive was only about twice as high as the number of lists. Photos are easier to create than lists, requiring only a single upload, so we had expected the number of lists to be much lower in relation to photos.

We further analyzed viewing and commenting behavior of users on both types of content. The data shows that lists are viewed more than twice as often as photos (16.37 list views versus 7.81 photo views, on average, $t=10.013$, $p<.0001$). Lists are also commented on more than twice as much as photos, with 0.94 comments per list versus 0.35 comments per photo on average ($t=6.647$, $p<.0001$). 35.8% of all lists have comments compared to 18.8% of all photos. Shared lists as a content type attracted more viewers and created more social interaction than photos.

In interviews, some users said the opposite of what we had expected. They indicated that sharing photos was difficult for various reasons: “[photo sharing is] partly difficult as a process...because [my] photo library [is] on my personal computer” or “Sharing photos specifically in beehive I find to be a lot of work...hive5s require me to think about them a bit, come up with new content. I can more readily create new content, without capturing it on my camera.” This makes sense as photos are typically created elsewhere and uploaded to Beehive, while the lists are composed directly in Beehive.

Some users clearly preferred lists as a different way to express themselves. In fact, 23 of 116 list creators had only lists and no photos. One user remarked “hive5s are a way to express myself in a way that I couldn't with photos.” Another said: “I have pictures on Facebook from Flickr account [...] I didn't initiate as much [in Facebook] as I

initiated in Beehive I think because of hive5s in Beehive.” Others saw lists as a way to generate more communication than with photos: “If you want people to talk to you about some stuff then not always posting a picture is a good thing [...] A Hive5 is an interesting thing that makes you think and [is] put[...] in front of people in an interesting way [...] that there's probability that people will react [...] higher than even blog posts.”

List Structure

As discussed in the List Creation section, we decided to limit the number of items in lists to five. While the maximum number of items was bounded, users were not required to use all of the five text entry boxes provided. Interestingly, only 10 of the 370 lists created had less than five of the items filled in. We also looked to see if any users had created two lists with the exact same name to, in effect, create a list with more than five items. Three users created four lists of ten items (or eight lists total, each with five items).

In the interviews, we specifically asked the users about whether they found the structure and ranking of lists challenging (as opposed to something more unstructured like a blog). They consistently described the format as “good”, “really like[d]”, and “easy to use.”

At list creation time, the imposed structure seemed to be particularly helpful. Users said: “I tend to overthink anything I write. Perhaps that's why I don't blog...”, “Really! I like structure itself because when I see a blank page it is harder for me to compose my thoughts,” “Sections make it easier for me [...] to know when it is done,” “The game in it is trying to select some things and I think it is very interesting and I really like it,” “Writing a blog post is torture for me. Writing a hive5 is simple,” “If it was longer I probably wouldn't use it as much,” “It is potentially more challenging to write a good hive5 than a good blog post because you need to be concise, but if you succeeded you potentially have a much larger audience.”

There were mixed reactions to the specific limit of five items. One user said: “I was limited by 5, had to be 5, had to push something off the list,” “Because it is 5 items it stops me from doing things that I would have put in the space otherwise,” “In some cases it is quite limiting. But in some cases it is just right.” Others had no problem with five items in a list: “If you had to go with a number to get people to fill it in, 5 is a good number,” “I think that five is as good as seven or four,” and “Five is as good a number as any. Better than many.” One user, upon viewing someone's list without five items thought, “Something is different, something is missing here.” Another remarked, “I wonder if anybody didn't use 5. If they would dare to.”

However, subjects described having just five items as useful when viewing other people's lists: “In some ways it stops people from going off and being ridiculous with lots of things or not enough,” “I know many [...] who don't read

[blogs]. When they look at a blog post, three paragraphs in length or more, they say ‘I don’t have time or any particular desire to read it now or ever.’ Maybe I want to read it, but looks like a long one, I’ll read it later. A hive5 that grabs attention, you basically just go read it, takes 5 seconds of your time.” For one user, the structure facilitated commenting: “If you have something to say you immediately say it.”

People who did not need it ignored the ranking (ordering items 1 through 5): “Is there a ranking?” and “I’ve not used it for any sort of ranking.” Those who needed it, appreciated it: “Sometimes useful, sometimes chronological [...] helps me preserve order” and “I’m glad that it is ordered.”

List Content

When we designed the Beehive list feature we thought that lists would give our users the opportunity to create interesting business-related content. We also believed that the structure and ranking of items in lists was conducive to the expression of opinions. To get a sense for what kind of information people were sharing with lists, we categorized all 370 lists into 6 categories. In our categorization, lists could be placed in more than one category. These categories are:

- *About Me* lists contained information about the user, e.g., “Projects I worked on,” “Places you can find me online,” or “Summits I’ve climbed.”
- *Goal* lists were created to accomplish tasks, e.g., “Things I want to do before I depart,” “Help me choose a honey moon destination,” or “Intern special event vote.”
- *Playful* lists contained fun or game-like content, e.g. “4 truths and a lie,” “Five fun job titles in IBM,” or “funny lol cats.”
- *Business* lists were oriented towards work-related information (including technology related), e.g. “Five jobs I had (and can return to, if necessary),” “Five technologies I can’t live without,” or “Social-tagging research analyses.”
- *Opinion* lists were used to express values, opinions and beliefs, e.g. “5 things I hate about moving,” “Favorite social software sites,” or “My top 5 design principles.”
- *Fact* lists were used to share non-personal information without making judgments, e.g. “Tech blogs,” “URLs from the Sunday Paper,” or “iPhone applications.”

Figure 5 shows the percentage of list use by category. As we had expected, our users created a large number of Opinion (39.7%) and Business lists (29.7%). Playful (11%), Goal (9.5%), and Fact (8.4%) lists were less frequently created. However, we were very surprised by the large number of About Me lists (40%). Although the profile pages in Beehive allowed users to create informal, free form descriptions about themselves, they used shared lists as an additional medium for self-representation.

The interview data supports this finding. Nearly every interviewee spoke of their ability to share information about themselves through lists: “Seemed like a fun way to give information about myself;” “I think the one I liked sharing the most was ‘I hold my idiosyncrasies quite dear.’ This is the one where I talk about the [quirks that] pervade my entire life and pretty much define who [I am].” When one user was asked why he created his lists he said, “I was just trying to kind of let people understand about who I am based on things that wouldn’t come across because [working] remotely you don’t really find that information out.” Another said they contributed lists “to let people know stuff about me that I haven’t shared elsewhere. Things that I like, that I don’t like, passionate about outside work. To help people build an entire persona about me.”

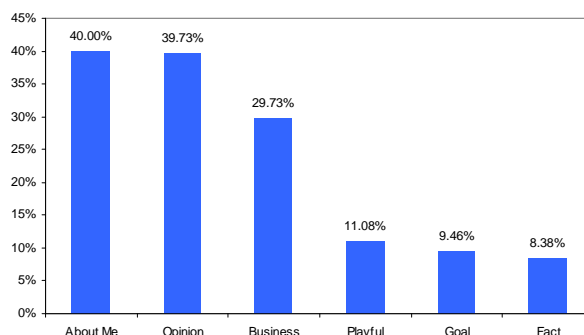


Figure 5. Beehive list content by category. Note that each list could be assigned to multiple categories.

Many users even felt lists were more useful for sharing personal information than other content types: “On the hive5 you have a tendency to make it more personal [than a picture or video],” “Usually I don’t talk about myself in a blog. As opposed to a hive5 which are mostly about my self, related to me, my opinions.”

Reinventing Lists

We observed that some of our users “reinvented” lists by using them in unanticipated ways. Many of these uses, but not all, were enabled by allowing users to enter HTML content in individual list items. As a result, we saw a significant number of rich media lists. List items included cartoons with the content displayed inline, YouTube videos, collections of web widgets, and even a collection of web pages using inline iFrames.

Some people used lists as a lightweight photo album for a collection of their Beehive photos. One informant described photos on the profile as a “blob of information,” and used the structure of lists to organize her vacation photos.

There was also an example of a user creating a poll with a list to choose a place for summer interns to visit, called “Intern Special Event Vote!” The first four items of the list contained descriptions, pictures, and URLs of the possible places to visit, and the 5th item contained a poll widget that users could use to vote from directly on the page.

One of the most creative examples of list use was called “4 truths, and a lie.” By prompting Beehive users to guess which list item was the lie about him, a Beehive user turned shared lists into a personal guessing game. This list was extremely popular and not only attracted many viewers and commenters, but also incited many people to reuse it.

Reusing Lists

Reusing lists was an integral part of our list design. Our hypothesis was that an explicit reuse feature would give our users an alternate way to react to a list as compared to commenting. We wanted to understand if and how this feature influenced social interactions around lists. The following sections report our findings on the social dynamics and motives of list reuse, and we describe possible evidence of sociability in reuse.

General Description

Lists were often reused: 168 lists out of 370 total lists (45%) were part of a reuse topic. We defined each reuse topic as the list that starts the topic plus all the lists, or children, which reuse that topic (reuse tree). Our users created 35 reuse topics with an average size of 4.69 lists per topic (Median: 3, Max: 37). The most popular, and thus largest, reuse trees were “Cities I have lived in,” “4 truths, and a lie,” “Places I’d like to visit,” “Five Technologies I Can’t Live Without,” and “Most Listened To.” The “4 truths, and a lie” list was extremely popular with 12 instances and a very high number of views, 801, and 66 comments. There were 17 people who had only reused lists and no original lists at all (with a max of 5 reused lists).

There was one list topic which we found in two separate reuse trees, “Cities I have lived in,” which led to two trees growing independently. We expect this number to increase as the number of users and lists on our site increases, because with the current design it will become more and more difficult to discover existing lists with the same topic.

Reuse by Category

Out of all of our list categories, we hypothesized that Opinion lists in particular would be most provocative and hence most reused. To our surprise, About Me lists were the most reused lists (62.2% of all About Me lists). This is consistent with our finding described in the “Using Lists” Section, confirming the importance of list sharing as a means for self-expression. Perhaps users feel either particularly inspired by the self-representations of their coworkers or pressured not to fall behind in presenting themselves to their coworkers. Fact lists were the least reused; with only 12.9% reuse in that category.

Reactions to Reused Lists: Viewing, Commenting, Reusing

Since reuse explicitly connects diverse reactions of multiple users, we expected reused lists to attract more comments and views. Our data indicate that our users do not comment significantly more on reused lists - with an average of 1.04 comments per reused list versus .84 comments per non-

reused list ($t=-1.198$, $p<.231$). However, reused lists were viewed significantly more often than non-reused lists with an average of 19.86 views per reused list versus 13.22 views per non-reused list ($t=-4.437$, $p<.0001$). This data suggests that offering list reuse can drive traffic and increase participation of viewers.

In the interviews, people said they intentionally reused lists because they expected others would have a better chance of seeing their list and possibly increase the probability of getting comments: *“I had posted a couple things on movies before, but didn’t get any traction from anybody else. So I saw this and copied this,” “I think they may look at it because I’m reusing that hive5. They may look because they may look at who else is creating a hive5 like that,” “Creating lists similar to theirs creates cross connections. Probably most likely going to come back and see yours.”*

This is not necessarily a false belief on the part of the list reusers either, as interview data suggests. Very often the people whose lists were reused will go back and view their lists’s children. When we asked people if they went back to look at others in the tree, they answered: *“I do. I absolutely do. When I see it, I absolutely go look. I see the reuse map,” “Saw it in the buzz notice and clicked on it,” or “Normally I check through the buzz and the feeds where I get the information that someone has reused my lists.”*

Even people who are only browsing a list will sometimes visit other lists in the tree: *“If I like a hive5, I read all of them. I read all the reuse ones,” “I don’t use it as a map. I click on every icon on it,” “I look for familiar faces then I might click on them to see their version of the hive5.”* But these responses were mixed, and some users we interviewed did not view other lists in the same tree at all.

Intentionally Creating Lists for Reuse

The interviews also brought out that certain people create lists for the purpose of other people reusing them. One user said that lists are *“not only a great way to talk to your audience, but also a great way to make others create similar lists to learn about some things in the same area.”*

Others also looked for opportunities to inspire reuse: *“I made a hive5 of pictures from my summer vacation. I did it because I figured it was one people could reuse,” “After I did the four truths and a lie, that occurred to me as something good to do, [...] that one was pretty successful, generated good conversation, thought it would be good if I could come up with something like that too,” “I hope that in most cases people will reuse [mine],” “Books that you’re reading, I thought somebody may possibly reuse that.”* Another user asked for better ways to make her list visible on the site to increase the likelihood of reuse: *“I had one I made that I thought people could use, but there is no way to promote it.”*

Users whose lists were reused took pride in that. *“The idiosyncrasies one was mine, and four truths and a lie, thank you very much!” “If you create one, someone reused*

from someone else, doesn't matter. You came up with the reuse hive5, that's what matters." A user even asked that the number of people who had reused his lists be shown on his hive5 page.

Users also seemed to feel their lists were unsuccessful when they had no reuse: "I tried to start a four lies and one truth and it didn't catch up," "I created 'Songs I like Because of My Parents.' No one reused it," "Five cats that lived with me', nobody reused that, can't imagine why," "I was hoping he would reuse [mine]," "No, unfortunately no reuses."

Choosing Lists to Reuse

The interview data suggests that users chose to reuse based primarily on whether they found the topic of the list interesting. Some said: "To that person, the hive5 is just a title, here's the things I'm going to put down. Someone else takes the concept and decides how to craft their own," "When I reuse it, I say, 'wow, very difficult to create a good hive5 [...] what a creative idea. [...] I want to use it to talk to my audience,'" "I reuse a list if I looked at the topic and thought I had something of value [to share]" "Reuse is a statement of 'I found this interesting' but nothing specific about the content [itself]." Others explicitly said they did not choose a particular person to reuse from: "Happened to be that person that I was looking at," "In a way, he's coincidentally the one I'm reusing [from]."

The interview data above suggests that people need not feel any particular connection to the person whose list they reuse. In order to better understand the social fabric that connects the people in a reuse tree, we analyzed the relationship between the creator of a list and the person reusing the list. We originally thought of reuse as being an anonymous, less binding reaction to a list as compared to a direct comment. Interestingly our data shows that our users chose to either comment on or reuse a list but typically not both on the same list; only 3% chose to do so. **Error! Reference source not found.** shows whom people chose to reuse from and whom to comment on.

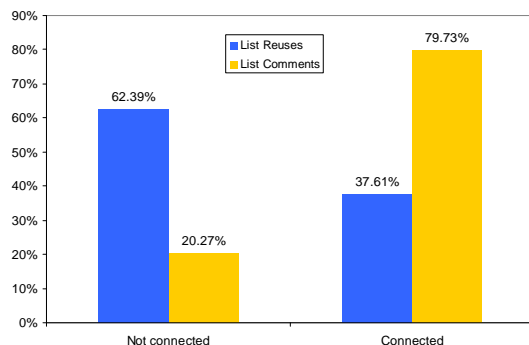


Figure 6. Reusing from and commenting on by those connected to versus not connected to list owners.

The majority of the reuses (62.4%) were from someone a user was not connected to (the list creator was not a member of the user's explicit social network in Beehive).

This data suggests that knowing someone personally does not have much impact on reuse; our users often reused lists from people they did not know. However, only 20.3% of comments on lists where from users who are not connected to the list creator. It seems that the act of commenting is much more personal than reusing. There is a similar trend for photos with only 15.7% of the comments from those not connected to the photo creator.

People confirmed this in interviews: "You reuse it because you want to make it your own. When you leave a comment you are just interested in [...] participating in that hive5," "I would definitely be much more likely to comment on someone's I know. Reuse, I could definitely see reusing someone I didn't know." Further, people take comments more personally: "I think I did [comment], most recently I asked if she really jogged with Matt Damon. She never replied and now I'm mad at her."

While these data confirm our initial hypothesis that reuse is more anonymous than commenting, here are three possible, non-exclusive explanations why the majority of our users chose to reuse from people they are not connected with:

- Given the less personal nature of reuse, some of our users might have simply been inspired to participate (de-lurk) by the topics others created. Our data shows that there are 20 users who never commented on any list but reused more than one list.
- Reuse happens mostly out of topical interest. The interview data showed that many people cared about the topic most when reusing, not who they reused from.
- Users were trying to reach out to connect to people they are not yet connected to by reusing their lists, or possibly to connect to people other than the creator of the reused list. We have provided evidence in the "Using Lists" Section that our users create lists mostly for self-representation, i.e. they want to let others know about themselves with their list. Moreover, this was the most reused list category. One of the motives for disclosing this kind of information could be that they are interested in connecting to like-minded people.

The following section examines aspects of emerging sociability through reuse in more detail.

Reuse Encouraging Sociability

While we found that reuse in itself is not always a social act, there are some reuse trees that have sparked many conversations and have formed ad hoc interest groups. From our interviews we also gathered that almost every user who viewed a list inspected the profile of the list creator, i.e. many are learning about the person whose list they may reuse. While the average number of comments for reused lists is only slightly higher than for non-reused lists, there are some reuse trees with disproportionate amounts of comments and views. They also have disproportionate amount of views and comments within the interest group of

the lists. Some people have reused these lists in cases specifically to join that group.

For example, the “4 Truths, and a Lie” tree has 66 comments while there are only 12 lists in the tree. 61 comments are from users who reused this list, but only 5 comments from users outside that group. In addition, the number of views for this reuse tree was disproportionate with 583 insider views versus 218 outsider views. Apparently, users inside that group of reusers were very active and following up with what was going on.

Another topic “Cities I’ve Lived In” has far fewer comments (only 13) while having a much larger tree (33 lists). Clearly “4 truths, and a lie” is generating more sociability than the “Cities I’ve lived in”, despite more people participating in the latter. Other trees with a high (comments / tree size) ratio are: “Things I would like to do in Beehive,” “I hold my idiosyncrasies quite dear,” and “How Research’s Desktop and Mobile Widget Runtimes Enable Social Networking.”

For these lists that are more social in nature the group interaction is strong. Regarding the “4 Truths and a Lie” list, interviewees said, “[it] was fun because it was interactive,” “[I have] only one [reuse]. ‘4 truths, and a lie’. Saw and thought it was fun,” “On 4 truths and a lie, I commented twice on people’s lies to guess their lies, two or three times I might have done that,” “I really liked the game and felt that I really, really want to play.”

One user felt strongly that it was through reuse that he entered the “community” of the tree: “Found it interesting and wanted to reveal and show myself within the community [...] and in a sense I wanted to get into this community, so I entered it reusing somebody’s hive5 and in a friendly way, in some social gesture, reuse the hive5 and get into the community.” He also said he was careful to select the person whose list he reused. For him, reuse offered a way to reach out to people who were important for his work but otherwise difficult to connect to because of his geographic location.

There is also some evidence that these lists spark conversations outside Beehive as well: “I talked to [anonymized] [outside of Beehive] about 4 truths and a lie, I might have inspired her to make one,” “Yeah we talked about four truths and a lie face to face,” “I guess I did have a conversation with somebody about it. Someone said she was trying to think of a hive5. I knew she had played a number of instruments. She made it, I reused it,” “Several times I did it with my team. Like people writing to me and I’m writing to them, saying did you see this and that thing on Beehive, sending the link. Four truths and a lie was one I liked to. Someone sent me the idiosyncrasies one.”

The act of reusing someone’s list directly links the reuser’s list to other lists. As we have shown earlier, reusers often expect a reaction to the effort they put into creating a reuse list about the same topic and the creators of the reused lists

are interested in other people’s reactions to their list. We are led to believe that reuse, as a feature, offers opportunities to connect or reach out to someone in a more subtle and sometimes playful way that would not have been possible otherwise (e.g. by providing only commenting capabilities with which users feel more socially inhibited to react and/or participate). As such, reuse is potentially beneficial for the sociability around shared content and, in Beehive, it might have helped lower the boundaries between the different social networks of our users.

CONCLUSION AND FUTURE WORK

Shared lists are different than existing mainstream content types, such as photos or videos and blogs, in that lists are structured content. When we designed list sharing for Beehive, on one hand we were intrigued by the potential of this content type for enterprise users. On the other hand we were also anxious that our users would not create any lists because crafting a list might take more time and thought than, for example, simply uploading a photo. Hence, our first goal with this research was to find out if and how people would use shared lists as a social content type. Our data shows that lists created more participation and social interaction than photos. We also learned that the structure and form-based nature of a list were generally no impediment for our users. In many cases it was beneficial because content was easier to create compared to a completely free-form blog posting. In particular, the specific limit of five items was not minded by half of those interviewed, surprisingly, and all found that it made the content easier to digest for readers. We need to better understand the role and value of constraints in interaction and how our observations translate to other media types.

The biggest surprise, however, was the kind of content people created with lists. We did not expect that our users would use lists mostly for self-expression, sharing information about themselves with other users on Beehive. The majority of this type of content was personal but, as we had originally hoped, there were also a great deal of work-related lists. This mixture of professional and personal content, in a way, creates a virtual version of water-cooler discussions that potentially helps employees to better connect with coworkers and understand who their coworkers are, beyond the immediate work context and physical boundaries. Introducing and studying social network software like beehive within a global corporate environment provides an opportunity to better understand the value of socio-technical systems in those settings. Very little research has been done in that space. For example, Farrell et al. [10] studied the role of people-tagging in reputation management in an enterprise. As we move from our controlled beta trial of Beehive to a company-wide deployment, we are interested in collecting more evidence on how our system supports bridging and bonding between coworkers. Similar to Ellison et al. [8], who studied the use of Facebook.com in an academic setting, we believe that

social network software can increase social capital inside an enterprise.

Our second goal was to understand whether reuse, as a major feature in our list design, would have a positive effect on the sociability of lists, i.e. is it conducive to aid people in reaching out to connect to others. While our data confirm that an explicit reuse feature can increase participation (and many of our users reused lists), our analysis does not show a significant increase in the number of comments on reused lists versus non-reused lists. Interview data suggests that reuse was done primarily because users found the topic interesting, but occasionally done for reasons related to a community in a list reuse tree. Indeed, some of our reuse trees had a community-like character and users specifically stated that they reused a list in the tree to reach out and connect to the “community,” and talk about these lists outside of Beehive. Some people also specifically tried to create lists that would be reused by other people, in order to get reactions. As the number of lists and users on beehive grows, we expect to collect more evidence on why reuse does work and in particular, we would like to understand how this feature can benefit other social content types.

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