

Mobilizing Lurkers with a Targeted Task

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Abstract

Users of online communities are commonly classified into active members versus lurkers. In this work we experiment with a method designed to encourage lurkers to share their acquired social capital with a community through lightweight contribution. The findings from our experiment demonstrate the importance of exploring new ways lurker populations can offer additional benefits to online communities.

Introduction

With the growth in the number of online communities and their importance in different aspects of life such as health, education, and career development (Preece and Maloney-Krichmar 2003), many researchers and practitioners have been studying issues of active participation in these communities (Rashid et al. 2006). In this research, users are commonly classified into active members versus lurkers. Lurkers are defined as persistent, but silent, members of a community who read, but either never, or rarely, contribute content (Rafaeli, Ravid, and Soroka 2004). Traditionally lurking has been viewed as a negative social activity. Active members can distrust lurkers and the presence of lurkers can be considered a threat to the sense of community because they are not contributing (Rovai 2000). However, lurking can also be seen as a normal activity which every member of the community is likely to do at some point, and many researchers view lurking as a positive, constant presence in communities (Nonnecke and Preece 2003), (Preece and Maloney-Krichmar 2003).

There are several reasons for valuing lurkers. Nonnecke and Preece (Nonnecke and Preece 2003) point out that because lurkers dedicate substantial time towards learning about the community, their knowledge about the group can be beneficial to themselves as well as the group. Lurkers, by not contributing, avoid adding to any existing chaos and information overload by avoiding duplicate, irrelevant, or controversial posts. They can also spread knowledge beyond the community by participating through other forums and by bringing new users into the community. Rafaeli et al. claim that both active (e.g. posting) and passive (e.g. reading) participation in online communities helps members

acquire social capital (Putnam 2000), because they are gaining valuable information (Rafaeli, Ravid, and Soroka 2004). This acquired social capital enables lurkers to later utilize their gained knowledge for beneficial purposes.

In this work, we experiment with a method designed to encourage lurkers to return their acquired social capital to a community. According to Lin, social capital is the gained “access to embedded resources to enhance expected returns of instrumental or expressive actions” (Lin 1999). In this sense, users of a community site could gain social capital by learning from lurker’s viewing expertise. Lurkers have knowledge of a community’s content and culture from their extensive viewing; they have information to share about what content is of potential interest to the community. However, their lack of contribution prevents the community from benefiting from this potential social capital. To capture social capital from lurkers, our system is designed to encourage them to share their browsing knowledge.

Our system experiment was run on a large social network site deployed inside IBM. This site, called Beehive, has been live for over two years and has over 60,000 registered users, with approximately 6-14,000 unique visitors each month. Users come to the site to socialize and connect with their coworkers, and they do this by sharing photos, lists and events (DiMicco et al. 2008). Similar to most online communities, the site has a small percentage of very active users who contribute a lot of content and the majority of users rarely contribute: 86% of the photos and 84% of the lists are created by 10% of users.

We investigate here whether assigning a targeted task involving promoting site content will encourage lurkers to complete the task and how their method of performing the task differs from users who actively contribute content to the site.

Harvesting the Knowledge of Lurkers

An important challenge in a mature community with a large amount of content is discovering the interesting and valuable content. Beehive has over 100,000 photos, lists, and events and as these numbers continue to climb, it has become harder for users to filter through all the available content and find the most interesting and valuable items. To address this challenge, we deployed a system on Beehive called Honeybee for promoting content. The Honeybee sys-

tem selects a group of users, in the form of a weekly, rotating panel, who are allowed to promote content by giving it “honey.” (Farzan, DiMicco, and Brownholtz 2009). Every week a new group of 50 users with different levels of contribution and activity history are selected to promote one item from each of the three different content type (one photo, one lists, and one event). Content that receives honey is promoted on the home page of the site and through emails, to be made more visible to the community. Additionally, the users, or honeybees, are highlighted on the site as a way of thanking them for helping the community.

In order to find out if an online community can benefit from the knowledge of lurkers, we studied how lurkers respond to this task, in contrast to contributors. Lurkers, by definition, are not contributing content, but have knowledge of the content on the site, so are as qualified as other users to select and highlight interesting content. But they have a predisposition to not contribute to the community, so may not fulfill their role as honeybees.

While free riding is most often considered the main reason for lurking, lurkers avoid contribution for many different reasons such as concerns about privacy, a preference for simply learning about a new topic, studying the characters of the community, not feeling comfortable with participating, and not having the sense of belonging to the group (Rafaeli, Ravid, and Soroka 2004).

The design of the Honeybee system may address some of those barriers and we hypothesize it can increase the motivation of lurkers, driving them to promote content. First, the honeybee task is simple and bounded (promote only three items within one week) which means the burden of the task is sufficiently low for all users. Second, the system directly asks users to be honeybees, describing it as an honor. We hypothesize this will help lurkers overcome any distress associated with participating. Lastly, we hope that highlighting the contribution of the honeybees on the home page of the site engenders a greater sense of belonging to community for lurkers. However, the Honeybee system’s approach does not target all the barriers and as a result we do not expect all lurkers to be affected. For example, those concerned about privacy may be even more discouraged to participate by this approach because they do not want to be highlighted or singled out on the site for their role.

Evaluation

We designed the evaluation to assess the following hypotheses:

1. Lurkers will participate as honeybees and this will affect their long-term contribution to the site.
2. By promoting content, lurkers will expose interesting and popular content to the community.

In our analysis, we categorized honeybees into lurkers and contributors based on their content creation and viewing activities. Content creation included adding photos, lists, or events to the site or commenting on any existing content. Any visit to content owned by other users was considered to be a viewing activity. We classify honeybees as lurkers if they had not created any content but had viewed at least

one piece of content in the month prior to being selected as a honeybee. Contributor honeybees were those who created at least one piece of content over the month prior to being selected.

The analysis contained data collected over 11 months, from September 2008 to August 2009. Over this time period, 2000 users were selected as honeybees. Out of the 2000, 604 users were classified as lurkers and 1327 as contributors, based on the above definition. 92.8% of lurkers had viewed more 10 pieces of content over this time period, averaging 92.24 views, a median of 62.5 views, and a max of 1476 views.

Participation Behavior of Lurkers

To evaluate our first hypothesis we analyzed lurkers’ participation in terms of responding to the honeybee task and the long term effect of the Honeybee system on their general contribution behavior. The following two sections describe our analysis and the results.

Participation Rate Table 1 presents the response rate of each group to the task. It presents the total number of users picking at least one item, and the number of users who promoted each different content type. The comparison of the response rates of lurkers and contributors show a significant difference between the two populations (Mann-Whitney test: $Z=-12.614$, $Sig.<.0001$). While lurkers’ participation is significantly lower, 32.45% is still a substantial participation level coming from a group of users who had not contributed any content or comments in at least a month.

	Lurkers		Contributors	
	Num users	%	Num users	%
total promoting	196	32.45%	836	63.00%
promoting photos	181	29.97%	774	58.33%
promoting lists	143	23.68%	645	48.61%
promoting events	86	14.24%	445	33.53%

Table 1: Response rate of lurkers and contributors

Post-Honeybee Effects We studied the effect of the Honeybee system on the behavior of honeybees in terms of their activity on the site the month after being selected as a honeybee. We looked at both their browsing (viewing) and content creation activities. For this analysis we divided both groups into the ones who had promoted and the ones who did not promote any content, in response to the honeybee task. Figure 1 presents the percentage of honeybees in each group who were active in terms of viewing and content creation during the month before and after their honeybee assignment. Lurker honeybees were originally selected because they were users who did not contribute any content but were viewing at content added by others the month before being selected. Therefore, the percentage of lurkers creating content in the month before is 0% and percentage of lurkers viewing content in the month before is 100%. Similarly, contributor honeybees were selected because they had created at least one piece of content in the month before; therefore, the percentage of contributors creating content is

100% for the month before. As a result, the drop in contributors creating content and lurkers viewing content and the increase of lurkers creating content in the month after is likely due to our selection criteria. However, the comparison of the group who responded to honeybee task by promoting content, versus the group who did not respond, shows that lurkers who responded to honeybee task were significantly more active in the following month in terms of content contribution (Chi-square test: $\chi^2=34.61$, $df=1$, $Sig.<.0001$). This result suggests that the Honeybee system is successful in encouraging at least a subset of lurkers to become more active content contributors.

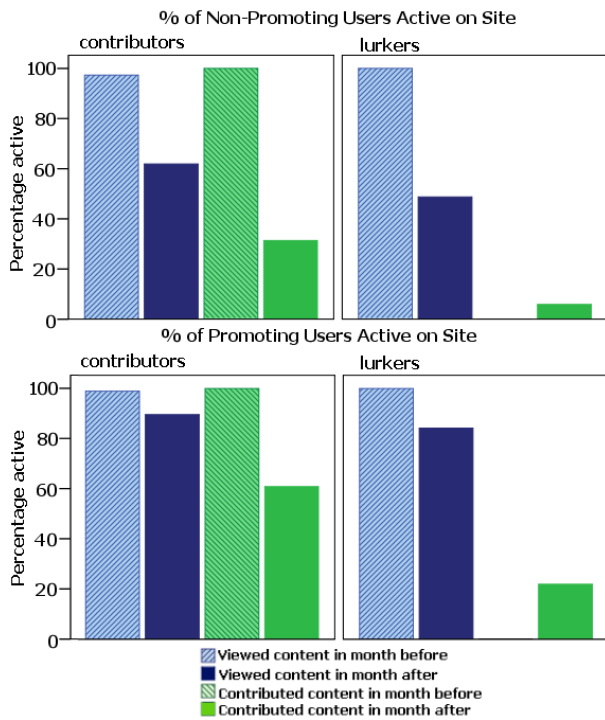


Figure 1: Percentage of honeybees creating content or views a month before and after being a honeybee

It can be argued that the lurker honeybees who responded to the task were more inclined towards participation in general, and therefore more likely to contribute content to the site in the month afterward. To address this issue, we excluded the lurkers who did not browse any content in the month after, from both the group that promoted and the group that did not. This analysis found that even among the actively browsing lurker honeybees, a significant larger percentage of the ones who promoted an item also created content (64.2% versus 35.8%, $\chi^2=11.773$, $df=1$, $Sig.=.001$).

Participation Behavior of Lurkers

To evaluate our second hypothesis, we analyzed diversity and popularity of honeyed content. Additionally, we analyzed how much lurkers reached out of their network in the content they picked to give honey to, as compared to contributors.

Diversity An important design goal and a demonstrated benefit of the Honeybee system is that the promoted content on the site is owned by a diverse set of users (Farzan, DiMico, and Brownholtz 2009). To compare the diversity of the promoted content selected by lurkers and contributors, we defined a “diversity” factor as the number of distinct owners of promoted content divided by total number of promoted pieces of content.

	Lurker	Contributor
diversity < 1	2 (1.46%)	49 (7.92%)
diversity = 1	135 (98.54%)	570 (92.08%)

Table 2: Diversity of owners of honeyed content picked by lurkers versus contributors

For example, if a user promoted 3 pieces of content from 2 owners, the diversity value would be $2/3$; an ideal diversity value is 1, where each promoted piece of content comes from a different content creator. The measure only has meaning for those honeybees who promoted more than one item; so this analysis excludes users who promoted only one item. Table 2 presents the number of honeybees in each group who promoted content with perfect diversity (equal to 1) versus honeybees who promoted content from the duplicate users. A Chi-square test of proportions shows that significantly higher proportion of lurkers selected content from complete diverse set of owners ($\chi^2=7.432$, $df=1$, $Sig.=.006$).

Popularity of Honeyed Content To assess whether there is a difference in terms of the popularity of content promoted by lurkers versus contributors, we used the number of views and comments the promoted content received as the measure of popularity. Figure 2 presents the average number of comments and views promoted content received a month before and after being promoted. We used the prior month as our baseline for comparison. As shown in the figure, the number of views increased significantly for content chosen by either group; however, while the number of comments for promoted content chosen by contributors stayed the same, the number of comments for content promoted by lurkers increased significantly (Wald $\chi^2=100.054$, $df=1$, $Sig.<.0001$). Moreover, there is a significant interaction of time and group (Wald $\chi^2=13.141$, $df=1$, $Sig.<.0001$) which means lurkers promoted content with significantly less prior comments.

This result suggests that lurkers are more likely to promote less popular content (content with fewer comments) and to draw attention of the community to content which would not receive as much attention otherwise. The significant increase in comments also suggests that they promoted content which was of interest to the community. This is an important contribution from lurkers to the site, and is supporting one of the main goals of the Honeybee system: highlighting interesting content otherwise hidden from the community.

Attachment to Network From our prior analysis, another demonstrated benefit of the Honeybee system is encouraging users to reach outside their social network and promote content created by users they do not know. In this way, the Honeybee system helps initiate new communication and increase

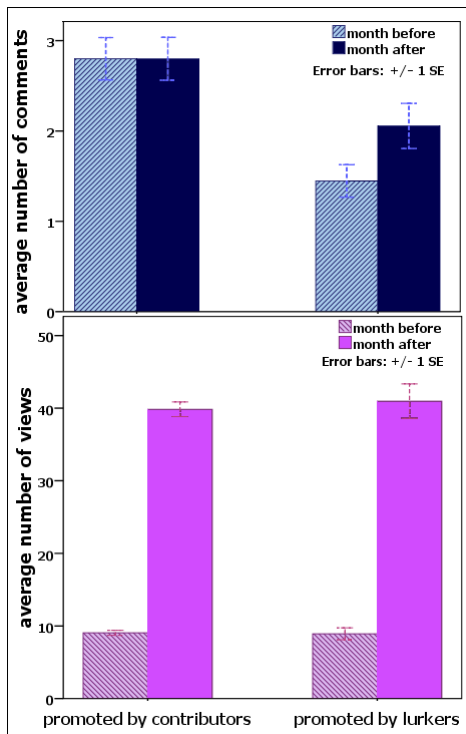


Figure 2: Average number of comments and views on honeyeared content promoted by contributors versus lurkers

social capital across the site (Farzan, DiMicco, and Brownholtz 2009). As one might expect, lurkers have significantly smaller social networks compared to contributors (μ : lurker = 20.29, contributor = 39.98; Mann-Whitney test: $Z = -5.124$, Sig. < .0001). Table 3 shows the number of honeybees who promoted at least one item from outside their social network. It shows that not only do the lurkers have smaller networks, but also a lower percentage of them reached out to promote content from outside their network. However, the difference is not significant ($\chi^2 = 1.62$, $df = 1$, Sig. = .203). This suggests that lurkers might be more careful in making contact with new users, even in this indirect way.

	Lurker	Contributor
from network	162 (82.7%)	656 (78.6%)
outside network	34 (17.3%)	179 (21.4%)

Table 3: Number of users in each group promoting content from outside their network

Design Implications and Conclusion

The Honeybee system was designed to provide a method for a community of users to find interesting and relevant content. The system of rotating the role of honeybee and rewarding honeybees with recognition was purposeful in that we wanted to encourage selected users to contribute to the spread of valuable information and feel honored to play that role. In this paper we explored how lurkers respond to this system and how the system affected them, as compared to active contributors. 32% of lurkers chose to promote content on the site. Although this is a lower participation rate

than the contributing users, this is a high enough number that we believe this system is successful in encouraging non-contributing community members to share their knowledge about content on the site, for the greater benefit of the community.

Lurkers, compared to contributors, promote a more diverse and less popular set of content which can be the result of the fact that they have exposure to a lot of content through their extensive browsing; however, surprisingly, even though they have smaller network size they are more likely to promote content from their network.

The system also appears to be successful in motivating a group of lurkers to later contribute more content. Lurkers who promoted content were twice as likely to contribute new content to the site in the following month, compared with the lurkers who did not choose to promote content.

These findings demonstrate the importance of exploring the potential for lurker populations to contribute to online communities. Future research could explore whether or not complete harvesting of lurker social capital disturbs the equilibrium of lurkers/contributors in an online community and how the culture of a community changes when lurkers begin to have a stronger presence on the site.

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