

Revealing the Long Tail in Office Conversations

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ABSTRACT

Blogs, wikis, and forums can break down geographic distances, workgroup boundaries, and organizational hierarchy in an organization. While these tools significantly lower the barriers to producing content, employees may perceive there to be little incentive to invest their own time in providing this content for public consumption. We found that increasing visibility often motivated employees to participate and contribute content. Employees were motivated by the opportunity for attention, and the ways in which social media tools enabled or hindered this opportunity influenced the way it was used. In this paper, we describe the design and use of the internal social media platforms at Hewlett-Packard and examine the ways that employees used these tools. Specifically, we explore ways in which designing for increased visibility and providing opportunities for recognition improve the ways that social media platforms can be used in organizations.

Author Keywords

Social media, attention economy, workplace, social computing, knowledge management, blogs.

ACM Classification Keywords

H5.3. Information interfaces and presentation (e.g., HCI): Group and Organization Interfaces.

INTRODUCTION

Why have over 20,000 people joined Dell's Tech Talk forum to ask and answer questions? How is it that most of the 330,000 questions in Sun's Java Forum have been answered? Why have some 23 million questions been answered for free in Yahoo! Answers? While many factors motivate participation, an underlying force drives the content production on the Web: *attention* [2]. The opportunity for visibility in an intensely public space enables people to cross geographic boundaries, cultural

differences, and domain-based knowledge silos. User-generated content sites like Wikipedia, Yahoo! Answers, or tech support forums are micro-economies of attention, where novices and experts alike can contribute and gain access to a vast sea of information. Yet despite extensive literature describing information overload and the attention economy on the Web, little research has explored its effects at work.

Recently, organizations have begun exploring the use of social media tools, such as blogs, wikis, and forums, to enable massively distributed collaboration and communication. While these tools significantly lower the barriers to producing content, employees may perceive there to be little incentive to invest their own time in providing this content for public consumption [4]. It has long been recognized that the disparity between work required and perceived benefit may prevent groupware tools from being utilized to their full potential [3].

The "long tail" of expertise and interests in large, distributed organizations offers potential opportunities for broad and diversified access to knowledge. Paradoxically, however, as organizations grow in size and scale, it becomes increasingly difficult for employees to locate specific resources and expertise. Thus, a content-production economy that is a rich and vibrant can be plagued with an overload of information. An *attention economy* results, where employees' attention becomes a scarce resource [1], placing a larger burden on them to know what information they are looking for and how to go about looking for it.

Encouraging adoption of social media within organizations requires overcoming these two challenges: motivating people to contribute information, and helping people to locate relevant information. We studied how internal social media tools are used at Hewlett-Packard (HP), a large multinational enterprise in the information technology industry.

We draw from a number of sources in our discussion including the design and use of WaterCooler, our social media platform; a survey of 144 WaterCooler users; 12 months of log files from the internal blog server; and interviews with 96 blog users. In this paper, we examine the ways in which distributed visibility of individual contributions influenced behavior. We suggest that increasing visibility motivated participation and enabled

alternative channels of information flow across units and departments.

DESIGNING WATERCOOLER

An *attention economy* drives the Web, where competition for attention is great and information can be created freely and shared in abundance [1]. Because attention is finite, readers must be increasingly selective about what they choose to read and how much time to devote to any individual post. Users employ several strategies to choose what to read, including:

1. *Novelty*: Many sites, such as blog aggregators, present the most recently published items. Collective attention fades over time as posts age [6].
2. *Popularity*: Many sites, such as digg.com and reddit.com, display not only the newest stories on the front page but the newest stories that were rated highly by other users. Site designers maximize collective attention with algorithms that optimize the delicate balance between popularity and novelty [5].
3. *By person*: Facebook, FriendFeed, Twitter, and other sites enable users to follow the activities of particular people of interest.
4. *By topic*: Sites like Technorati and Google News enable users to monitor posts on specific topics of interest.

We used these strategies to guide the design of WaterCooler. WaterCooler is an internal portal that aggregates social media platforms from across the company into one location and cross-references data streams with the employee directory. The early design goals were to make it easier for people to stay aware of new activity across multiple platforms. WaterCooler pulls from 99 internal sources (such as the wiki, forum, blog, Digg-like site, and idea-sharing site).

WaterCooler associates posts with timestamps, author, and inferred keywords. It then extracts employee names from the free-text author field and maps them into the company LDAP directory, which provides data on their organization, location, management chain, job function, and contact information. The hierarchy and attributes provided in the directory effectively bootstrap a social network, automatically providing ways for users to identify people like them.

Previously the most common view users had of blog contributions was the most recent posts (method 1). WaterCooler provides filtering mechanisms matching methods 2-4:

2. *Novelty and popularity*: WaterCooler tracks clicks on each post and presents the most recent posts read by a certain number of users on the front page and in a “popular items” feed.

3. *By person*: WaterCooler cross-references post authors with the employee directory, providing filters by person, organizational unit, and job function.
4. *By topic*: WaterCooler indexes each post and enables users to search and create feeds of new posts matching specific keywords.

We have had WaterCooler available internally to all HP employees since July 2007. The site currently has over 3,000 active users (visiting the site over the past 30 days). Adoption has been entirely voluntary, driven largely by word-of-mouth and announcements in a few organizations. We interviewed 96 employees about their perceptions and attitudes towards blogging and the use of social media at HP. Interviews took place over a 6-week period during the summer of 2008, and participants represented a diversity of gender, regions, work groups, and start dates.

We then advertised a web-based survey among WaterCooler users in August 2008 and received 144 responses. Participants were representative of geographic demographics within the company, but not of job functions, which were skewed towards engineering and marketing. This bias is representative of participation within the social media user community at HP, according to our analysis of blogging participation. Our interviews indicated that this bias in adoption correlated with a self-reported willingness to try new online environments among engineers, and a self-reported interest in taking advantage of Web 2.0 tools in the marketing department.

RESULTS

We found that opportunities for attention among coworkers and management often motivated employee participation and contribution. Specifically, when employees perceived increased visibility of their contributions, they were more likely to actively participate and to report positive experiences. Here, we focus on two dimensions of visibility: organizational boundaries and providing feedback.

Crossing Organizational Boundaries

Blog authors widely cited visibility across the organization as a key reward for their efforts:

After starting my blog, it was amazing to me how quickly I met other people, especially across different business groups... you know, I would post something on my blog and a week later I'd get an invitation to present on it. –P24a

Some people will talk to you when you've got them face to face, so I know my team is reading it. But I quite often get emails from people I've never heard of in other parts of the country, they've either seen something that resonates with them. –P12a

WaterCooler tracks posts and clicks by author and, by extension, business group. So we were able to construct readership and commenting networks for HP blogs.

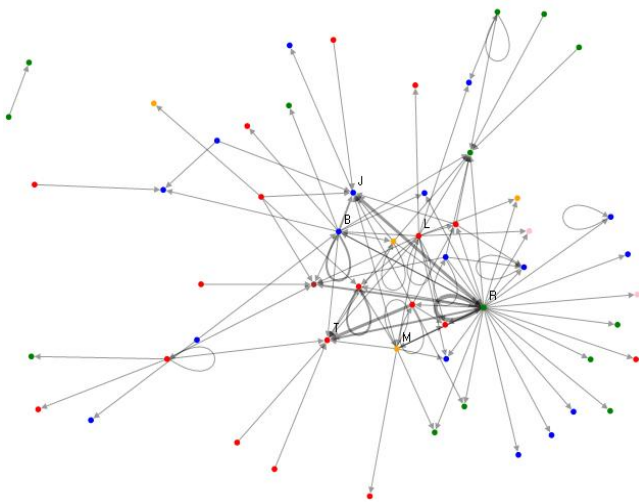


Figure 1. Partial readership network of HP blogs. Each node is a user, color-coded by business group. Each edge from *A* to *B* indicates that *A* read at least three of *B*'s posts.

Figure 1 shows the readership network formed by users who used WaterCooler to find and read several (at least three) posts by particular authors. Fifty-five percent of these links were to people outside the user's business group, suggesting the opportunity for cross-pollination of ideas across traditional business silos.

Some authors, such as *T* and *J* in the graph, emerge as widely-read "hubs", drawing large and diverse audiences, while most receive attention from specific niche groups. This is typical of "long tail" publishing media, and underscores the inadequacy of popularity alone for guiding users' attention.

Figure 2 shows the commenting network observed on HP

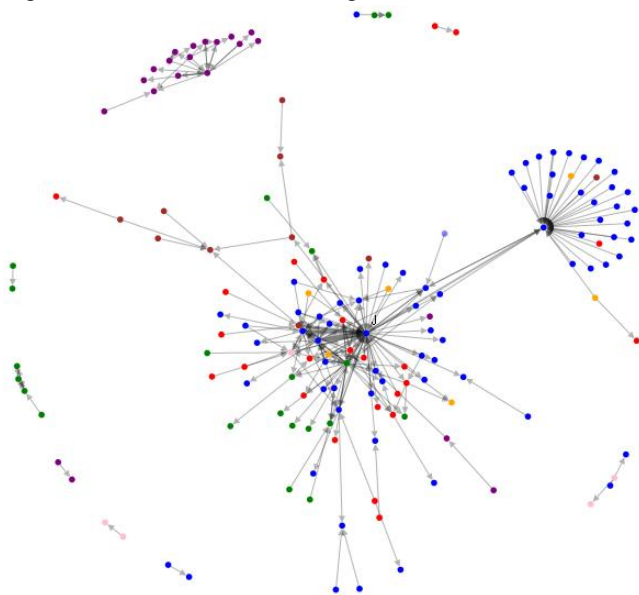


Figure 2. Commenting network on HP blogs. Each edge from *A* to *B* indicates that *A* wrote at least three comments on posts by *B*.

blogs—that is, users commenting on each others' blogs. This activity is exogenous to WaterCooler, as it includes people who find blogs via other means, such as bookmarks or emailed links. *J* emerges at the center of the giant component, both because she comments on many others' blogs and because many other people comment on hers.

The commenting patterns tend more to intra-group discussion. For example, there are several disconnected clusters, such as the purple cluster along the periphery, which has adopted a departmental blog as an official forum for discussion. The blue cluster to the right centers around an official "ambassador" blog intended to interface between executives and individual contributors. Since the topic is expressly issues affecting the blue group, most of the commenters are from that group.

The disparity between the structures shown in Figure 1 and Figure 2 may suggest that WaterCooler is encouraging people to follow authors outside their business group, but more study is needed to assess this. Several survey respondents specifically mentioned the value of this practice:

I started following what was going on in [Blue Group] because of the posts I found through WaterCooler. Most of the people I work with are in [Red Group], so it's interesting to see what's happening in other parts of the organization. It helps me understand the bigger picture of what's happening to HP. It helps me make better sense of some of the initiatives the executives talk about. –P17b

Providing Feedback

A common refrain from people we interviewed about blogging at HP was a desire for some sort of feedback that their contributions were useful, thought-provoking, or even read at all. One participant said:

That's one of the big weaknesses of it, the only way you know if anybody is reading it is if they take the trouble to reply. Without that you have no clue who people are.... it's largely uni-directional. –P52a

WaterCooler recognizes widely read articles by promoting them to the front page, leveraging readers' clicks and requiring no special effort from them. In turn, this is influential in guiding users' attention: 69% of WaterCooler users look to it as a way to see "what's going on in the company at a glance". However, seventy-six percent of users that saw links appear on the front page of WaterCooler report clicking on them at some point, privileging popularity over relevance (similar to the way articles become popular on Digg.com)..

WaterCooler also recognizes frequent contributors to each source, within each group, and each topic, using a simple ranked list. Employees use this as a signal to identify subject matter experts and active sharers. In the interviews and surveys, as well as informally, several people asked for metrics to help evaluate the diversity of knowledge sharing

practices in their organizations. This is an opportunity for further study, as simply counting the most prolific authors will not necessarily reveal usefulness or relevance.

However, according to our surveys and interviews, the most valuable form of feedback employees seemed to desire was direct responses to their posts. One participant remarked:

What I really want to do is have a conversation. I wonder about whether I have the wrong idea about blogs or not, whether I should not expect people to comment on them, or is this just my place to blast out to the world? I can do that at home, I can post my own thoughts in a diary right now. I'm not very motivated to put a post out there even though there's things I'd like to discuss. -P47a

CONCLUSION AND NEXT STEPS

Respondents in both the survey and interviews affirmed that the most significant drawback in their use of social media tools at HP is the relatively low penetration. Although most new communication platforms on the Web are adopted by an early few before reaching a broad demographic of users, not having critical mass is a common barrier to groupware adoption and utility within organizations [3]. Some participants reported feeling disappointed with the low adoption thus far, and many felt that social media tools should be more heavily promoted through official channels.

"I would like to see senior managers adopting these tools. One thing is these are tools that college ages used for communication. When they come to HP, we cannot take their communication channel away. We cannot take away their creativity, which is what we hired them for anyway." -P14a

While mandating social media use through top-down management is unlikely to be effective, or even desirable, it is likely there is value in having managers "lead by example".

Corporations are experimenting with internal blogs, wikis, and social networks, but with less long-term understanding of how their uses might differ from the Web. Motivated by a new cohort of Internet-savvy early adopters entering the workforce, the challenge is understanding how such

platforms *should* be used. In what ways do existing uses on the Web transfer to a corporate setting? Some employees were comfortable navigating these socially-oriented content production spaces, but many were not. Moreover, companies often perpetuate disincentives for employees to want to share information [4].

Our goal is to motivate employees to contribute knowledge and insights, and to better support them in knowing how, when, and where to contribute and access information in order to perform their jobs effectively.

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