Crossing Boundaries: Digital Literacy in Enterprises

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Introduction

New technologies are often embraced by the young, who can sponge up the capabilities and nuances much as they absorb language, culture, and traditional literacies. An earlier generation of students picked up text editing and email, and subsequently brought their skills and knowledge of uses and effective practices into workplaces. Communication technologies particularly appeal to kids, whose primary focus is on building social networks and learning about the world from their peers—and occasionally from elders, especially those who learn to speak the same language.

Cost can be a barrier for the young, but they are motivated to overcome it, sharing systems at schools or libraries, hanging out with more fortunate friends and siblings, and pressuring parents. Mobile phone use progressively reaches younger age groups, even in less prosperous regions. Today, young people lead in the use of text messaging, instant messaging, blogging, and social software in general—MySpace, Facebook, YouTube, Skype, and so on. In doing so, they acquire facility with features of these technologies, understanding of challenges the technologies can and cannot address, problems that use might engender, and social conventions that govern effective use.

As students leave school or university and move into workplaces and other organizations, they carry these skills and knowledge. They can see where these technologies can address problems or improve efficiency. However, most of their new colleagues are unfamiliar with the technologies and skeptical of proposed uses. The older generation has social networks in place, is less focused on informal communication, so will more slowly try new technologies and learn new tricks. So the spread of digital literacy into enterprises is resisted. It comes slowly. But it comes.

In this paper we first illustrate this phenomenon by examining the parallel between the adoption of email and the adoption of messaging twenty years later. We then turn to a third example and our main focus, a case study of blogging in a large high-tech company. Weblogs typify social software empowered by web-based visibility which may move into enterprises more rapidly than previous technologies. Infrastructures are in place, the software is relatively lightweight and inexpensive, and competitive drive for efficiency is stronger in global markets.

Digital Literacies and Enterprises: A Parallel Between Email and Messaging

Email in the 1980s

Today, we take email for granted—it is a mission-critical tool for most enterprises in the developed world and increasingly significant across the planet. Twenty years ago, this was not true. In the 1980s, email was regarded with suspicion by management, even in high tech firms [19]. Popular with students, yes, but would it distract employees from productive work? Even in the 1990s some researchers thought organizations would abandon email once they measured productivity losses [20].

One of us experienced this first-hand. Employed in 1983 at a high-tech firm that had deployed email but did not use it, he was told that email was a way students wasted time, and that to get information from people elsewhere in the organization, he should learn to write formal memos and send them through the management chain.

In the 1980s, disk space was too expensive to save email after it was read. Students learned to use it for informal exchanges, quick questions and answers, based on a conversational model, ignoring typos, sprinkling in strings of exclamation points, question marks, or capitalized words to mimic spoken emphasis. The older generation associated typing with formality and permanent records. Some who began using email treated it like written correspondence, starting each message with "Dear…" and closing with "sincerely" or "yours truly."

Practices, attitudes, and technology changed. More young people entered the work force, where informal social interaction and quick business exchanges are important, after all, and found email a natural medium. The cost of acquiring and maintaining an email system came down. Disk sizes increased, so email could more often be saved. In the 1990s, email attachments first became widely available, allowing the sharing of formal documents, spreadsheets, and slide decks much favored by managers. Accordingly, email became acceptable for more formal correspondence; with greater likelihood of future review, senders felt more accountable for content and form. Strings of exclamation points disappeared. Tools came along to help fix spelling and grammar.

The left column of Table 1 identifies these and other features of email at the time. Some might surprise people today. For example, lacking naming conventions for email addresses or online directories, one could mainly just email friends.

The informality and ephemeral nature of email was a key obstacle to enterprise adoption: Mangers didn't see the value. Individual contributors often have a high need for quick questions and answers and informal discussion. This is why they are typically collocated in groups. They have fewer meetings, so the asynchronous interruptions of email are manageable. Managers and executives rely more heavily on exchanging structured information, spend more time in meetings where interruptions are problematic, and tend to regard informal "chatting" by their employees with suspicion. A balance must be struck, but informal communication is important.

Illustrating this point, in 1983, the head of Xerox PARC said that a company executive had confessed that embarrassment about his spelling kept him from using email and asked whether PARC could develop an automatic email spelling corrector. "We could," John Seely Brown reported telling him, "but we won't. Instead, we'll build a spelling de-corrector!" [4]. He argued that email was and should remain an informal communication medium. A tool that inserted random spelling errors would help keep it informal.

Email in 1983 & *2008*	IM in 2003 & *soon*

• Used mostly by students
  Used by everyone
	• Used mostly by students
	  Use spreading rapidly

• Access limited to friends
  Accessible to everyone
	• Access limited to buddies
	  Pressure to remove limits

• Clients not interoperable
  Complete interoperability
	• Clients not interoperable
	  Pressure for interoperability

• Conversations ephemeral
  Conversations saved
	• Conversations ephemeral
	  Recording is more common

• Attachments not supported
  A major feature today
	• Attachments rarely supported
	  Attachment capability sought

• Chosen for informality
  Became formal
	• Chosen for informality
	  Recording → formality

• Organizational distrust:
  Chit-chat? ROI?
  Mission-critical
	• Organizational distrust:
	  Chit-chat? ROI?
	  Will become essential

Table 1. Characteristics of email and IM at different times.

Messaging in the 2000s

Email did not remain informal, of course. The spelling de-corrector wasn't invented—but instant messaging was! A need persisted for casual channels for casual Q&A, unpolished ideas, exaggeration, sloppiness, letting off steam, gossiping and flirting, without fear that unguarded remarks would return to haunt the sender. Young people lauded IM or text messaging for "not being formal, like email" had become. Just as email was quicker than formal memos, messaging is quicker than email. No one worried about spelling, attachments were rarely supported, one mainly reached buddies, and messages were rarely saved.

Like email before it, messaging was regarded with managerial suspicion. From Gartner, the major consulting firm: "Prediction: IM misuse will threaten user productivity… IM misuse and overload has the potential to be worse than e-mail overload… Enterprises run the risk of turning unmanaged, unsanctioned consumer IM into unmanaged, sanctioned EIM" [12].

This too is changing, more rapidly due in part to the comparatively low cost of messaging. We find that high demand for archiving IM conversations and for sending attachments; formality is likely to increase along with managerial acceptance. Digital literacy will again move from student and consumer spaces into enterprises.

A Case Study of Weblog Use

Next we present a study of emergent blogging practices in a corporate setting. We attended meetings, read email, documents, and weblogs, and interviewed 38 people—bloggers, infrastructure administrators, attorneys, public relations specialists, and executives. We found an experimental, rapidly-evolving terrain marked by growing sophistication about balancing personal, team, and corporate incentives and issues.

Weblogs are used by millions of people. Research is being published on genres of use [13], motivations and expectations [7, 18, 23], and other aspects of what the December, 2004 special issue of *Communications of the ACM* titled "the blogosphere." Most weblogs are written by individuals for friends and family or to inform the public about personal views and observations. These range from diary-style student weblogs to 'A-list' weblogs maintained by political candidates, journalists, pundits and other prominent people on a range of topics.

Most bloggers are in their late teens and early twenties. If history is a guide, they will carry skills and knowledge about weblog capabilities into workplaces. In an earlier era, students adopted line and text editors, forerunners of word processors, at a time when keyboard use was considered blue-collar and was avoided by knowledge workers and managers. Employees who had adopted email as students found that even high tech workplaces were skeptical about its value [19]. More recently, instant messaging followed a remarkably similar path of student adoption, corporate suspicion, and ultimately growing acceptance [16].

Corporate adoption was slow for word processing and email. Word processing did not become widespread until a generation with keyboard skills arrived. In most organizations, email required significant new infrastructure—hardware, software, and administrative support.

Today's emerging technologies will have an easier time. IM clients are easily downloaded. Free or inexpensive web-based weblog technology is available. Costs for organizational hosting remain, but are substantially lower than in the past.
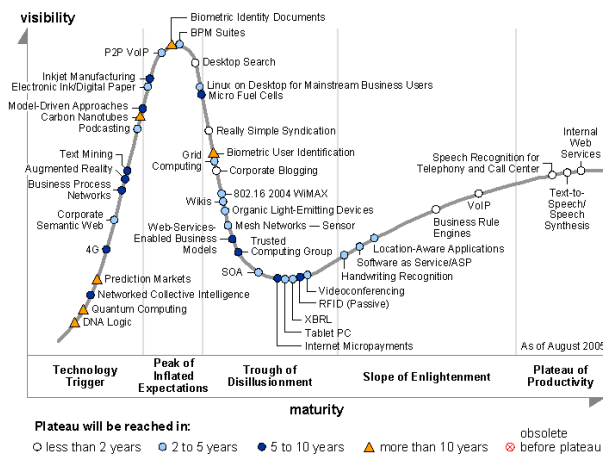
Figure 1. Gartner positions corporate blogging.

How quickly will corporate or employee weblogs take hold? Figure 1 is a mid-2005 Gartner projection [9] that places emerging technologies on a curve that moves from a technology trigger through a "peak of inflated expectations" to a "trough of disillusionment," and then, for those that succeed, to full productive use. Gartner anticipated that corporate blogging would be in productive use within two years.

Employee Weblogs

Some people define a blog as on-line writing designed for a wide public audience. We use the term more inclusively—if an author considers it a blog that suffices—though our focus here is just on blogs that touch on worklife [7]. We use the term 'employee weblog' instead of 'corporate blogging' because the latter suggests action that is authorized, acknowledged, or formally associated with an organization.

Some weblogs focus on personal life and mention work in passing; others focus on work experiences and say little or nothing about personal life. Reflections on work may be general or specific to an author's project or group. Intended audiences vary: friends, acquaintances, fellow employees, people interested in general aspects of worklife such as those found in a novel, colleagues or fellow professionals, customers or partners of the author or employer, or external media interested in the organization.

Because weblogs are often highly visible, easily accessed, and indexed by search engines, their use by employees raises issues for teams and organizations. With a few keystrokes, information traverses the wall separating an organization from the outside world. Planning and social convention go into erecting and maintaining such walls; it can be unsettling to have them so easily crossed. Although in principle not unlike sending an email attachment or newsgroup post, the instantaneous, wide visibility can feel qualitatively different, amplified by ripple effects or information epidemics created by blogger networks [1]. The effect is most strongly felt when readers can identify an author or the author's organization.

For a large company, weblogs present an untested middle ground between public relations handled by professional staff and the usually inconsequential employee discussions of work with family and friends. Even when pitched mainly to family and friends, weblog posts may be indexed by search engines and delivered by watchlists minutes after being written.

People are not careful—in April 2003, one of us chanced upon a weblog, public although written mainly for friends, in which a colleague described actions that were clear grounds for termination. In widely-publicized events, a Google employee was fired for discussing everyday life at work [5], a Microsoft contractor for posting a photograph of a company site [3], and employees at Delta Airlines, ESPN, and Waterstone Books for blog content. (Searching on "fired for blog" yields hundreds of hits.)

At the same time, employee blogging is starting to be seen as a potentially useful communication channel. Zerfaß [24, discussed in 14] describes eight functions of corporate blogs. One is pure public relations, two deliver internal communication—knowledge transfer and contract negotiation—and five focus on market communication: product blogs, service blogs, customer relationship blogs, crisis blogs, and CEO blogs (which we broaden to executive blogs, e.g. [6] and which can also serve an internal communication function).

Accounts of employees blogging openly about work appear regularly (see for example Edward Cone's "Rise of the Blog" [5]). Weblog authors in major technology companies can be found by searching for "(company name) bloggers," where the company name is Amazon, Google, IBM, Microsoft, Sun, and so on. The resulting lists are neither official nor comprehensive, but they reveal that employee blogging is widespread. The growing familiarity

of young people with the form and analyses of its potential [11] motivate a look at early adopter organizations, teams, and individuals.

How do weblog authors balance writing about work and personal life? How do they react to feedback and comments from inside and outside their organizations? How does management deal with shifting external perceptions of the company and its employees? Weblogs could affect legal, public relations, and human resources policies and practices. What are the risks, the possible benefits?

The millions of young people entering organizations will know how to work more effectively and efficiently by applying new technologies, communication skill, and ability to create engaging digital multimedia, much as their predecessors made email and word processing mission-critical tools. Studies of early adoption can contribute to designing these technologies for organizational settings and to guiding organizations in their use.

Study Goals and Method

Our study site was a single site, Microsoft. Reports indicate that even within high-tech companies, weblog use varies considerably. This may reflect differences in size, geographic dispersion, corporate culture, or happenstance. Nevertheless, many individual incentives and experiences, and organizational opportunities and sensitivities, are likely to be common.

The second author, one of about 60,000 Microsoft employees, has created weblogs but was not part of the company's active weblog culture. The first author, a relatively well-known blogger, visited to work on the study.

We set out to explore where, how, and why employees blog; how personal the writing is in work-related weblogs; what happens when blogging becomes a formal work objective; perceptions of the personal and business impacts of blogging; and possible steps to make blogging more effective.

Over ten weeks (July-September 2005) we browsed and read employee weblogs, followed weblog email distribution lists, attended meetings organized by others to discuss weblog issues, read documentation covering weblog guidelines and policies, and interviewed 38 people in the organization, most in person for an hour or more, some by phone. We had access to data from internal surveys that covered weblog awareness, attitudes, and behavior.

We first interviewed employees who had supported, promoted, and authored weblogs, gathering relevant history and identifying significant groups and roles: active bloggers, infrastructure support (e.g., those managing servers) and policy-makers (e.g., attorneys). These people suggested other interview candidates; yet others we found by exploring employee weblogs and contacting authors whose weblogs complemented those in our sample. These included well-known and less well-known bloggers, employees in different roles or located in different countries, those with diverse blogging styles (strictly work-related, mixing work and personal, product blogs, internal weblogs that could be classified as project weblogs [22], and non-English weblogs). Table 1 provides an overview.

Table 1. Interview respondents

	Total	Male	Female	Infrastructure or policy
Bloggers	34	29	5	7

Non-blogger	4	3	1	4
Total	38	32	6	11

Semi-structured interview questions addressed history, perceptions of blogging in the organization, and personal practices emphasizing respondents' knowledge of or involvement in organization-wide blogging processes. Specific questions about events or blog content were based on insights gained from reading their blogs. Over time some emphases shifted. For example, discovery of heavy product weblog activity led to more exploration of that focus.

Virtually everyone we approached agreed to be interviewed and engaged enthusiastically with the research. This may partly reflect the verbal, discursive nature of blogging, but many of our questions clearly resonated with people's perceptions and reflections on this rapidly evolving communication medium.

Results

Our primary focus was on weblog authoring and the authors' views of the readership. After describing the evolution of perceptions and policies around blogging, we present an overview of weblog infrastructure. Then work-related uses of weblogs and their implications are discussed, followed by a case of product weblogs, an active form that illustrates some of the issues and patterns we observed. Finally we discuss personal choices that shape blogging.

Evolving Perceptions and Policies

The first Microsoft bloggers were students with externally hosted weblogs who were hired as interns or employees, starting in 2000 and 2001. Their weblogs attracted little attention. By mid-2002 employees were manually hosting weblogs on company machines and arguing for externally visible weblogs. An internal weblog server, maintained through voluntary efforts, hosted a few dozen weblogs by the end of the year. Late in 2002 a list of employee weblogs, including some hosted externally, was published by someone outside the organization (Mary Jo Foley in *Microsoft Watch*). This helped create a sense of a community engaged in externally visible blogging. The attention led to internal meetings and reflection.

Internal servers are necessary for internally-facing weblogs accessible on an intranet, but not for externally-facing weblogs, which can be hosted on any server. However, by dedicating servers to host external weblogs, a company can facilitate, promote, and possibly monitor activity. A successful grassroots push by passionate employees for such servers gave rise to issues of ownership and appropriate behavior.

By mid-2003, a server hosting externally visible weblogs was operating. Because some managers perceived a benefit in using weblogs to communicate with customers, this server had formal budget support.

The wisdom of letting employees blog was actively debated by those aware of these efforts. Early bloggers felt that legal and public relations representatives wanted to shut them down. In an open internal panel discussion in June 2003, a legal representative benignly encouraged bloggers uncertain about the wisdom of publishing particular content to seek guidance. Four months later, however, a contractor was dismissed for what many considered a relatively minor disclosure in a blog. Many in the weblog community had made similar disclosures, so there was

great concern. The resulting discussions among bloggers, human resources, legal, and public relations were seen as producing healthy mutual education and clarification of policy.

We interviewed two senior attorneys charged with considering weblog activity. They noted that long-standing policies covering email and newsgroup posting applied to weblogs. They recounted examples of employees saying unwise things in public weblogs—often humorous in retrospect—but noted that similar incidents occur in other media. The attorneys appreciated that employee weblogs enabled the company to very rapidly counter misinformation in press coverage, and had even assigned a law student intern to research the benefits and drawbacks of initiating a public weblog focused on legal issues.

The attorneys noted that Bill Gates and Steve Ballmer had spoken positively in public about weblogs. A senior vice president began blogging in May 2003. Not all executives showed the same level of enthusiasm, but by the summer of 2005 the climate had shifted. The attorneys suggested that an event like that of two years earlier would not lead to dismissal today.

Guidelines for weblog practice had occasionally been circulated. People were sensitive over how to characterize them. Repeatedly we were told "the policy is that there is no policy," or "the policy is 'be smart.'" Some worried that even these would lead to the charge "You have instituted a blogging policy!" The attorneys backed a mild "be smart" policy, while noting pointedly that other policies covering the disclosure of proprietary information applied in this medium.

Public relations staff are potentially affected in two ways: weblogs can create problems for them to handle, and weblog success could undermine their role. Indeed, we were told that some managers were considering diverting some publicity funds into hiring a blogger.

Blogger concern that PR would be antagonistic was not unreasonable. It was company policy to bring in PR when interfacing with external media. This was not applied to online newsgroup participation, but weblogs are more likely to be noticed by external media and disrupt carefully timed media campaigns.

In an interview, a senior manager in the public relations group demonstrated a very sophisticated understanding of weblogs. She saw them as a channel that would affect but not supplant other channels, bringing benefits and risks. Her job was to understand and shape effective practices in a shifting terrain. Complex issues of control would no doubt arise, but she saw that the clock would not be turned back.

We interviewed two vice presidents of product development. One, unabashedly enthusiastic, had hired a well-known blogger. He argued that the company had much to gain from being seen as open and transparent. The other vice president was skeptical. He had concerns about self-appointed spokespeople for a project or for the entire company. Although perceived to be antagonistic by bloggers with whom we spoke, during the course of our study he initiated a blog himself, with a focus on recruiting. He also supported the initiation of a product blog in his organization. He realized that weblogs must be credible and relatively informal, but stressed strategic planning, with careful consideration of consequences, including possible effects on team members should one person become well known based on the group's work.

Weblog Infrastructure

A complete overview of employee blogging was impossible. Company-hosted server weblogs were visible, but were only a fraction of the activity. The server administrators estimated two to three thousand bloggers in the company, but an internal survey put the number at over seven thousand. This imprecision is understandable: employees are not obliged to use official company servers, to report that they are starting a weblog, or to identify themselves or their affiliation. Drawing on data from different sources, we were content with identifying major weblog categories and estimating their numbers when possible.

Internally hosted weblogs include approximately 800 on a central server with an unknown number of self-hosted weblogs on other intranet servers. At Microsoft, external customer-oriented weblogs are perceived to be the principal value of the medium, with skepticism toward internal weblogs—"there is not clear business purpose for it"—which are therefore not supported formally, the server maintained by volunteers and intermittently down (a new server was donated by unhappy users to solve this problem).

An index of internal weblogs is consulted in intranet searches, making it a good tool "to add to that index." But they are only accessible when an employee is on the corporate network, which obstructs access to one's own internal weblog while mobile.

Weblogs hosted on *external official servers* are publicly accessible, but can only be created by employees. Servers run by two corporate groups hosted over 2000 weblogs; several regional servers host weblogs authored in local languages, creating a local faces for an international company.

Company-supported external servers include those available to the general public but supported by Microsoft, specifically weblogs that are part of the company community initiatives and the MSN Spaces consumer blogging platform. These are intended to provide blogging space for non-employees, but nothing prevents employees from using them.

Finally, *other external servers*—public blogging platforms and self-hosted servers—have no Microsoft connection or dependencies.

Internally there are two email lists dedicated to blogging issues and some document repositories, although the latter originated in different and are not easily found (some respondents were unaware of them).

Work-related uses of weblogs

From the interviews came three broad categories of weblog use: direct communication with others, showing a human side of the company, and documenting and organizing work.

Many described blogging as a way to *share their passion for their work and to communicate directly with others inside and outside the organization*. Often, people who design and develop a product have unique information but are separated from customers and users by intermediaries in sales, marketing, and field support, and by the time to reach market. Writing formal articles that could be published on the company web site was not appealing to our informants, due to the time and rounds of reviewing required to publish via official channels, and the lack of visibility or feedback associated with such materials.

In contrast, a weblog is an easy way to provide information, share tips, and engage in direct interaction with peers outside the organization or with consumers of one's work. One respondent noted, "we were trying to ship something and [in my role] I have no external exposure to people… so [starting a weblog] was partly to talk about it with outsiders." The visibility of blogs via search engines ensures that posts are relatively easy to discover. Another respondent received permission to publish internal FAQ materials in his weblog to benefit external readers.

Most bloggers found it gratifying to inform or help others, to learn about the destiny of their work in the "real world," or to become visible as an expert in a specific area. Company encouragement to interact with customers and engage with communities provided a supportive atmosphere and eliminated potential barriers, but did not seem to directly induce blogging. As one person put it, "blogging doesn't come out of fear, it's about passion."

As employees of a company that can seem impersonal to those outside, many described a desire to *show the human side of the company* (see [15] for an indication that weblogs can be effective in this respect). They wanted to demonstrate that people in the organization care and are passionate about their work. They could recount stories behind products to help people understand why particular choices were made and share details of daily routines to give outsiders a sense of the context of their work. One respondent said, "I'm tired of being called evil." Bloggers also felt they could respond in crises with greater credibility based on a history of objectively sharing useful information.

Where the company's primary language is not spoken, this was stressed. Writing in local languages enables greater connection with those communities. Some country-specific blog servers were set up.

Humanizing the company in the eyes of potential employees was also emphasized. Three informants (two HR employees, one vice president) consciously crafted weblogs for recruiting. Their weblogs told everyday work stories for different roles in the company, provided insight into selection or promotion procedures, and shared tips and tricks. These authors felt the weblogs had measurable impact on recruitment. Other people reported new hires who had applied to a group after reading a group member's weblog.

Some employees used a weblog both to communicate with others and as a space to *document and organize their work* or draft ideas. Several described their weblog as a personal archive enhanced by feedback from readers; "either I could have written that down it as an internal note and just kept that or now it's out there on internet, so I can find it more easily and also get hints from folks." A few people mentioned that they enjoy writing; two had aspirations to write a book based on weblog entries. Several internal weblogs, including one by a team, were used to document and share work in progress with others.

That weblog content can have long-term value for an individual is seen in this comment on future access to an internally-hosted, externally-visible weblog; "if I leave the company they say it could be archived, but you will not be able to update it […] if they said they would delete it, I'd be thinking why am I blogging here and not externally… and grab my old content."

Bloggers who do not mention documentation as a major motivation sometimes use old entries in drafting more formal documents, or save time answering a frequently asked question by sending a link to a blog entry. Several people indicated that they could avoid 'spamming' others with experiences and ideas by placing them in an easily-accessible weblog post.

Implications: Finding and Being Found

In employee weblogs, ideas that were previously unarticulated or hidden in personal archives become visible, interlinked, and searchable. Collectively, this produces a wealth of information about products, practices, tips and tricks. Many respondents reported time saved by blogging: re-using entries, quickly helping others or learning, getting answers to questions, receiving feedback on ideas, finding people inside or outside the company with similar interests or needs.

A few bloggers mentioned that posting to their external weblog helped them connect serendipitously to a person or relevant information inside the organisation. One noted that an idea posted to a weblog resulted in a prototype developed in another part of the organisation. He wrote, "I've never met Lee or had any agreements with anyone that he would do this. Nor would I ever have been able to send mail to the right group of interested people that might be able to spend the time building a prototype. I simply blogged my idea, the idea found the right people, and we've made a bunch of progress that will help ensure the right feature is delivered to our users."

A weblog also gives visibility to its author, whose expertise can be exposed beyond his nearest circle of colleagues. Our informants told us about invitations to publish articles or speak at events as a result of blogging. Several reported that their job responsibilities evolved as their interests were exposed: "[After reading my weblog my manager said] if you are so externally focused, you can be our community lead… now I'm a community lead… I enjoy it." Some bloggers noted that being recognised as an expert gave them greater confidence in their career prospects.

Externally-visible blogging provides publicity that a role and position would not normally entail. Some bloggers acquired more negotiating power or security as people realised that making them uncomfortable or dismissing them could have repercussions with customers or partners. Blogging externally was also seen as a way of helping to accelerate internal change: suggestions made in public may get more attention than those delivered internally. Also, customer feedback can confirm ideas, giving a proposal more validity.

Of course, these power shifts can lead to tension, so visibility can be a mixed blessing. Some bloggers dislike the limelight and experience or worry about tensions within their teams when readers credit them for a team effort: "You are not trying to expose yourself or to be a star". Also, becoming a contact point for customers raises expectations for blog coverage and the blogger becomes a focal point for questions and suggestions. Bloggers with large audiences complained of e-mail overload and discussed preventive measures. Some felt they were doing other people's jobs on top of their own.

The Case of Product Blogs

This section focuses on a specific type of employee weblog, strongly associated with a specific product in the eyes of readers. We distinguish two types of product weblogs: those intentionally focused on a product from the beginning, and emergent, de facto product weblogs. A product weblog can provide a product team with an unmediated way to engage customers, to learn about their experiences, and to reveal human faces behind the product.

Intentional product weblogs focus less on individual personalities; they provide informal views and timely information behind specific products and engage with customers who use them. They supplement rather than replace formal PR and marketing, providing stories about the decisions that shaped the product, time-sensitive information that would take too long to publish through formal channels, and tips and tricks.

For readers, such a product weblog can be a single place to get news about a product and to communicate directly with people behind it. It feels more official than a personal employee weblog. This can yield a bigger readership and greater impact, but has risks as well. With a product blog written by a team, more is at stake: Readers' expectations about content quality and regularity are higher than for a personal blog. The authority of a product blog increases the potential impact of a mistake; if the weblog creates news it can engender a PR crisis. One respondent noted that PR specialists responsible for a product asked his team not to blog on Fridays: "you gonna impact their lives [if an emergency arises over a weekend]."

Most product weblogs authored by our respondents were team endeavors, although one person might lead the effort and exhort other team members to blog. In all but one team product blogs, entries appear with an author name, showing the personality and style of each team member and ensuring personal accountability. Some respondents considered this a critical aspect of team blogs and complained that their weblog technology did not support including author as metadata for searching or filtering.

Given expectations of a topical focus and stronger ties with an official product or company image, product weblogs generally include some constraints on content or style. Personal entries were considered less appropriate in this context, but no one indicated that was a strict rule; in fact, one noted, "we didn't get killed for personal stuff [on the product blog]."

Every intentional product weblog we saw had an editorial process. The specifics varied greatly. Some product teams collected and reviewed ideas or drafts via a group mailing list, document server, or in meetings. In some cases agreement of all team members, including marketing representatives, was required to post. In others, reviews were only used to get opinions about questionable content. Reviews were variously used to insure regularity of postings, obtain consensus between personal opinions and overall team perspectives, and to block information with high risk of misinterpretation or misuse by the external audience.

Editorial processes can reduce risk and increase uniformity, but of course they can have negative impacts as well. Review and negotiation take time—in some cases up to a couple weeks—which reduces the immediacy that is integral to blogging, making it more like other forms of corporate web publishing. Review can reduce the informality and the motivation of individual contributors; one respondent mentioned the "pain of being edited by your colleagues." Some contributors to a product blog write even more about the product in their own work-related weblogs, where they have more freedom and flexibility. One noted, "the problem with team blogs: because everyone can contribute, doesn't mean they will." On the other hand, blogging together lowers the pressure on any one person to provide interesting material regularly and reduces the time required of a solo weblog author; some team bloggers definitely appreciated that.

Believing that group posting and an editorial process can kill the personality and immediacy that appeal to potential readers, some bloggers are extremely critical of team product blogs; "my feeling is that people don't like

team blogs as much as personal blogs… [Other company] blog feels like a press-release." It is unclear why team product blogs are perceived that way. It may be due less to the group authorship per se than to the editorial process it often implies, and to self-editing of style and content to avoid possible negative impact.

An alternative form of blogging that has similarly strong ties to a product is a *de facto product weblog*. De facto product weblogs are created as personal weblogs, often written outside job responsibilities, and not as the focal point for product information. The product focus emerges as their authors' post on themes they are knowledgeable and passionate about. Their authors feel less pressure to conform to product group norms or official PR initiatives. However, some become strongly affiliated with a particular product or initiative in the eyes of external readers, giving rise to the same risks and potential business benefits as intentional product weblogs.

Management may see a de facto product weblog as a potential communication channel to reach customers or an external community. One person in a public relations role (a blogger himself) described a complex situation that arose with a de facto product blogger: "we wanted to get into the community and asked him to post something… ask him to post our press-releases, so enthusiast groups can get them… media alerts… what's happening officially… it is not the best thing for him or us […] don't want him to be the official spokesperson… for him it's also putting official information and he feels less free to comment on that… also some of his readers would suspect that his weblog is written by a corporate guy – 'you are not one of us, but one of them.'" He then described his plan to start a 'proper' weblog for the product that would provide a more person-independent, objective space for informal communication and engagement with customers.

Another potential problem arises when an author of a de facto product weblog moves to another position in the company, leaving old interests behind and wishing to shift weblog posts to describe new job challenges. For the audience it could be an abrupt loss of a space to receive information and to engage with others, and this could have negative consequences for the company. To transfer the weblog to another author wouldn't work here: The weblog wasn't intentionally created to have a product-focused purpose; it is centered on personal interests and strongly tied to its author.

Personal choices

Blogging is still an area of experimentation at Microsoft and it is generally up to a given individual to decide if, when, why and how to blog. We identified several choices a blogger who works for the company had to make.

Starting a weblog. Most people we spoke with began on their own initiative, with little prior discussion. "I asked only my direct manager and it was on purpose: I knew if I would ring my manager's manager or manager of my manager's manager it would become impossible." Many bloggers cited experimentation, examples set by colleagues or pressure from others as reasons for starting a weblog.

Almost everyone mentioned a work-related rationale for blogging. Personal reasons for starting to blog were central in the case of strictly personal weblogs – "it proved to be a good communication tool with my friends" – and also appear in weblogs that include work-related content. With the latter, personal motivations accompanied work-related goals; "I like the conversations that come out of blogging: it's challenging."

Where to blog? We expected to find that the main decision when starting a weblog would be whether to blog internally or externally. However, more fine-grained choices and a broad variety of guiding criteria emerged, usually influenced by the goals for blogging, such as:

- *Access and visibility.* Who should be able to access the content? How easy will it be to find? Internal weblogs are good for sharing non-public information, but have less exposure than an external weblog. Weblogs on official Microsoft servers are easily found by someone seeking Microsoft news; blogs on other external servers can be lost amid the many millions of other bloggers;

- *Affiliation with the company.* The choice of server can be influenced by a desire to have or avoid an explicit company affiliation. For some, their connection to Microsoft is a matter of credibility or pride; for others it adversely affects their image, leading them to be judged as Microsoft employees rather than for their expertise;

- *Freedom and control over technology or content.* Company-supported servers are an easy way to start blogging, but a self-hosted server (internal or external) can provide flexibility in configuring a weblog to fit one's preferences. Self-hosted or third-party platforms also raise fewer questions over the nature or ownership of the content.

What (not) to blog about? With no formal policy, the lack of explicit rules creates a risk: each blogger is ultimately responsible for 'being smart'. Most weblogs we examined contain a disclaimer indicating that the content reflected the personal views of the author and should not be attributed to the company. But when an author openly associates with the company, the fine line between the personal and the corporate is blurred. Even weblogs primarily or exclusively focused on work are likely to have a personal touch, presenting information in an informal style and from an individual perspective. Many employees add personal comments to work-related notes or publish entries about hobbies, events in their private lives or opinions on non-work matters – suggesting that their readers 'come to read the person, not the blog'.

Attitudes differ toward the propriety or desirability of mixing personal and work content. Some bloggers have two weblogs, one for work and one for personal content. Others share no private information online. Others see no problem with mixing work and private issues in a weblog that identifies their affiliation and often stress the role of personal information in providing context for work-related posts. Many struggle to identify what can be blogged about work, finding a grey area between the clearly confidential and the clearly publishable. In one group, bloggers praised clear communication from their management that identified 'three topics you are not supposed to blog about'. This provided clear boundaries while not curtailing the freedom to blog.

For most it takes time, trial-and-error experimentation and reflection on internal and external feedback, to find what is comfortable for blogger, readers, and the company, trying to balance conflicting interests; one blogger said, "I fight with myself as a writer on behalf of Microsoft." Some respondents started conservatively and grew less so over time. Many described specific incidents that showed where to set boundaries. One mentioned intentionally writing a series of provocative posts to test the limits. Bloggers were challenged about posts by others, including people at higher levels. The relationship with the immediate manager was often identified as critical, in getting a

blessing to start a weblog, negotiating acceptable uses, or seeking support in cases of unexpected negative effects of a post.

Blogging as part of a job. Given the time demands and work-related implications, how was blogging integrated into the day job for which a person was responsible? For a few, blogging eventually became an official part of their job. Indeed, in one case 15 hours per week was formally devoted to blogging. However, in most instances it is less dramatic. Some bloggers justified spending some work hours reading or writing weblogs by showing the impact on other responsibilities.

Others did not make blogging a formal objective, but raised it during annual performance appraisals as an extra work-related activity: "It's not explicitly part of my objectives, it's a means to an end," said one. A few bloggers strove for a complete separation of job responsibilities and blogging, even for primarily work-related blogs, to maximise their flexibility and freedom in posting.

Content ownership. Despite the disclaimers, staff blogging about work, especially those using official servers, conceded that the company ultimately owned the content. This is consistent with the contracts governing the company's intellectual property rights, usually interpreted as applying to hardware, software and branding, but technically covering writing as well.

However, not everyone agreed that all weblog content should be company property, but no one recounted a case where an ownership dispute had arisen, although their expressions of concern revealed uncertainty about the matter. For many, blogging involves personal initiative, investment and time, and could have long-term value in creating and maintaining an online reputation or as a record of thoughts and experiences. This played a role in the discussions about content ownership. Many would concede the right and need for the company to have access to the content of blogs closely related to specific products, yet want to ensure their own access should they leave the company: "If they said they would delete it, I'd be thinking why am I blogging here [on company server] and not externally?" Some took the extreme position of wanting sole ownership of their words and hosted their blogs externally, blogged on their own time, or both.

Conclusions

Be cautious in drawing conclusions from a study of a single company. The weblog community we observed is young and the environment is a strong shaping influence. In addition, with the technology and its adoption at an early point, new products will change the infrastructure. Features of weblogs are being integrated into diverse applications. Nevertheless, this study identifies issues that can guide organizations in making effective use of social software.

For an employee, a weblog can provide a space to share passion for work, to document and organize ideas and work practices, to find and engage others inside and outside the organization. For an employer, this can result in accelerated information flow, increased productivity, enhanced reputation and customer engagement, but also in greater dependence on personalities, less control over the corporate face to the outside world, and possible challenges to hierarchy.

A weblog, often started by personal initiative and supported by personal investment, can become an organizational asset, raising expectations and introducing risks. These considerations may motivate engagement with blogging, perhaps by providing support to maximize positive effects or by setting boundaries to minimize risks. Still, for many employees, blogging feels outside the corporate sphere of influence, even when clearly work-related. As a result, it is an arena for negotiation and interplay between personal and corporate interests.

We found disagreement as to what kinds of blogging made sense, and what kinds of content were appropriate. At our study site, key players in legal, public relations, and management were initially more negative than they were after more experience with the medium. If pushed to specify limits up front, an organization could be too restrictive and lose potential benefits. At the same time, bloggers should constantly consider limits and consequences—personal judgment and responsibility are inescapable elements of the activity.

Employers and employees who take up blogging should anticipate that their practices will evolve. Their responsibilities may shift. Team relationships are affected. Experience and feedback change a blog; relatively formal blogs add personal touches, relatively personal blogs can take on project responsibilities. Issues arise when bloggers change jobs.

We expected perceptions and experiences around weblogs in Microsoft to be more confused than they were. We were surprised by the evidence of rapid evolution and growing sophistication. Perspectives had not converged; indeed, rapid changes in blogging practices raised new issues. A wide range of independent experiments were underway, accompanied by reflection and a keen sense of what was at stake. Blogging is about observing, reflecting, and commenting on surrounding activities, so perhaps this should not have been surprising.

Where encouraged, employee weblogs will change how work is organized and how authority is distributed by fostering direct communication across organizational boundaries, from employee to customer, and across group boundaries within organizations. The policy of "be smart" is telling; it becomes more important to have employees who are broadly informed. As we learn to exploit powerful new digital technologies, we may see significant changes in organizational forms; weblogs may be a manifestation of such change.

Passion-driven, decentralized, bridging personal and work contexts, employee blogging represent only one of the Web 2.0 technologies currently entering enterprises after adoption by consumers. Although our study does not provide all the answers, it indicates changes in workplace literacies that those technologies are likely to bring.

Personal passions have a legitimate place at work. Personal stories and voices yield trusted relations. People are more likely to believe another human being than an organisation or a computer. Showing emotions, telling personal stories, being passionate in hierarchical environments could be a challenge, but it is becoming an essential part of work.

Transparency is here to stay. Weblogs provide a visible, often public, trace of one expertise, actions and mistakes: what is written may stay 'out there' forever and be searched, aggregated, transformed and linked back to the author. When there is no way to escape one's past, it is essential to learn how to make mistakes in public and how to handle them gracefully.

Visibility can turn into information overload. Being visible as a weblog author might extend one's reach, but may also bring an unexpected explosion in communication as a result. With its low threshold for online publishing,

blogging brings into public spaces ideas and stories previously hidden in private collections. Some of them are relevant and reliable, but most extraneous, incomplete and not interesting, so important signals might be easily lost in the increased "noise." Complaints of information overload through blogging are the symptoms of navigating in the world of information abundance with habits and strategies learnt at times of information scarcity.

Everyday routines matter. Unless one has nothing else to do, blogging survives only if integrated into the everyday world. Starting a blog is easy, continuing requires more—embedding the activity into one's information routines, work processes and interpersonal practices.

Microactions aggregate. Blogging is about microcontent—publishing small pieces of thought and commentary, anchored with permalinks and carried away by feeds. However, the real value is not at the post level—ecosystems between blog posts and connections between their authors are more interesting and more important. Counting and measuring visible traces is tempting, but knowledge, reputation, and relations can escape rankings.

Authority becomes fluid. Formal hierarchies are still there, but blogging provides alternative routes of influence. In the end, individuals make judgments, take risks, and take responsibility.

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