

# DISCOVERING THE ICEBERG OF KNOWLEDGE WORK: A WEBLOG CASE

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## Session I-2

### Abstract

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**Keywords:** knowledge work, personal networking, personal knowledge management, weblogs.

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## 1 Introduction

"If we build it, will they come?" This common problem of technology adoption by the end-user challenges knowledge management initiatives as well. Knowledge management practice, once technology-driven, is starting to recognise that having knowledge bases or virtual community tools is not enough to ensure active participation and knowledge sharing.

Unlike physical work, knowledge work is unique and difficult to standardise; knowledge workers are autonomous and almost impossible to control (Drucker, 1999). Thus, the success of many knowledge management initiatives depends on knowledge workers willingness to adopt new practices and tools. Answering "what is in it for me?" questions of employees is critical for any KM implementation. This is not easy: we know well why a company needs knowledge management, but in many cases we are unable to answer how it will support the work of an individual knowledge worker.

In this paper we argue that existing knowledge work models depict only the "tip" of knowledge work iceberg and need improvements in order to be useful for supporting knowledge workers. This paper proposes a framework for analysing knowledge work based on insights about knowledge worker activities in a specific case: use of *weblogs* for professional purposes.

Simply explained weblogs are personal "diary-like-format" websites enabled by easy-to-use tools and open for everyone to read. Though the average public weblog is a personal diary, mostly of interest for its author's family and friends (Henning, 2003), there is a growing cluster of weblogs used by professionals as personal knowledge repositories, learning journals or networking instruments. Used in this context, weblogs address interests and needs of their authors, but they also create an opportunity for others to benefit from having emergent ideas and personal notes captured in public spaces instead of private collections. And, more important for a researcher, the public nature of a weblog provides a visible trace of knowledge worker activities.

We start this paper by describing the challenges of studying how companies can support knowledge workers, given the discretionary and invisible nature of knowledge work. Then we introduce weblogs and draw on the results of a weblog adoption study to examine how they are used to support knowledge work. We argue that weblogs provide a good case for understanding usually hidden activities of a knowledge worker and use our results to propose a framework for analysing knowledge work.

## **2 Knowledge work: discretionary and invisible**

One of the challenges for modern organisation is to shift from methods of Scientific Management, which has evolved from Taylor's studies on improving productivity of manual workers, to new management approaches that address increasingly knowledge-intensive nature of work (Drucker, 1999). Knowledge management as a field is both the product and the driving force of this change: improving knowledge worker productivity is argued to be one of core KM goals (Wijg, 2002; Schütt P., 2003).

However much of knowledge management research and practice is focused on a corporate level: organisations think and act in terms of interventions supporting specific knowledge activities of many employees. In corporate settings "no one seems to own the problem of knowledge-worker performance" (Davenport, Thomas, & Cantrell, 2002): 25), resulting in the lack of attention to improving productivity of an individual knowledge worker:

When it comes to knowledge workers, we pretty much hire smart people and leave them alone. No quality measurements, no Six Sigma, no reengineering. We haven't formally examined the flow of work, we have no benchmarks, and there is no accountability for the cost and time these activities consume. As a result, we have little sense of whether they could do better. (Davenport, 2003)

Although this statement may sound extreme, we agree that in the knowledge management field there has been a lack of focus on improving the productivity of the individual knowledge worker. We believe this is a result of specific characteristics of knowledge work: it is discretionary and invisible.

Knowledge workers are best described as *investors* (Stewart, 1998; Davenport, 1999; Kelloway & Barling, 2000): they make choices of when and how much of their knowledge and energy to invest in a company that doesn't have much direct control over these investments. Taking this standpoint leads to defining *knowledge work as discretionary behaviour*, as a system of activities that knowledge workers opt to do, and managing knowledge work as establishing conditions that increase the likelihood of making the "right" choices:

As such knowledge work is understood to comprise the creation of knowledge, the application of knowledge, the transmission of knowledge, and the acquisition of knowledge. Each of the activities is seen as discretionary behavior. Employees are likely to engage in knowledge work to the extent that they have the (a) ability, (b) motivation, and (c) opportunity to do so. The task of managing knowledge work is focused on establishing these conditions. Organizational characteristics such as transformational leadership, job design, social interaction and organizational culture are identified as potential predictors of ability, motivation and opportunity (Kelloway et al., 2000: 287).

Similar frameworks of factors and conditions that empower and guide knowledge work are being developed by other authors as well (e.g. Keursten, Kessels, & Kwakman, 2003; Schütt P., 2003). However, there is still no agreed definition of knowledge work as a system of activities of a person.

There is a striking similarity between studies on different aspects of knowledge work: unlike physical work, it is mostly *invisible*. The "iceberg" metaphor is used in studies of informal and incidental learning to describe the 20/80 ratio between learning in formal settings (e.g. taking courses) and learning informally that most people do not even consider as learning (Center for Workforce Development, 1998). Personal relations are vital for sharing knowledge (Cross, Parker, Prusak, & Borgatti, 2001), but the time spent building and maintaining personal networks is hardly taken into account (Nardi, Whittaker, & Schwarz, 2003). In most of the cases one can observe only products of knowledge work – reports, designs, decisions made – but not the process of creating them (Drucker, 1999; McGee, 2002). Much of the work of finding, interpreting and connecting relevant pieces of information, negotiating meanings and eliciting

knowledge in conversations with others, creating new ideas and using them to come up with a final product, happens in the head of a knowledge worker or as part of communication or doing work.

The invisible nature of knowledge work makes it difficult to recognise and measure. Along with this, outcomes of knowledge work are often unique (Drucker, 1999), thus making establishing benchmarks even more challenging task.

We believe that the difficulties of measuring knowledge work and the lack of control over it explain the lack of attention to productivity of the individual knowledge worker: interventions supporting specific knowledge activities of many employees are more visible, easier to measure and to manage. These interventions often bring valuable results, but many of them do not fit the work practices of knowledge workers and are perceived as an overhead instead of being an integral part of work (Davenport & Glaser, 2002).

In this paper we suggest overcoming difficulties of studying knowledge work by analysing it a weblog case. We choose this case because weblogs make many of usually hidden knowledge work activities visible in a public space and allow studying individuals without losing sight of their social context. In the following sections we introduce weblogs as a phenomenon, illustrate and discuss weblogs usage by knowledge workers and examine what studying weblogs adds to our understanding of knowledge work.

### **3 Weblogs**

*Weblogs* (also addressed as *blogs*) are not easy to define in one sentence. Most authors agree that a weblog is "a frequently updated website consisting of dated entries arranged in reverse chronological order" (Walker, 2003), but then discuss specific characteristics that make weblogs different from other forms of webpublishing (e.g. Winer, 2003). The difficulty of defining weblogs has something to do with the fact that their authors have different goals, uses, or writing styles with only one thing in common: format. Said more poetically, "Weblogs simply provide the framework, as haiku imposes order of words" (Hourihan, 2002).

The average *weblog tool* works as a lightweight content management system. It keeps a database of text entries and other pieces of content (such as picture or sound files), supports adding and editing of items, and simplifies publishing to the Web, by processing content through a set of pre-defined templates holding all the formatting information for a particular visual presentation. While simple weblog systems only

provide a chronological organisation of posts, the more advanced systems also support clustering entries into categories or labelling them with additional meta-data entries such as keywords and topics.

Many weblogging tools do not only generate HTML pages, but can also encode their published content in a XML-based format known as RSS (Really Simple Syndication). These RSS encoded content feeds can be harvested by so called *news aggregators* (also known as RSS readers). These programs automatically check subscribed weblog feeds for updates and display their content. In this way readers can easily keep up with many weblogs (and an increasing number of other websites), without navigating the actual web pages. In fact, this convenient method for monitoring large numbers of sources has led to a widespread use of RSS feed readers among weblog authors. In many cases weblogs without RSS encoded feeds have a hard time attracting regular readers.

However what makes weblogs different is not the publication of content per-se, but the personalities behind them. Weblogs are increasingly becoming *on-line identities* of their authors. Most weblogs are not formal and faceless corporate sites or news sources: they are authored by individuals (known as webloggers or bloggers), and perceived as "unedited personal voices" (Winer, 2003).

Often weblogs are written as a narration of their authors' thinking and feeling (Walker, 2003; Herring, Scheidt, Bonus, & Wright, 2004), allowing smaller or larger parts of a weblog author's personality and values to emerge between her words. Even weblogs that are not more than collections of links and short commentaries say something about their authors. The selected content a weblog author finds interesting enough to link to and to comment on, functions as a public record of personal interest and engagement.

At first glance, weblogs are low-threshold tools to publish on-line, empowering individual expression in public. However, one thing that excites so many bloggers lays hidden from the occasional reader: blogging is learning about oneself and developing connections with others.

#### **4 Insights of weblogs use for knowledge work**

Though only a few systematic collections of observational data are available today (e.g. Mortensen & Walker, 2002; Aïmeur, Brassard, & Paquet, 2003; Efimova, 2003), there appear to be some strong indicators of a growing cluster of public weblogs used by professionals as personal knowledge repositories, learning journals or networking

instruments. One can find, for example, *medlogs* (weblogs about health and medicine, <http://www.medlogs.com>), *blawgs* (law-related weblogs, <http://www.blawg.org>), *edublogs* (educational weblogs, <http://www.ebn.weblogger.com>) or *knowledge management weblogs* (<http://www.voght.com/cgi-bin/pywiki?KmBlogger>). A closer look at these examples reveals that weblogs can serve as an instrument for understanding activities of their authors. In this section we explore weblog uses for knowledge work by presenting and discussing findings from a weblog adoption study.

#### 4.1 Findings from a weblog adoption study

To illustrate how weblogs can support knowledge work we use insights of a study focused on understanding factors supporting weblog adoption (Efimova, 2003). During this study, 62 bloggers and 20 people without a weblog answered qualitative on-line questionnaire about their motivation to have a weblog, as well as context, technology and personal characteristics that support blogging. The sample was not representative enough to draw conclusion about weblogs in general, but it suits well to explore different uses of weblogs.

Below we summarise the study findings related to questions about motivation and values of blogging, job characteristics that support blogging and situations that prompt writing to a weblog. These findings are illustrated with selected quotes from the study respondents (spelling, grammar and punctuation are preserved).

Respondents were asked about their *motivation to start a weblog* (Table 1). Many of them started blogging out of curiosity, for experimentation or being encouraged by others, but some stated explicitly that they wanted to organise ideas and references or improve learning. Starting a weblog was also driven by an interest in communication and sharing or a need for expressing and publishing ideas.

**Table 1.** Examples of responses about motivation to start a weblog

##### **Why did you start your weblog? What motivated you?**

*Respondent A:* Out of curiosity. Saw some people do it, wanted to experience for myself if it was worthwhile. And because it seemed like I had been blogging for years on paper: taking notes, jotting down ideas. It seemed an interesting experiment to try that on line.

*Respondent B:* I was sharing my knowledge in various mailing-lists. I thought by publishing them at one place things have more value for me

*Respondent C:* I had recently completed a Masters degree and wanted/needed an outlet for continued thinking.

*Respondent D:* To be able to share ideas. Also, writing helps to improve ideas and thinking as you have to articulate yourself to others.

These results are interesting to compare with the responses of bloggers about *added values of blogging discovered after starting it* (Table 2). Some bloggers discover that blogging helps improving their knowledge and skills (e.g. technology-related skills, writing, discipline and being organised, ability to pose questions, ability to distinguish between public and private). Others find out that serendipity, feedback and dialogues in the blogosphere contribute to sharing, evaluating and developing their ideas. Many respondents observe social effects of blogging: amplified networking and relation building, finding people with similar interests or new friends, and community-forming. Some note that after starting blogging they found an audience and an easy way to promote their ideas.

**Table 2.** Examples of responses about weblogging values discovered after starting a weblog

**What other added values of blogging did you discover after starting it (if any)?**

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*Respondent A:* 1) That ideas can turn into new relationships and social networks. 2) That I get praise for writing good stuff, or criticism for bad stuff, even if I myself wasn't sure about its worth: it's a sort of test, am I crazy, or is this a good thing. Especially when there are no others in your own organization working in the same field. 3) The dialogues that come from posting.

*Respondent E:* The increasing network of easily reachable "intelligent" people

*Respondent F:* The main thing that has surprised has been the depth of the information that is available in the individual blogs.

*Respondent G:* thinking in public is valuable and something I am learning; also the ability to distinguish between different public and private scopes

*Respondent H:* networking, building personal credibility, getting in touch with friends I had lost contact with, learning a lot of new stuff through reading other blogs

*Respondent I:* meeting new people with similar (and also different opinions... being open and learning to know myself better while others get to know me too

The answers about *job characteristics that support blogging* (Table 3) fall into three groups. First, weblogging fits well with jobs focused on technology or weblogs: IT-related professions or any other job that requires studying or using technology in general or weblogs in particular for learning, collaboration or knowledge sharing. Second, weblogs are supported well by jobs that require trends watching, collecting and aggregating information, making notes, writing. They also fit well if there is a need for collaboration, sharing and feedback, or need for exposure and "selling ideas". Finally, blogging fits working environments that provide "right" conditions for it: freedom to communicate, time, Internet connection.



**Table 3.** Examples of responses about job characteristics that support blogging

**Which characteristics of your job support blogging?**

*Respondent D:* Collaboration with others and the sharing of ideas. Also, writing and documentation is a regular part of my job. As an academic I have to write journal articles so writing for a wider audience in my weblog is a natural extension of that.

*Respondent F:* I am a collector of ideas and information and have found that a byproduct of blogging is a roadmap of my interests.

*Respondent H:* Knowledge-driven job; blogging has become "backup brain" for job- as well as personally-interesting links and notes. Posting job-related questions on the blog has yielded valuable feedback from readers

*Respondent J:* I spend a lot of time on research, so my blogging is partly recording opinions/information/insights/sites I find interesting and partly using the act of writing the blog to clarify my thinking on various topics.

We also asked bloggers about *situations that prompt writing* in their weblog. The motivation behind posting on a topic may include:

- capturing and organising information and ideas for oneself or others,
- clarifying ideas or concepts, articulating ideas to understand them,
- contributing to an idea development by commenting or by connecting different ideas,
- starting a conversation, looking for a feedback.

These examples suggest that weblogs can support many activities of a knowledge worker. Of course, they are only an illustration: we do not imply that all weblogs are used this way or that weblogs allow observing all the components of knowledge work. However, the image of knowledge work that weblogs highlight is much richer than existing models and can serve as a starting point for in-depth exploration. In the following sections we reflect on the examples presented above by exploring a weblogger activities along two lines: developing ideas and developing relations with others.

#### **4.2 Developing ideas**

Although developed as tools for easy webpublishing, weblogging tools are flexible enough to be used in a variety of ways. They proved to serve as an instrument for filtering and organising information, articulating, developing and sharing ideas (for example, use of weblogs in research, Mortensen et al., 2002). Below we build on existing research and weblog discussions to propose a number of bloggers' activities related to developing ideas.

**Finding ideas/information.** Reading weblogs of others with similar interests helps to filter ideas or discover pointers to interesting resources: a link from a weblog serves as a personal recommendation and it is usually accompanied by a comment that helps to identify its quality. This peer-filtering mechanism of weblogs is often compared with references in scholarly publications (Mortensen et al., 2002; Paquet, 2003). Through this mechanism avid weblog authors can become “human information routers” for like-minded readers.

**Capturing, articulating and organising ideas.** As one-user content management systems, weblogs are used for capturing ideas from outside world for future use (e.g. quotations, links) and for articulating one’s own ideas in order to remember them. Weblogging tools increasingly offer opportunities for categorisation, allowing retrieval of old posts via topic-based archives as well as chronological ones. Although far from providing full functionality, weblogs are used as personal information management tools, for storing and organising notes for further retrieval.

**Initiating and following conversations.** Weblogs are used to develop ideas not only at a personal level, but also through dialogues with others. Most of weblogging tools provide commenting functionalities, so each weblog post can serve as a trigger for a conversation with regular readers of a weblog or random web surfers.

A more sophisticated conversational form is *distributed weblog conversations*. Rather than commenting directly, many weblog authors prefer to comment within their own blogs while providing a link to the original post. This results in discussions scattered across many weblogs, also known as “*blogologues*” or “*blogosphere stories*” (Jenkins, 2003). These distributed conversations are open-ended and relatively easy to join at any point in time since many participants try to summarise earlier arguments to make their own posts meaningful. On the other hand, being distributed between different weblogs they may be difficult to follow for outsiders, and weblog authors themselves need a variety of tracking tools to trace them.

#### **4.3 Developing relations with others**

Weblog conversations do not only support development of ideas, but also *developing relations* with others. Although linking to others is explicit, the process of developing relations via a weblog is easier to experience than to observe as an outsider. This probably explains why in the study described above only a few respondents started a

weblog to develop new connections, while many noticed social effects of blogging after writing for a time.

Specific characteristics of weblog communities still have to be identified, but a limited number of existing studies confirm that weblogs do support community forming (Asyilkina, 2003; Nilsson, 2003), establishing relations across communities (Aïmeur et al., 2003), and conversational learning (Fiedler, 2003). A growing popularity of on-line networking tools (see boyd, 2003, for an example) provoked a round of discussions between bloggers about weblogs as a networking instrument (for example, Mehta, 2004). Below we build on existing research and weblog discussions to propose a number of bloggers' activities related to developing relations with others.

**Self-representation and leaving traces.** As we already noted, in many cases weblogs serve as on-line identities for their authors. Professional weblogs are often compared with or used as "living" business cards. Probably the best-known example of it is a story of Robert Scoble, who got hired by Microsoft as a result of writing a weblog:

“My boss said this was the first time he hired somebody and knew exactly what he was getting,” he [Robert Scoble] said. “People know everything about me from my blog. It's like a business card. Even if you're a plumber and you do a Weblog, I imagine you're going to get a lot of different job offers.” (Ankeny, 2003)

Being aware of another person's knowledge is a prerequisite for effective knowledge sharing (Cross et al., 2001). Although not every weblog author receives job offers, weblog posts provide visible traces of a blogger expertise, thus serving as a starting point for initiating knowledge-sharing connections with others.

**Finding experts and cross-disciplinary connections.** Many weblogs display *blogrolls*, lists of weblogs that their authors read regularly. Through these lists occasional readers can find trusted "sources" that influence the thinking and writing of a particular weblog author. These links are not only referrals, but also *signs of value* and *personal recommendation*, enabling others to find relevant contacts faster. As personal interests of a blogger can vary a lot, these recommendations are not limited to one specific area. Compared to closed professional associations, publications or conferences, open nature of weblogs supports establishing *cross-disciplinary connections* (Aïmeur et al., 2003) that fuel development of innovative ideas.

**Developing, maintaining and activating connections with others.** Personal relations do need constant work (netWORK, "an ongoing process of keeping a

personal network in good repair" according to Nardi et al., 2003: 9). Regular reading of particular weblogs often functions as a seed for developing more personal relations between weblog authors. Next to supporting establishing new connections, weblogs help to maintain the existing ones: regular reading of a weblog supports continuous awareness of someone's thinking and progress, allowing them to "stay on the radar". They also lower the burden of finding someone's contact information, as most of weblog authors provide various means (e.g. e-mail address) to contact them.

#### **4.4 Weblogs as a looking glass**

Weblogs are envisioned as a prototype technology for enabling grass-root knowledge management (Nichani & Rajamanickam, 2001; Bausch, Haughey, & Hourihan, 2002; Röhl, 2003), triggering pilots and experimentation in companies. The results of our study support these suggestions and indicate that studying weblog uses in corporate KM is a valuable research direction. However, in this paper we would like to take another angle and suggest using weblogs as a looking glass to explore needs and activities of a knowledge worker.

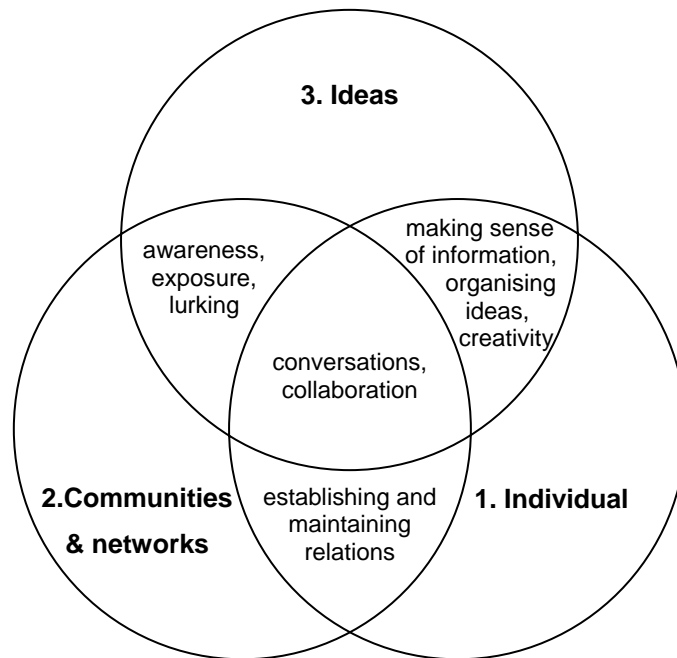
The activities described above are not unique to those writing or reading weblogs. Filtering relevant information, organising one's ideas, and connecting with others to develop them further are increasingly becoming a part of any knowledge-intensive work. These examples, as well as literature on personal effectiveness (e.g. Covey, 1990), personal networking (e.g. Cope, 2002), personal information management (e.g. Landsdale, 1988) or personal knowledge management (e.g. Barth, 2000), suggest that knowledge work is a more complex phenomenon than described by existing frameworks focused on creation – acquisition – application – transmission of knowledge.

Weblogs provide an interesting case for understanding knowledge workers and the complexity of their work. Their public nature provides researchers with unique opportunities for observing usually invisible trails of developing ideas and relations with others, and for getting insights about interplays between and individual and communities in this process.

### **5 Emerging dimensions of knowledge work**

Examples of weblog uses by knowledge workers illustrate the complexity of knowledge work: finding, interpreting and connecting pieces of information, articulating ideas, engaging in conversations that lead to elaborating ideas and developing relations with others, keeping track of personal notes, conversations and contacts... In this section

we introduce a framework that connects these activities into a whole (see Fig.1). A knowledge worker's activities could be mapped across three dimensions, as interactions of an individual (1) with other people (2) and ideas (3).



**Fig.1.** Framework for knowledge work analysis

New ideas and insights are developed in a social context of a community of practice (Lave & Wenger, 1991; Brown & Duguid, 1996), hence *conversations and collaboration* is in the middle of the framework, at the intersection of all three dimensions. However, this is not enough. Conversations require *awareness* of a specific domain, players and social norms, enabling *relations* and unique *personal contribution* to be brought in.

Participating in conversations in any community of practice requires learning to move from being an outsider through participation at the periphery to a more active position (*legitimate peripheral participation*, according to Lave et al., 1991). Awareness, as a starting point of this process, comes through *exposure* to ideas of others and *lurking* (observing without active participation) to learn about professional language and social norms (MacDonald et al., 2004). Research on lurking suggests that it is a more common activity than active participation in conversations (Nonnecke & Preece, 2003), but its effects are only starting to be explored.

From one side, effective knowledge development is enabled by trust and shared understanding between people involved. For an individual this means a need to *establish and maintain personal network* (Nardi et al., 2003), to keep track of contacts

and conversations (Whittaker, Jones, & Terveen, 2002), and to make choices which communities to join.

From another side, developing knowledge requires *filtering* vast amounts of information, making sense of it, *connecting* different bits and pieces to come up with new ideas. In this process physical and digital artefacts play an important role (Kidd, 1994; Sellen & Harper, 2001; Halverson, 2004), so knowledge workers are faced with a need for *personal information management* to organise their paper and digital archives, e-mails or bookmark collections.

The framework we propose illustrates a need for multidisciplinary approach for understanding knowledge workers: existing fields address one or two dimensions and rarely take into account their connection with the rest. For example, research on knowledge sharing in communities of practice often does not address needs and activities of individual knowledge worker, while studies on personal information management do not take into account social context of knowledge creation.

Existing fields focus on specific activities, leaving the problem of integrating them in a coherent whole to knowledge workers themselves. We believe that more promising approach would be in understanding what a knowledge worker, as an actor, needs and how processes and technologies could be modified and aligned to improve his productivity. This position is partly addressed in a current discourse around personal knowledge management (for example, discussion of Association of Knowledge Work members on Inter-Personal Knowledge Management, <http://www.kwork.org/Stars/gurteen.html>), but needs further development.

## **6 Conclusions**

In this paper we argue that existing knowledge work models depict only the "tip" of knowledge work iceberg and need improvements in order to be useful for supporting knowledge workers. Knowledge work is discretionary and invisible, thus difficult to understand and to support. We propose overcoming these difficulties by analysing knowledge worker activities in a specific case: use of weblogs for professional purposes. After introducing weblogs we present the results the weblog adoption study illustrating and discussing weblog use to support knowledge work.

Presented examples of weblogs use to support knowledge work do not necessary illustrate all possible knowledge worker activities, but they highlight more complex image of knowledge work than existing models. We use results of our exploration to propose a framework for analysing knowledge work. This framework maps a

knowledge worker's activities across three dimensions: (1) individual, (2) communities & networks, and (3) ideas. We argue that existing research addresses one or two dimensions and rarely take into account their connection with the rest and stress the need for multidisciplinary approach to studying knowledge work.

The proposed knowledge work framework can serve as a starting point for further research on knowledge work. Along with developing and validating the framework in a context of weblog use, its use in other contexts should be studied. Finally, the use of weblogs as a research instrument in other contexts may be a promising research direction.

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