

Beyond personal webpublishing: An exploratory study of conversational blogging practices

Lilia Efimova
Telematica Instituut
The Netherlands
lilia.efimova@telin.nl

Aldo de Moor
Tilburg University
The Netherlands
ademoor@uvt.nl

Abstract

Although initially developed as low-threshold tools to publish on-line, weblogs increasingly appear to facilitate conversations. The objective of this study is to identify practices of conversational blogging. This paper presents results of an exploratory qualitative analysis of a weblog-mediated conversation case, focusing on participation rhythm, media choices and specific linking practices. Based on our findings we propose attributes of conversational blogging: linking as conversational glue, tangential conversations and interplays between conversation with self and conversations with others. Finally, future research directions are discussed.

1. Introduction

Weblogs are perceived as low-threshold tools to publish on-line, empowering individual expression in public. Although a weblog is a personal writing space, its public nature suggest a need to communicate [1] and invites feedback.

A weblog conversation emerges when a weblog post triggers feedback from others, either using comments to the original post or replies in other weblogs linking to it. While using comments is not much different from any forum discussion, the practice of replying in another weblog creates complexity as the conversation spreads over multiple weblogs. Given that every weblog has its own audience, the conversation becomes exposed to new readers, who are often not aware of earlier part of the discussion and have a limited ability of tracing it.

Although some studies found limited interactivity of weblogs [2], [3], complex weblog conversations do occur [4], [5]. Given that there are better tools to discuss a topic it is interesting to know why weblog conversations develop: what participants' needs do they serve and how?

This paper presents the results of an exploratory qualitative analysis of a weblog-mediated conversation case. The objective of this study was to identify practices of conversational blogging by analysing how weblogs are used in such conversations.

In the following sections we first provide a definition of weblog conversations, discuss why taking into account their socio-technical context is important to understand

their dynamics, and describe our research approach for this study. We then present and discuss our weblog conversation case, focusing on participation rhythm, media choices and specific linking practices. Based on our findings we propose attributes of conversational blogging: linking as a conversational glue, tangential conversations and the interplay between conversations with self and with others. Finally, future research directions are discussed.

2. Researching weblog conversations

In this section, we introduce the concept of weblog conversations, their socio-technical context, and our research approach.

2.1. Weblog conversations

A conversation can be defined as a series of interrelated communicative acts, aimed at defining and reaching a goal [6]. Note that these goals may not always be intended, but can at least be construed from an analytical perspective.

We define a weblog conversation as a series of interrelated (interlinked) weblog posts and comments on a specific topic, usually not planned, but emerging spontaneously. This definition is very close to what Jenkins [4] defines as a *blogosphere story*. Although most of the blogosphere stories analysed by Jenkins are reactions to a media publication or external event, we are more interested in conversations that emerge as a result of an initial weblog post.

There are some specific problems of weblog conversations that those mediated by, for instance, a mailing list do not have [5]:

Distributed and fragmented nature. Fragments of conversations are distributed among multiple weblogs. These characteristics are only revealed when one studies an ecosystem of weblogs and not a single weblog.

Lack of bi-directional links. The distributed nature of arguments in a weblog conversation is only part of the problem when one wants to follow it. Another difficulty is a result of the lack of bi-directional connections between posts: in most cases there is a link from a later post pointing to an earlier one, but not vice-versa. This

problem could be solved with the use of *trackbacks* – in the case that both weblogs are trackback-enabled, a symmetrical link is created in the original post – but many popular blogging platforms have adopted trackbacks only recently.

Lack of tracking technologies. As the number of weblog tracking and searching tools is high and constantly growing, it is surprising that there is not one that can be used to fully track weblog conversations. Existing tools allow finding links to a specific post, discover meme epidemics by analysing the spreading pattern of a particular URL [7] or keyword [8], but not tracking a series of arguments connected with links.

For a researcher aiming to study weblog conversations there is another challenge: discovering the ones to be included in the analysis: which topics are relevant?

2.2. Socio-technical context of weblog conversations

The public nature of weblogs makes them an easy target for a researcher, providing a record of personal interest and engagement in the posts as well as links that indicate influences and relations with other participants. Although analysing the content of weblogs and links between them is a valid research approach that has generated fruitful results, in this section we would like to point to the invisible side of blogging, discussing how conversational practices are influenced by their socio-technical context.

Weblog technologies include such applications as the *weblogs* themselves, *comments* facilities that permit readers to engage in a discussion about particular blog entries, *trackback* facilities to find out about when blog entries have been referred to, and *news aggregators* (also known as RSS readers) that collect entries from webloggers and news sources, creating an easy way to get an overview as all updated entries are shown in one place. In addition weblogging is also supported by many specific *searching and tracking tools*. For example, there are tools for searching content on single weblogs, groups of weblogs, or across all weblogs. Other tools allow for the tracking of hyperlinks between weblogs, and even identify clusters of weblogs based on their hyperlink connections or content similarity.

Not all of these technologies are available or even known by all bloggers, and learning about them is a gradual process (e.g. see [9] on differences of awareness and use of RSS readers between bloggers and would-be bloggers). Using (or not) a particular technology influences the content of a weblog and, as a result, the social dynamics around it.

For example, for a full analysis of weblog conversations, an understanding of relations between

participants and their awareness of each other contributions is important. One of the ways to identify if there is a connection between two weblog authors would be to analyse *blogrolls* (links to other blogs one reads) or link sidebars. While this approach can yield valuable results (e.g. [11]) there are other ways to detect relations between bloggers.

First, links in a weblog text could indicate a connection between bloggers as well and including them into the analysis gives totally different dynamics [10]. Second, not all weblogs have blogrolls or sidebar links (only 28,5% according to Herring et al. [11]). Does this indicate that these weblog authors do not have relations with others or do not read other weblogs? Not necessarily. Bloggers could be connected via their RSS reading lists, as the following quote¹ illustrates:

Seems to me that blogrolls made sense in a time before RSS aggregators. If you use other blogs and sites as triggers for your own writing, then a blogroll serves as a useful way to organize your surfing. When you shift to an aggregator driven strategy, your subscriptions file becomes the equivalent of your blogroll. Of course, your subscriptions file is invisible while your blogroll was public.

In many cases, links are not just pointers to additional information, but also "currency of the web" [12] that helps to improve visibility of a page being linked to or, especially in a context of weblogs, signs of value and personal recommendation (see [13] for the analogy between linking in weblogs and references in scholarly publications). Different interpretations of the social meaning of such links may create different dynamics of interactions between bloggers.

Another example of subtle dependencies between (often invisible) uses of specific tools and blogging dynamics includes awareness of a blogger about incoming links. For example, if weblogs linking to each other have *trackbacks* enabled, bloggers and their readers have a visible trace of connection between posts. Although there are many tools for finding incoming links, being aware of them and using them can change participation. Finally, using a news aggregator to monitor weblogs of others changes the awareness about their contribution as well²:

There seem to be an idea in the air which I absolutely don't like: aggregate feeds only once per day.

Quite often weblogs host conversations and in conversations timing is important. I want to know asap when people I often have conversations with post something to their blog, it can't wait 24 hours because it would make my reply old (let alone further replies). I also use my aggregator to be up-to-date with my colleagues, and even in this case I need to be updated frequently.

In short, when a weblog conversation develops, it is not embedded in a neutral space, but is distributed between personal spaces of weblog authors, connected by the

¹ <http://www.mcgeesmusings.net/2003/10/04.html#a3711>

² <http://radio.weblogs.com/0001011/2004/09/08.html#a8200>

complex social fabric of relations, and often by use of additional technologies. Thus understanding weblog conversations requires taking into account their socio-technical context, which is difficult to capture by analysing only weblog content.

2.3. Research approach

Although many publications on weblogs suggest that they are interactive and heavily hyperlinked (see, for example, [14], some weblog studies found limited interactivity of weblogs [2]; [3]. This could be explained by the uneven character of the blogosphere, with local-scale community structures that exhibit periods of heavy linking to each other [15]. It seems that weblog conversations are more likely to develop within specific communities and that characteristics of these communities influence the frequency and manner of exchanges [11]. Such differences between practices in blogging communities as well as differences in characteristics of technologies bloggers use suggest a need for research that explores dynamics and conversational patterns of blogging within specific weblog communities [16].

Although there is a variety of methods (e.g. interviews) that could be employed for collecting data about contextual factors, in this study this was done by analysing a weblog conversation in a weblog community where the first author participates. At the time of the conversation, the author was not yet planning the study. While this still raises a question of bias, this approach allowed her to use her personal knowledge about community dynamics and norms for the analysis. To reduce bias, these interpretations were validated by asking the participants to provide feedback on this paper.

In addition, analysing one's own weblog community allows one to select a rich weblog conversation that would be difficult to find and demarcate otherwise, given the lack of weblog conversation tracking tools. We consider the conversation to be quite typical, at least within the community described: it starts without an explicit intention to discuss the topic, develops in multiple directions according to the interests of people engaged, brings about insights on the topic and some joint actions, and then dies.

Based on the discussion in the previous section, two socio-technical context elements of blog conversations were focused on in our analysis:

(1) Rhythm and media choices: activity levels over time, uses of posts vs. comments to add a contribution, indications of other media used.

(2) Linking practices: linking and quoting, linking in summaries, links to one's own weblog.

Rhythm refers to changes in activity levels over time, which seems to be at least partially caused by media choices participants make.

All context elements seem to be important determinants of the form, content, and effect of weblog conversations, and are likely to be different across communities.

3. Case: The Actionable Sense Conversation

In this section, we present a case of a weblog conversation that has developed in a cluster of weblogs focusing on knowledge management and social software. It became known by its participants as the "actionable sense" conversation.

3.1. Participants

The conversation we present has developed in a cluster of weblogs focusing on knowledge management and social software. The case represents a dense social network of weblog authors, and may be classified as a community, given the many bonds and interactions between participants. Many of them are aware of each other: they appear on several KM weblog lists, they link to each other in blogrolls or they are connected by RSS subscriptions. Participants engage in multiple weblog conversations over time, pick-up ideas and practices from each other (e.g. adoption of Skype, Voice-over-IP tool), and employ a variety of media to communicate. In most of cases, first contacts were established via weblogs and some participants have even met face-to-face on various occasions.

The participants could be characterised as early adopters of technology: most weblogs use stand-alone weblog tools (Movable Type, Radio Userland, WordPress) that require skills for installation and maintenance; they employ trackbacks, ping aggregation services (e.g. topicsExchange channels), use news aggregators to read weblogs via their RSS feeds and constantly experiment with new blogging tools and add-ons.

Next to sharing interests in knowledge management and social software, many of the participants explore the use of weblogs in a business context, so their communication involves more meta-blogging - experimentation with weblogs and reflections on blogging experiences - than could be observed in many other groups.

3.2. The Actionable Sense Conversation

The conversation started from an initial post by the first author, in which she raised the problem that writing to a weblog makes visible one's "loose ends", ideas that do not turn into actions³.

³ <http://blog.mathemagenic.com/2003/11/23.html#a849>

It was picked up by another blogger, Ton, who further elaborated on the idea, thinking aloud on how shared understanding and joint thinking in a weblog community could turn into joint actions⁴.

This post resonated with many others in community, leading to what became known between its participants as the "actionable sense" conversation. This conversation has led to a variety of outcomes: exploration of relations between blogging, networking and joint actions; emergence of a network of bloggers interested in pursuing joint projects; developing an organisational model that could guide ad-hoc joint work; and the creation of a private wiki space and mailing list for further discussion.

3.3. Data collection

For the purpose of this study we focused only on the weblog-mediated part of the whole conversation (however we have included references to other media in weblog posts into our analysis, see 4.2.2). To trace the conversation, a combination of methods was used. The first week of the conversation was analysed in an earlier study [5], so it provided an initial set of posts for further analysis. Then outgoing and incoming links for each post were collected (15 May 2004). Outgoing links indicated earlier posts, while incoming links revealed follow-up posts. In order to discover incoming links, trackbacks were analysed.

The content of newly discovered posts was examined to identify if they focussed on the topic of the conversation (turning online connections between bloggers into real-life joint action). Those that did were further examined for outgoing and incoming links to reveal new candidates. The exploration was stopped when incoming and outgoing links did not lead to any new posts on the topic any more.

In the next stage, weblog posts and comments to them were mapped to provide an overview of postings by author over time. Further qualitative analysis was carried out to identify conversational practices of the participants.

As one authors of this paper is an active blogger and has participated in the conversation, her personal knowledge about context of the discussion and use of weblog technologies was used to interpret the data. The participants of the conversation were provided with a copy of the paper and have had an opportunity to comment on it. Permissions for using real names and direct links to weblog posts were obtained from the participants.

The weblog-mediated part of the conversation analysed took place between November 23, 2003 and January 18, 2004 and included 30 weblog posts (including 4 identified as off-topic) and 59 comments in two languages (English and German).

In total 32 people participated: 11 used both posts in their own weblogs and comments in weblogs of others, 6 posted to their weblog only, and 15 used only comments. Between 15 people who used comments, 10 provided a link to their own weblog; for the other 5 it was not possible to identify if they have a weblog or not.

Figure 1 provides an overview of the conversation (due to the space limits it excludes 12 people who commented only once. Weblog posts are indicated with X (on-topic) and O (off-topic posts; were not examined for further connections), comments to one's own weblog as Y and comments to someone else's weblog as I. The figure illustrates only posts linked to other posts in the conversation; in most cases the participants posted on other topics in between.

Next, the results regarding the socio-technical context of the weblog conversation (rhythm, media choices and linking practices) are presented. In the following text, quotes and discussion of specific weblog posts are accompanied with their URLs, all of which were valid as of June 20, 2004. Quotes include original text and emphasis used in the posts and comments; links are indicated as underlined text. The rest of formatting (e.g. colours) is excluded.

4. Results: socio-technical context

The socio-technical context we studied comprised rhythm (activity levels over time), media choices (post vs. comments and use of other communication media), and linking practices.

4.1. Activity level over time

During the first couple of days an original post by Lilia triggers a few comments (only one is included in Figure 1) and a post by Martin, but none of them generates further discussion. However, once Ton picks it up and reframes the problem, the conversation intensifies quickly.

After several exchanges, the conversation almost stops for a week until Ton posts on December 14. The pause could be explained by the fact that a shared wiki space was established during that week and part of the discussion moved there.

The second part of the conversation is different from the first one. First, not everyone from the first part participates and several new people join in. Second, this part is qualitatively different: most of the posts and comments are reactions to Ton's post describing an idea of organisational structure for an ad-hoc network of bloggers (marked as sub-discussion at Figure 1). Third, it proceeds in two languages, English and German.

These two parts could be treated as two different conversations, however the decision was made to include

⁴ <http://www.zylstra.org/blog/archives/001144.html>

Participant	Lilia	Denh	Martin	Ton	Gary	Dina	John	Jonat	Paul	Stuart	Lee	Julian	Jon	Judith	Taran	Barry	Wolfg	Rober	Spike	Marst
Participant	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
23-nov	X	I																		
24-nov																				
25-nov			O																	
26-nov																				
27-nov	X			X																
28-nov					X	IX	XO													
29-nov		I		XI	Y			I												
30-nov	XY			I	I				X											
01-dec				X	II			I		XI	X									
02-dec				II	I	XX	XI					XY	I							
03-dec										X		Y	OIII	II						
04-dec					Y	I				I		Y								
05-dec	X																			
06-dec	O																			
07-dec*																				
08-dec															I					
09-dec																				
10-dec																				
11-dec																				
12-dec																				
13-dec																O				
14-dec				X																
15-dec				I				XY												
16-dec			X	I											I		X			
17-dec																				
18-dec				I													II	X		
19-dec																				
20-dec																				
21-dec																				
22-dec																				
23-dec																				
24-dec														X						II
25-dec																				
26-dec																				
27-dec					I															
28-dec																				
29-dec																				
30-dec												Y								
31-dec								X												X
01-jan				I																
02-jan																				
03-jan																				
04-jan																				
05-jan																				
06-jan				X								I								
07-jan																				
08-jan																				
09-jan																				
10-jan																				
11-jan																				
12-jan																				
13-jan																				
14-jan																				
15-jan																				
16-jan																				
17-jan																				
18-jan				Y																
19-jan																				


X - weblog post, O - off-topic weblog post,  sub-discussion
 Y - comment in own weblog, I - comment in another weblog * wiki space is started

Figure 1. Activity level over time

both in the analysis as they seem to be connected: several people participate in both; Ton keeps the running title (Actionable sense I, II and III) and refers to e-mail exchanges with Lilia and Marin inspired by one of the earlier posts.

4.2. Media choices

In our analysis of media choices, we distinguish between blog-specific options (posts versus comments) and other media.

4.2.1. Weblog posts vs. comments in other weblogs.

Figure 1. also illustrates different ways of using weblog posts and comments by the participants.

In this conversation, some participants use comments rarely (e.g. Lilia, Dina), while others comment a lot (e.g. Ton, Gary). The choices where to comment are different as well: Julian supports discussion at his own weblog, while Ton comments to posts at weblogs of others.

There are two people (Jonathan and Judith) who first appear commenting in weblogs of others, but later on post to their own weblogs. This indicates their awareness of the conversation even if it is not immediately visible from their weblogs. The post of Judith on December 24⁵ confirms this: she gives an overview of the discussion and links to earlier posts.

There are three cases where participants use comments twice without posting to a weblog (two of them link to their own weblogs, so they had the choice of writing a weblog post). Denham comments twice, but both times to Lilia's posts, Taran comments in two weblogs on different topics, while Marshall posts almost identical comments in two weblogs (alerting the authors and readers about specific meaning of word "actionable" and triggering Ton's post on January 6). Thus, there seems to be a variety in commenting purposes in the sense of either triggering posts in one's own blog (preparing to define one's own individual view), monitoring a particular thread, general conversation, and strengthening the coherence of the conversation.

4.2.2. Use of other communication media. Several weblog posts indicate that the conversation is spanning different media. This post by Stuart provides a good example⁶:

There is a little trepidation when a troupe starts exploring whether it can really collaborate and how it can make money. I was serious about both conversational blogging and jazz communities. I reread and reread new posts from overnight, spent time Skyping with Ton and Dina and then resorting to the phone with Ross Mayfield. In the meantime I've sent out yet more messages spoke to Gary this morning and it continues.

Ross Mayfield made the emerging **Actionable Sense Troupe** a very generous offer yesterday to aid in community building by offering a SocialText workspace⁷ get things started. Having read many thoughtful posts I'm going to start inviting those in that have said they want to participate later today. [...]

Other participants refer to use of other media as well. For example, several of them mention the wiki space, e-mail exchanges, phone conversations, instant messaging or Skype discussions. Dina posts a transcript of an instant

messaging session with Stuart⁸. Lilia, Ton and Martin refer to an e-mail exchange between all of them⁹. This use of different media is not unique for the specific group of bloggers studied (see [3] for similar findings).

4.3. Linking practices

Figure 2. provides an example of links between weblog posts in the conversation. It includes weblog posts between November 23 and December 5 and links between them. In order to simplify the presentation, comments, off-topic weblog posts and links to other weblog posts (one's own or someone else's) are excluded. Even in this simplified form, the figure illustrates the complexity of interconnections between weblog posts.

4.3.1 Linking and quoting. In the conversation that spreads between multiple weblogs, links provide the main connection between different weblog posts.

In most cases, links are used to indicate previous argument(s) that a weblogger refers to in a post. In this case, links lead to a specific post (or a comment section, e.g. post 19 links to comments to post 9). However, post 18 is an exception: while quoting Ton, John and Gary, Stuart refers to their weblog homepages, rather than to specific posts.

Apart from linking to earlier arguments in a conversation, links can play other roles. A weblog post by Jonathan (not included in Figure 2) illustrates this¹⁰:

Following a pointer by Spike Hall, I came upon Making Actionable Sense, Part III. Ton Zijlstra puts forward an interesting model, which he has been discussing via e-mail with Lilia Efimova and Martin Roell. (It resembles some of the conceptualization by Peter Senge of his "Learning Organizations".)

The first link provides a "discovery credit", referring to a post by Spike where Jonathan has discovered a post by Ton, referred to with the second link. Third and fourth links point to homepages of Lilia's and Martin's weblogs, crediting their participation in the discussion. The last link points to an external source that enriches the conversation with Jonathan's own associations.

The participants of this conversation seem to care about crediting others. In most cases, quotes are accompanied by links to an original post. When referring to a post (quoting or just providing a link), most of the participants include a name of a blogger (often only a first name suggesting familiarity; which was also found by [17]). When quoting others the participants use a variety of

⁵ <http://www.meskill.net/archives/000486.html>

⁶ <http://www.henshall.com/blog/archives/000632.html>

⁷ This refers to the private wiki space mentioned earlier

⁸ <http://radio.weblogs.com/0121664/2003/12/02.html#a320>

⁹ <http://blog.mathemagenic.com/2003/12/05.html#a858>,

<http://www.zylstra.org/blog/archives/001161.html> and

http://www.roell.net/weblog/archiv/2003/11/23/unverfolgte_ideen_sicht_bar.shtml respectively

¹⁰ <http://www.jcwinnie.us/MT/archives/000332.html>

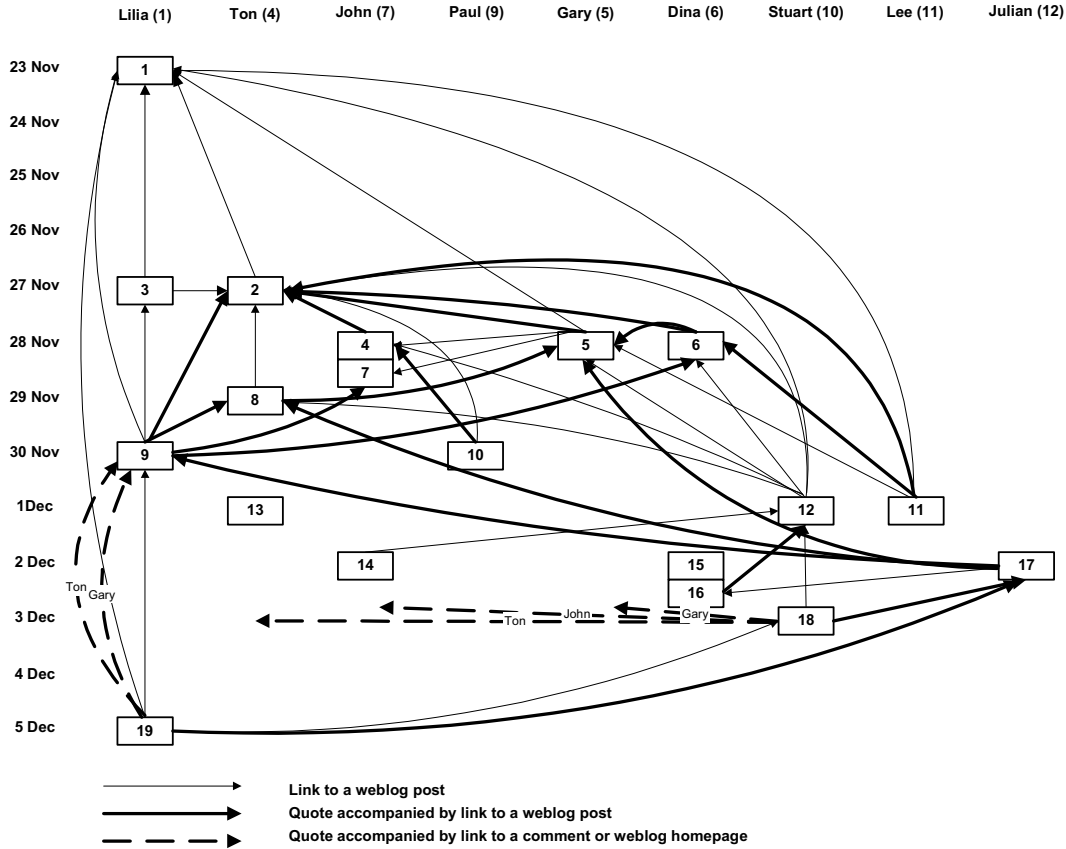


Figure 2. Linking and quoting

ways to distinguish their own text from the text of others: indent, emphasis, colour or other visual cues.

4.3.2. Links in summaries. Compared to conversations mediated by other discussion technologies, such as mailing lists [5], a relatively large number of summaries can be observed in the conversation analysed (e.g. posts 9, 11, 18, 19 on Figure 2). For example, Lee (post 11) provides an overview of the conversation¹¹:

There has been an interesting little conversation going on between people we are connected with recently around the idea of making "actionable sense" through blogging - i.e. how to turn evolving ideas into action.

Ton started it, prompted by Lilia's post about exposing loose ends (of thoughts) through blogging:

[Quotes Ton]

Denham Grey chipped in to suggest using a Wiki as a way of gradually dealing with the loose ends issue.

Then, in the midst of her house moving, Dina Mehta got very excited about Ton's ideas and pointed to an interesting follow-up from Gary Murphy. She also supported the idea that sometimes involving other people in your thinking network can help turn ideas into action:

[Quotes Dina]

This is one of those cases where the form of the conversation matches its content, which suggests that Ton's original suggestion about communities of bloggers working together to turn their ideas into action may actually work.

Summaries can play different roles in a post. The post of Lee is a summary by itself, while, for example, Lilia and Stuart (posts 9 and 12 respectively) give an overview of an earlier discussion before providing their own contribution. However, these overviews look different: Stuart just links to relevant posts¹², while Lilia quotes extensively¹³.

While summarising posts with a collection of links to various pieces of an earlier discussion occurs often, none of the posts links to all earlier arguments. This suggests either a lack of overview of all relevant parts of the conversation or the conscious choice of a weblog author to link only to parts that meaningfully connect with her writing.

4.3.3. Linking to one's own posts. While linking to earlier posts of others seems to be a regular practice, the participants employ different strategies when referring to their own posts that belong to the conversation. For

¹¹ <http://www.headshift.com/archives/000737.cfm>

¹² <http://www.henshall.com/blog/archives/000627.html>

¹³ <http://blog.mathemagenic.com/2003/11/30.html#a855>

example, Lilia links to all previous posts, Dina and John do not link to earlier posts at all, Ton links in one case, but not in another.

While not necessary linking to their earlier posts, several participants use running titles to connect posts together. For example, Dina uses the following titles for her posts: "Blogs – turning ideas into actions", "Turning ideas into actions (2) – Corporate blogging" and "Turning ideas into actions (3) – From conversational blogging to jazz communities" (posts 6, 15 and 16 respectively). While the second post clearly belongs to Dina's view of the conversation, it is not linked to by any other participant. A similar example includes a post by Lilia (3), where she connects it with her other posts during the conversation, but it is not linked to by any other weblog.

5. Conversational blogging

Having given a rich description of (part of) the socio-technical context, we can now use these factors to characterise the case conversation itself. Phenomena we observed are linking as a conversational glue, tangential conversations, and conversations with self versus others.

5.1. Linking as a conversational glue

Although several studies suggest limited interactivity of weblogs (e.g. [2]; [3]), our case illustrates that weblogs could serve as a true conversation tool: supporting fast and meaningful reactions, exchange of multiple perspectives and joint development of ideas. Contrary to a random weblog (e.g. [2]), in the case one can observe multiple comments, frequent linking and even summaries of earlier discussion. Moreover, the participants of the case take effort to attribute contributions of others and clearly distinguish them from their own perspectives.

However, although all participants have used weblogs as a conversational tool, their conversational practices differ. Example are the frequency of choosing to comment in other weblogs vs. writing to one's own weblog, quoting vs. linking, different ways of organising own contributions (linking to own posts and running titles).

As the conversation is distributed across many weblogs, the participants of the conversation employ a variety of tactics to retain an overview: they link and quote others, provide summaries, use trackbacks to find incoming links or even add incoming links manually (see Ton's post on November 27¹⁴). These practices seem to be the "glue" that holds the conversation together: without links and trackbacks posts across weblogs lose their "physical" connection even when they are connected to each other logically. This makes weblog conversations

different from those facilitated by other communication tools: in other cases there is a shared space (e.g. a discussion thread in a forum) that holds the conversation together, while in the case of weblogs it is the effort of the participants that connects different contributions together¹⁵.

While further research is needed to fully understand what are the supportive conditions that turn weblogs from a personal publishing medium into conversational tool, our study indicated that subtle practices of blogging mediated by specific technologies (e.g. trackbacks and news aggregators) are important factors to take into account.

5.2. Tangential conversations

Another interesting characteristic of weblogs as a conversational tool is their potential to support tangential conversations. By this we mean conversations that touch, but move in a different direction. In the case analysed, several levels of tangential conversations are observed. First, next to the "global" conversation between different weblogs, many of them host "local" conversations supported by comments to specific posts. Second, the conversation seems to branch into subtopics that are discussed simultaneously. Third, there are language-specific conversations (English and German in our case). Fourth, "conversations with others" is accompanied by "conversations with self" that organise thinking of a single weblog author (see following section). Finally, the conversation we analysed is not limited to using weblogs as the only tool to support it: the participants employ a variety of other media to communicate in parallel to their discussion in weblogs.

Compared to the "tree" structure of conversations facilitated by other (centralized) tools, such as mailing lists, distributed weblog conversations provide an example of a "hypertext" conversation: they can follow multiple paths simultaneously, engaging and connecting different audiences. Studying the tangential nature of weblog conversation as a way to distinguish them from other media and understanding the pragmatic effects of such conversations, would make an interesting research direction. Weblogs as a conversation medium could be particularly interesting in a knowledge management context, as they provide a distributed space for *perspective making* and *perspective taking* [18], thus creating potential for developing innovative ideas [19].

¹⁴ <http://www.zylstra.org/blog/archives/001144.html>

¹⁵ Although putting effort in developing and reinforcing shared practices is observed in case of other media (e.g. Ericsson, 1999) it doesn't go as far as creating a shared communication space by connecting different personal spaces.

5.3. Conversation with self vs. conversation with others

Unlike other tools that support conversations, weblogs provide their authors with a personal space simultaneously with a community space. As a result, at any given time a blogger is involved in two types of conversations: (1) conversations with self and (2) conversations with others [20].

In the simplest case, a weblog post is fully and only embedded into "a conversation with self", a personal narrative used to articulate and to organise one's own thinking. A single blogger could have several of such conversations simultaneously, returning to ideas over time. Next, each of the posts can trigger a conversation with others that can take several rounds of discussions as well.

The choice to comment in either other weblogs or one's own weblog to react on ideas of others is an illustration of the dynamics that emerge from the coexistence of multiple discussion spaces. Commenting in another weblog seems to be the easiest way to contribute to a discussion: it provides an obvious context, immediately visible for others and doesn't require extra effort to provide necessary context and linking in own weblog. However, in many cases the participants choose a more complicated way and react in their own weblogs. A comment of Dina to Ton's post¹⁶ illustrates how commenting inspired her to write a post in her weblog¹⁷:

Saw this post in my news aggregator Ton - and i felt i have to say that i couldn't agree with you more and that i would love to see it happen. I had the very same feeling this evening - amazing synchronicity ! I've only just returned from a meeting with a company that is more 'open' than many others to the idea using social software tools like blogs, both in their intranet and externally. And as i was driving back - i was thinking that how wonderful it would be to be able to brainstorm with other bloggers interested in this area on some of the barriers or stumbling blocks - and work out possible solutions or directions forward. There is much that i can already tap into in terms of the technology involved - but very little that makes me confident about really 'motivating' them to start. Aaaaah - i feel a blog post coming up ... :)

Our case includes other indicators of the role of personal space in a weblog conversation. For example, linking to one's earlier posts or the use of running titles indicates the author's attempt to maintain a personal line of thinking while contributing to the discussion (other ways to organise ideas within a weblog - use of categories or topics - are not included in our analysis). Summaries can serve as another example: adding a new argument, a blogger tries to make it meaningful in both personal and social contexts, by summarizing and connecting to earlier

arguments. The effort a blogger makes to organise his ideas is not unique to this medium. It reflects a broader need for organising personal physical and digital artefacts [21], [22], and contact and conversation management [23], [24].

In sum, a major weblog complexity is that the same tool is used for both managing personal space and for engaging into conversations with others. In spite of the fact that weblogs are often perceived as personal "protected spaces", their authors take into account social consequences and shape their weblog accordingly [3]. For example, the careful attribution of others' contributions may not be needed when writing for oneself, but it plays an important social role in public.

6. Conclusion and further research

Unlike other communication tools, weblogs create an environment for conversations distributed over multiple media spaces, so it is the effort that bloggers take linking to each other that holds a conversation together. Weblog conversations branch into multiple paths and difficult to track and to follow, but they are also not restricted to a specific audience, making serendipitous inclusion of new participants possible. Furthermore, weblog conversations show how bloggers weave personal narratives and discussions with others into a whole.

This paper presents only a single weblog conversation and a partial view on its socio-technical context, so additional studies are needed to find out how far the results can be generalised. The conversation model needs to be extended: more attention should be paid to goals and topic dynamics. Another direction would be to study different weblog conversations in the same community and then compare them with conversational practices in another weblog community. In this context it will be particularly interesting to find out if complex weblog conversations are tied to cases where long-term connections exist in a group of bloggers or if they could also develop in weblogs not connected with a web of social relations between their authors. Another direction would be to compare if specific technologies used by bloggers (especially trackbacks and news aggregators) influence the complexity of weblog conversations.

Given that the participants of the conversations analysed could be described as *lead users* shaping emerging technology and its uses to address their needs [25], the results of this study could indicate future developments of blogging practices and inform further development of blogging tools. Work on developing weblog conversation tracking and/or visualisation tools would be particularly interesting as it could change the dynamics of weblog conversations, making them more

¹⁶ <http://www.zylstra.org/blog/archives/001144.html>

¹⁷ <http://radio.weblogs.com/0121664/2003/11/28.html#a319> Comparing the texts of comment and post reveals how the original comment got integrated into the post.

effective by providing participants with social visualisations [26] of the activities of others.

Acknowledgements

The authors wish to thank the participants, Dina Mehta, Janine Swaak, Edward Faber, Carla Verwijs, Stephanie Hendrick and the anonymous reviewers for their helpful comments.

References

- [1] Mortensen, T., "Dialogue in slow motion: The pleasure or reading and writing across the web," *Keynote at BlogTalk 2.0* Vienna, Austria: 2004.
- [2] Herring, S. C., Scheidt, L. A., Bonus, S., and Wright, E., "Bridging the gap: A genre analysis of weblogs," *Proceedings of the 37th Hawaii International Conference on System Sciences (HICSS'04)* Los Alamitos: IEEE Press, 2004.
- [3] Nardi, B. A., Schiano, D. J., and Gumbrecht, M., "Blogging as social activity, or, would you let 900 million people read your diary?," *Submitted to CSCW 2004* 2004.
- [4] Jenkins, E. "Dynamics of a Blogosphere Story," *Microdoc News* [Online], 20 May 2003. Available: <http://web.archive.org/web/20040203105253/http://microdoc-news.info/home/2003/05/20.html>
- [5] de Moor, A. and Efimova, L., "An argumentation analysis of weblog conversations," *Proceedings of the 9th International Working Conference on the Language-Action Perspective on Communication Modelling, June 2-3, New Brunswick, NJ*. 2004.
- [6] Dietz, J., "Modelling business processes for the purpose of redesign," *Business process re-engineering: Information systems opportunities* North-Holland: 1994, pp. 233-242.
- [7] Adar, E., Zhang, L., Adamic, L. A., and Lukose, R. M. "Implicit structure and the dynamics of blogspace". HP Information Dynamics Lab, 2004. Available: <http://www.hpl.hp.com/research/idl/papers/blogs/blogspace-draft.pdf>
- [8] Glance, N., Hurst, M., and Tomoyioko, T. *BlogPulse: Automated Trend Discovery for Weblogs*. 2004. WWW 2004 Workshop on the Weblogging Ecosystem: Aggregation, Analysis and Dynamics.
- [9] Efimova, L., "Blogs: the stickiness factor," in Burg, T. N. (ed.) *BlogTalks* Vienna, Austria: 2003, pp. 109-125.
- [10] Marlow, C., "Audience, structure and authority in the weblog community," *Presented at the International Communication Association Conference, May, 2004, New Orleans, LA* 2004.
- [11] Herring, S. C., Kouper, I., Paolillo, J. C., Scheidt, L. A., Tyworth, M., Welsch, P., Wright, E., and Yu, N., "Conversations in the blogosphere: An analysis "from the bottom-up"," *Proceedings of the 38th Hawaii International Conference on System Sciences (HICSS'05)* Los Alamitos: IEEE Press, 2005.
- [12] Walker, J., "Links and power: The political economy of linking on the web," *Proceedings of Hypertext 2002* Baltimore: ACM Press, 2002, pp. 78-79.
- [13] Mortensen, T. and Walker, J., "Blogging thoughts: personal publication as an online research tool," in Morrison, A. (ed.) *Researching ICTs in Context. InterMedia report 3/2002* Oslo: 2002, pp. 249-278.
- [14] Blood, R., *The weblog handbook: Practical advice on creating and maintaining your blog* Cambridge: Perseus Publishing, 2002.
- [15] Kumar, R., Novak, J., Raghaven, P., and Tomkins, A., "On the bursty evolution of blogspace," *Proceedings of the twelfth international conference on World Wide Web* Budapest, Hungary: 2003, pp. 568-576.
- [16] Lawley, L. "blog research issues," *Many-to-Many* [Online], 27 Jan 2004. Available: http://www.corante.com/many/archives/2004/06/24/blog_research_issues.php
- [17] Nilsson, S., "The function of language to facilitate and maintain social networks in research weblogs." Umea Universitet, Engelska lingvistik, 2003.
- [18] Boland Jr., R. L. and Tenkasi, R. V., "Perspective making and perspective taking in communities of knowing," *Organization Science*, vol. 6, no. 4, pp. 350-372, 1995.
- [19] Bonifacio, M. and Molani, A., "The richness and diversity in knowledge creation: An interdisciplinary overview," *Journal of Universal Computer Science*, vol. 9, no. 6, 2003.
- [20] Efimova, L., "Discovering the iceberg of knowledge work: A weblog case.," *Proceedings of The Fifth European Conference on Organisational Knowledge, Learning and Capabilities (OKLC 2004), April 2-3, 2004*. 2004.
- [21] Kidd, A., "The marks are on the knowledge worker," *Proceedings of CHI '94* Boston: ACM Press, 1994.
- [22] Sellen, A. J. and Harper, R. H. R., *The myth of the paperless office* The MIT Press, 2001, pp. 242.
- [23] Halverson, C. A., "The value of persistence: A study of the creation, ordering and use of conversation archives by a knowledge worker," *Proceedings of the 37th Annual Hawaii International Conference on System Sciences (HICSS'04)* Los Alamitos: IEEE Press, 2004.
- [24] Whittaker, S., Jones, Q., and Terveen, L., "Managing long term communications: Conversation and contact management," *Proceedings of the 35th Annual Hawaii International Conference on System Sciences (HICSS'02)* Los Alamitos: IEEE Press, 2002.
- [25] von Hippel, E., "Lead users: A source of novel product concepts," *Management Science*, vol. 32, no. 791, pp. 805, 1986.
- [26] Erickson, T., "Designing online collaborative environments: Social visualizations as shared resources," *Proceedings of the 9th International Working Conference on the Language-Action Perspective on Communication Modelling, June 2-3, New Brunswick, NJ*. 2004, pp. 143-158.