



Proceedings of the
2nd International Conference on the
Pragmatic Web

“Building Common Ground on the Web”

Tilburg, The Netherlands, 22–23 October 2007

Editors:

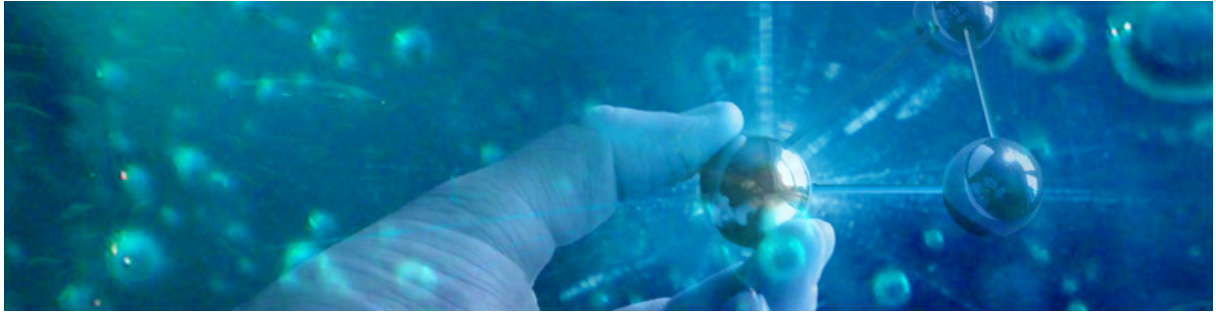
Simon Buckingham Shum, Mikael Lind and Hans Weigand

In Cooperation With



WG8.1 Task Group
on Community
IS Development

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ISBN 978-1-59593-859-6

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Table of contents

Editorial	v
Committees	vi
Conference program	vii
P. J. Ågerfalk & J. Sjöström: <i>Sowing the Seeds of Self: A Socio-Pragmatic Penetration of the Web Artefact</i>	1
M. Aakhus: <i>Exploring the Gap between Interaction and Institutional Orders in Pragmatic Web Design</i>	9
A. Paschke, H. Boley, A. Kozlenkov & B. Craig: <i>Rule Responder: RuleML-Based Agents for Distributed Collaboration on the Pragmatic Web</i> (Invited Paper)	17
F. Yetim: <i>DISCOURSIUM for Cooperative Examination of Information in the Context of the Pragmatic Web</i>	29
M. Hoffmann: <i>Logical Argument Mapping: A Cognitive-Change-based Method for Building Common Ground</i>	41
H. Delugach: <i>An Evaluation of the Pragmatics of Web-based Bug Tracking Tools</i>	49
A. de Moor: <i>A Practical Method for Courseware Evaluation</i>	57
G. Falkman, M. Gustafsson, M. Jontell & O. Torgersson: <i>Towards Pragmatic Patterns for Clinical Knowledge Management</i>	65
P. de Leenheer & S. Christiaens: <i>Mind the Gap! Transcending Contextualized Knowledge Sharing</i>	75
A. de Waard: <i>A Pragmatic Structure for Research Articles</i>	83
J-P. Cahier, L. Zaher & M.I. Zacklad: <i>Information Seeking in a “Socio-Semantic Web” Application</i>	91

From the Conference Chairs

Welcome to Tilburg, and to ICPW 2007!

We're delighted to welcome you to the 2nd *International Conference on the Pragmatic Web*. Following last year's inaugural meeting, it is exciting to see continued interest in this fascinating concept.

At last year's conference, almost every speaker seemed to open with the words "*I'm not sure what the Pragmatic Web is, but here's my take on it...*" Clearly, the concept resonates in different ways with different people, and we will see an equally colourful spectrum of contributions over the next two days.

As an emergent community, clearly we are not running a mega-conference yet—but holding a small, inclusive and welcoming meeting that is not too hasty to reject unfamiliar ideas should be taken as a feature, not a bug! Balancing that, we were of course still concerned to maintain quality, so that engaging with the people and papers repays the effort. Out of the 20 full paper submissions received, the programme before you has 8 full papers, and 2 short papers, mostly reviewed by three or four people, and subsequently revised. We are indebted to our distinguished Programme Committee for their hard work to feed back to authors so constructively.

To this lineup, we are delighted to add our distinguished keynote speaker Wolfgang Prinz whose work in CSCW is well known, plus an invited talk from Adrian Paschke, chair of the 2007 RuleML conference, a potential sister community.

Working in cooperation with ACM SIGWEB (Hypermedia & The Web) and IFIP WG8.1 (Community Information Systems) serves to raise the profile of this event and makes the proceedings more accessible, so our thanks to them for their support.

As a nascent community, our task is to reflect on the shape of the Pragmatic Web vision. For instance:

- Is there a coherent set of themes emerging?
- What are the missing frameworks or foundations?
- Are there key communities whom we should aim to engage?
- How do we take our development to the next level?
- Are you interested to help make this happen?

In addition to the usual discussion time after presentations, the refreshments breaks and conference dinner, we have planned in a plenary session at the end of each day to bring us all together, when we encourage you to share your reflections and perhaps see new connections between the contributions. Fittingly, this will be a conference of conversational sensemaking!

We look forward to engaging with you,

Hans, Mikael & Simon

Hans Weigand

Mikael Lind

Simon Buckingham Shum

Conference co-chairs:

Simon Buckingham Shum, The Open University, UK
Mikael Lind, University College of Borås, Sweden
Hans Weigand, Tilburg University, The Netherlands

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Manuel Zacklad, Univ. de Technologie Troyes, France

**2nd International Conference on the Pragmatic Web
Tilburg University, Oct 22-23, 2007, Room TZ-3 (Building T)**

Programme

Monday 22 Oct

- 09.00 Meet and Greet
- 09.30 **Welcome!**
Hans Weigand, Mikael Lind & Simon Buckingham Shum
- 09.45 **Sowing the Seeds of Self: A Socio-Pragmatic Penetration of the Web Artifact**
Pär Ågerfalk^{1,2}, Jonas Sjöström¹
¹Jönköping International Business School, Sweden
²University of Limerick, Ireland
- 10.30 **Exploring the Gap between Interaction and Institutional Orders in Pragmatic Web Design**
Mark Aakhus
Rutgers University, USA
- 11.15 Refreshments
- 11.45 **Rule Responder: RuleML-Based Agents for Distributed Collaboration on the Pragmatic Web** (Invited Paper)
Adrian Paschke¹, Harold Boley², Alexander Kozlenkov³, Ben Craig⁴
¹RulrML Inc., Canada
²National Research Council, Canada
³Betfair Ltd., London
⁴Univ. of New Brunswick, Canada
- 12.30 Lunch
- 14.00 **Keynote Address**
Wolfgang Prinz
Fraunhofer FIT, Germany
- 15.00 Refreshments
- 15.30 **DISCOURSIUM for Cooperative Examination of Information in the Context of the Pragmatic Web**
Fahri Yetim
Cologne University of Applied Sciences, Germany
- 16.15 **Logical Argument Mapping: A Cognitive-Change-based Method for Building Common Ground** (Short Paper)
Michael Hoffmann
Georgia Institute of Technology, USA
- 16.45 **Plenary Discussion: Reflections on Day 1**
- 17.30 Break
- 19.00 **Conference Dinner**

**2nd International Conference on the Pragmatic Web
Tilburg University, Oct 22-23, 2007, Room TZ-3 (Building T)**

Programme

Tuesday 23 Oct

- 09.00 **An Evaluation of the Pragmatics of Web-based Bug Tracking Tools**
Harry Delugach
University of Alabama in Huntsville, USA
- 09.45 **A Practical Method for Courseware Evaluation**
Aldo de Moor
CommunitySense, The Netherlands
- 10.30 Refreshments
- 11.00 **Towards Pragmatic Patterns for Clinical Knowledge Management**
Göran Falkman¹, Marie Gustafsson^{1,3}, Mats Jontell², Olof Torgersson^{1,3}
¹University of Skövde
²Göteborg University
³Chalmers University of Technology, Sweden
- 11.45 **Mind the Gap! Transcending Contextualized Knowledge Sharing**
Pieter de Leenheer and Stijn Christiaens
Vrije Universiteit Brussels, Belgium
- 12.30 Lunch
- 14.00 **A Pragmatic Structure for Research Articles**
Anita de Waard
Centre for Content and Knowledge Engineering, Utrecht University, The Netherlands
- 14.45 **Information Seeking in a “Socio-Semantic Web” Application (Short Paper)**
Jean-Pierre Cahier, L’Hédi Zaher, Manuel Zacklad
Université de Technologie de Troyes, France
- 15.15 Closing Plenary:
Reflections on the Conference and the Future of Pragmatic Web
- 16.00 Farewell drinks

Sowing the Seeds of Self: A Socio-Pragmatic Penetration of the Web Artefact

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ABSTRACT

This paper analyses the concept of the information technology artefact in a pragmatic web context with a special focus on its user interface. Assuming a communicative socio-pragmatic view of the use of Web artefacts, a distinction is made between explicit performance of essential communication actions and “give offs”; our sometimes unintentional traces left on the Web, which we may even be unaware of. It is argued that both aspects are key to understanding the role of IT artefacts and user interfaces in the Web context.

Categories and Subject Descriptors

H.1.2 [Models and Principles]: User/Machine Systems – *human factors*. H.4.3. [Information Systems Applications] Communications Applications – *Bulletin boards, Information browsers*. H.5.2 [Information Interfaces and Presentation]: User Interfaces – *Theory and methods*. H.5.3 [Information Interfaces and Presentation]: Group and Organization Interfaces – *collaborative computing, theory and models, web-based interaction*.

General Terms

Management, Design, Theory.

Keywords

Web 2.0, Open innovation, User interface, Web system, Identity.

1. INTRODUCTION

Undeniably, the way we use the Web has changed dramatically since its inception in the mid 1990's. As users have changed from passive consumers of information to active contributors, much of the content on the Web today is the result of individuals' knowledge sharing and exchange of ideas. O'Reilly [17] conceptualized this emerging information infrastructure and referred to it as Web 2.0; a term now widely used when

describing the business models, tools and technologies that facilitate and leverage such global interaction and communication on the Internet. He suggests that network effects arising from user contributions are key to market dominance in the Web 2.0 era and that in order to be successful, companies must learn to trust users as co-developers. This insight is a key factor also in the success of the open source software movement, which has proved that communities of volunteer developers are even capable of threatening the dominance of some of the world's leading software companies. Conforming to the old “if you can't beat them, join them” mantra, many commercial organizations are also entering the open source arena in an effort to build active communities around their products [10]. A fundamental question in relation to the success of these emerging “gift cultures” [3] is what motivates people to contribute time and knowledge without any apparent payback, at least not in the immediate monetary sense. Lerner and Tirole [15] argue that the two major motivations are career concerns and ego gratification, which they collectively refer to as the signalling incentive. By contributing to a Web community, such as an open source project, people gain reputation and status within that community, which thus appears to be the main driving force. Interestingly, well before the coining of the term Web 2.0, Flores [11] analysed the emerging networked society and came to the conclusion that Web systems are primarily identity creating systems. Drawing on Heidegger's identity concept, he suggests that identity requires “both an intense Kierkegaardian total commitment to some cause or person that discloses a new world for an individual and a Hegelian working out of that commitment so that others recognize that new world as making more sense than their former world, so that they see the individual who brought it about as a leader and that new world as their world.” [11, p. 364] According to Flores, this is central to both personal and corporate identity on the Web. A successful company has to show commitment and build strong corporate identity to attract people (i.e. visitors) and an individual has to commit fully to a community in order to build a strong personal identity, motivated by the signalling incentive. Hence, while personal identity is important to oneself, it is also important to others in order for them to recognize ones contributions. In a similar vein, personal identity is important to corporations in order to recognize their users and customers and to tailor their own Web presence, thus building their own identity. However, while identity and recognition is important on the Web, the flipside of the identity coin is that of personal integrity. Consider, for example, the following: Last year, a team within AOL released search data of more than 650,000 users. Although actual

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2nd International Conference on the Pragmatic Web, Oct 22-23, 2007, Tilburg, The Netherlands.

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user names were replaced with random numbers, all the search terms of single users were possible to track and by using these search terms it was possible to track down an individual [2]. Apparently, No. 4417749 conducted hundreds of searches over a three-month period and eventually the data trail led to Thelma Arnold, a 62-year-old widow in Lilburn, GA, who confirmed the searches were indeed hers (Barbaro and Zeller, 2006). Shortly after this report, AOL removed the search data from its site and apologized for its release, but the detailed records continue to circulate online. The story does not tell whether or not Ms. Arnold benefited from her strengthened identity in this particular community. However, the example clearly illustrates that some of the traces we leave on the Web are less intentional and probably less ego gratifying.

According to Flores [11], the speech act theoretical insight that institutions are constituted by their commitment structures is essential to understanding identity creation on the Web. We can, for example, use these structures “to determine whether we are witnessing new institutions or just different versions of old ones” [11, p. 357]. Hence, actors’ intentions and the way these are used to coordinate interaction with other actors are essential for identifying institutions, such as corporations, communities and individuals’ on-line presence. However, a focus on intentions alone seems to limit our analysis of social interaction through information technology (IT) to what the actor is aware of and purposively chooses to do. This is also mirrored by Weber’s account of social action, which identifies such action with behaviour to which the actor attaches meaning [22]. Arguably, it is hard to attach meaning to something of which one is unaware. In an ideal speech situation – the casual face-to-face setting [5] – two communicating parties rely on many subtle cues besides the spoken word. Body language and other “give offs” are central in our day-to-day interpretation of social life, and these are often unintentional. Goffman [12, p. 2] writes, “The expressiveness of the individual appears to involve two radically different kinds of sign activity: the expression that he gives, and the expression that he gives off”. According to Goffman, what we give are the things we communicate through verbal signs, such as spoken language. The things we give off, on the other hand, are the often non-verbal signs that help to situate and verify the things we say. Goffman [12] defines interaction as “the reciprocal influence of individuals upon on another’s actions when in one another’s immediate physical presence.” An interesting aspect of communication through IT artefacts, such as through the Web, is that this casual face-to-face setting changes into a more structured computer mediated one. In this new setting, participants are typically not in one another’s immediate physical presence; they may in fact neither see nor hear each other, and may recognize each other’s action at considerable delay [1]. In this context, there appears to be another form of “give off”, the kind that made it possible to track down Ms. Arnold in Lilburn, GA.

The traces she left while using the search engine helped to situate and verify her identity to the extent that even though the AOL employees’ intention was to anonymize the users, she was still very much identifiable. It thus seems that Dietz [7, 8] distinction between essential (realization independent) issues and their realization becomes central to understanding communication action on the Web. While the essential aspect of Ms. Arnold’s actions was to find information, her incidental traces, or

“technology embedded give offs”, were essential in establishing her identity.

With this backdrop, this paper aims at deriving a conceptualization of the IT artefact from a communication action perspective, given the characteristics of Web applications in general, and Web 2.0 in particular. Such a conceptualization should be a useful analytical instrument in future evaluation and design efforts and can also serve as a tool for further elaboration on the role of the IT artefact in Web communication and community building. In a sense, our work can be seen as a response to Orlikowski and Iacono’s call for theorizing the IT artefact [18], and particularly its role within the Web context. As a basis for this conceptualization, we use the work of Sjöström and Goldkuhl [20] which provides a sound foundation in pragmatic social action theory that has proven useful in empirical contexts [e.g. 19]

The paper proceeds as follows. Section two presents the conceptual foundation of IT artefacts and their user interfaces as instruments for social action and communication. Section three lays a foundation for our conceptualization of the Web artefact by summarizing the empirical part of the work. Finally, section four discusses the conceptualization of the IT artefact in terms of possible refinements of the initially presented conceptual foundation and presents overall conclusions and future outlook.

2. A SOCIO-PRAGMATIC VIEW OF THE IT ARTEFACT

Drawing primarily on the semiotics of Bühler [4], Sjöström and Goldkuhl [20] present a conceptualization of user interfaces that emphasizes communication between actors (Figure 1). The proposed socio-pragmatic user interface perspective has been operationalized in a number of studies of information systems [e.g. 19, 20] where it has proven useful for highlighting user interface problems. With its roots in language/action theory [23], the perspective embraces the view that information systems are instruments for technology mediated social action [13].

This communicative perspective on user interfaces is grounded in concepts from Semiotic Engineering [e.g. 6], which distinguishes between three types of communication in user interfaces: *User-system interaction*, *user-user interaction*, and *designer-to-user communication*. The user interface is here conceptualized as a “one-shot messages from designers to users about the range of messages users can exchange with the system in order to achieve certain effects” [6., p. 462]. The focus in Semiotic Engineering is thus on designer-to-user communication, and the other types of communication are primarily related to specific types of application, such as groupware.

The model in Figure 1 can be seen as a reaction to this view, holding that all user interfaces support creation and/or interpretation of messages that together form the communication between users and between users and designers. Sjöström and Goldkuhl suggest the term *pragmatic duality* to represent the dual function of user interfaces: The user simultaneously interacts with the artefact and other users through the creation and/or interpretation of representations [20]. The model thus captures the “essential” computer mediated actions among actors in the organization, as well as navigation actions performed by the user.

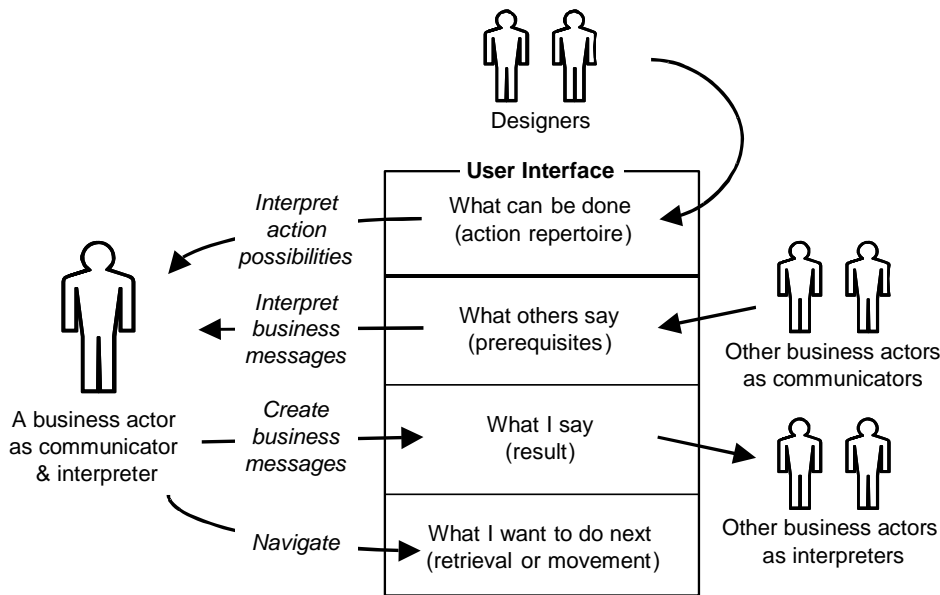


Figure 1 –A communicative perspective of user interfaces, after [20]

As indicated above, the proposed user interface model should be understood within a larger conceptualization of the IT artefact as an active instrument for communication. The IT artefact is here seen as both a medium for communication and as a mediator of human action. The latter implies that the artefact is seen to possess properties of agency. An IT artefact is not restricted to represent and transfer results of human action; it can also act semi-independently and transform such results into new messages and representations. We would not argue that an IT artefact possesses human attributes of intentionality and responsibility. It can, however, act as an agent on behalf of humans following pre-programmed rules [13]. It does also, as indicated above, contain a memory of previous action results and other prerequisites for action. This action memory and the agency aspect are two of the main characteristics that distinguish communication through IT artefacts from the use of passive media, such as telephone and traditional mail.

It is important to understand that the suggested way of conceiving user interfaces was developed in the context of traditional business supporting information systems. As we shall see below, to conceptualize communication action on the Web, the user interface model needs further elaboration.

3. THE AMAZON.COM CASE

In line with the discussion on give v. give off above, the distinction between what users purposively intends to do and the sometimes unintentional traces they leave behind, indicates a need to distinguish between different types of contextual information related to the performance of actions at Web pages. It has generally acknowledged that data is a valuable asset in the Web 2.0 philosophy [17] and that there are different types of data available: what users intentionally communicate to others and the traces of action that are gathered by the Web infrastructure as such (primarily through the content of HTTP requests and responses). Therefore, to understand Web communication we need to analyse both essential and incidental communication. In our study, essential communication action was manifested as screen documents and incidental communication action was

collected and logged using a browser extension¹. For this study, we chose the well-known web site Amazon.com since it embraces many characteristics of Web 2.0 [17].

3.1 Essential Action at Amazon.com

The perhaps most obvious essential action at Amazon.com is the purchasing of books. An interesting aspect of Amazon.com, however, is that it facilitates users' sharing of experiences and opinions about the various books on offer. In the following we will focus on this community-oriented activity. Specifically, we will focus on the *visible* results of user actions as represented by the Amazon.com website, as shown in Figures 2 and 3 below.

Figure 2 illustrates a review of a book, communicated by an anonymous user ("A reader"). Seven people have rated this review and unanimously stated that the review wasn't that helpful to them (perhaps as a result of its lack of argumentation).

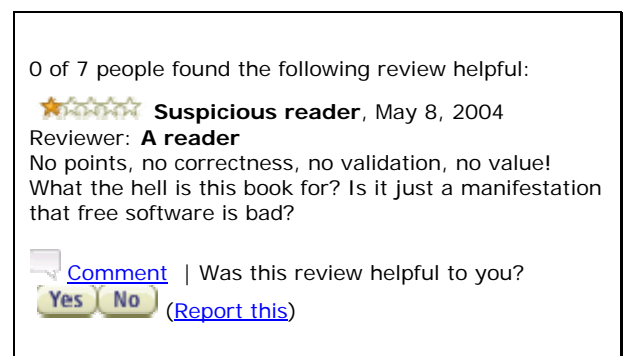


Figure 2 - An unknown user comments on a book by Feller and Fitzgerald [9] on Amazon.com

¹ The browser in use was Mozilla Firefox and the extension is called Live HTTP headers.

Figure 3 shows another review, provided by an individual who has chosen to identify himself as Mark Tarrani. It is even possible to follow the hyperlinked name and find additional information about this individual, including a personal photo. This person has apparently written many other reviews (hence the “Top 100 Reviewer” badge). 29 out of 30 people report they have been helped by the review, which thus signals that this reviewer is appreciated by the community. (It is perhaps not too far-fetched to assume that “A reader” was the one person out of the 30 who did not find Mike Tarrani’s review very helpful.)



Figure 3 - An identified user comments on a book by Feller and Fitzgerald [9] on Amazon.com

3.2 Incidental Action at Amazon.com

The mechanism by which HTML (Hypertext Markup Language) pages are retrieved from a Web server for display by a browser is the HTTP (Hypertext Transfer Protocol) request command [21]. An HTTP request contains a certain amount of information sent when a user accesses a page on a web server. We expect that users of a Web application are aware of the parts of a message that are visible on the screen. If a user, for instance, writes a book review, they are probably aware that the entered information is communicated to someone through the browser, over the Internet, to a Web server. In addition to this visible part of the message, there are some “hidden” pieces of information added to the HTTP request, as defined in the HTTP standard [21]. This information is part of the communication context, and reveals some information about the user and the technology in use. There is not room to analyse an HTTP request in its entirety in this paper, but we will discuss a few parts of its content (an example request can be found as an appendix).

The request contains technical information such as the user’s operating system (and version), the language in use, and the browser used and its version. Furthermore, the message contains

the user’s IP address², which can be used to identify the current user, at least indirectly. Using the Domain Name System, it is possible to map an IP address to a country, region, or even to a company and sometimes to an individual user. In addition, the HTTP request contains so-called “cookies”. These are small pieces of information that are stored on the user’s hard drive. Whenever a Web page in a certain domain is accessed through the browser, the browser sends the cookies associated with that domain to the web server. The web server then returns new (or changed) cookies, which the browser stores and sends again in the next request. Cookies are a common mechanism for maintaining state in longer transactions or for personalizing a context for a user [14]. Finally, the request contains information about “referring page” – if a user follows a hyperlink from site A to site B, site B is told that the visitor came from site A.

Consequently, we revealed quite a lot about ourselves when searching for a book on Amazon.com. We told them, not only that we were interested in the book by Feller and Fitzgerald [9], but that we were using English versions of Windows NT 5.1 and the web browser Firefox 1.5.0.11. We also told them that the search string “Fitzgerald Open Source” was entered from Amazon.com, and that we had visited the site before (a cookie was sent). Furthermore, we revealed our IP address, which in turn gives away that we were located at Jönköping University in Sweden at the time of the query.

Interestingly, when requesting the start page “http://www.amazon.com” a large number of HTTP requests are performed in the background (see Table 1). These requests would typically go unnoticed without the special analysis software. The anticipated requests (the page itself and the include files it needs to display properly) are marked with grey in Table 1 (next page). The other requests will be discussed below.

Requests #1, #4, and #7 are addressed to two different Google services: *Safe Browsing* and *Page Ranking*. These requests are sent by the Google Toolbar, a popular plug-in to the web browser. When installing this plug-in, the user is asked whether they want to activate these services or not. It is probably safe to assume, however, that many Internet users are, just as the authors were, unaware of the whereabouts of this plug-in. Effectively this means that every time a page is requested with this configuration, such requests are fully or partially forwarded to Google (possibly without the user knowing).

Requests #2 and #3 are the “essential” requests: The requests sent to retrieve the actual web page and its included files (e.g. images, style sheets and javascript includes).

Requests #5, #6, and #8 are sent to various (commercial) advertising services. The purpose of these appears to be to keep track of users’ browsing across different Web sites. Krishnamurthy and Wills [14, p. 4] explain, “Cookies are also used by tracking servers to more accurately identify a user as the user navigates between different Web sites. If pages from these Web sites cause objects to be retrieved from the same tracking server and this server has a cookie associated with it then the server receives this cookie on each retrieval.” Martin et al [16]

² Technically, the IP address is not part of the HTTP request but is communicated through the underlying TCP/IP protocol stack. Hence, all HTTP requests can be traced to a certain IP number.

Table 1 - Performed HTTP Requests when entering http://www.amazon.com using Firefox

#	Host	Explanation	Purpose	Performer	Agency
1	sb.google.com	The request is forwarded to Google's safe browsing service.	Verify host safety	Browser Plugin: Google toolbar	on behalf of user
2	www.amazon.com	The request to get a web page is sent to the Amazon web server.	Request action from server	Browser : User action	on behalf of user
3	[...]s-amazon.com	Request for images are sent to another Amazon web server.	Request images from server	Browser	on behalf of user
4	sb.google.com	Multiple requests are sent to Google's safe browsing service.	Verify host safety	Browser Plugin: Google toolbar	on behalf of user
5	[...]bleclick.net	A request is sent to some advertisement host.	Espionage	Browser: Webb application	on behalf of Amazon
6	[...]vertising.com	A request is sent to some advertisement host.	Espionage	Browser: Webb application	on behalf of Amazon
7	[...]eries.google.com	A request is sent to Google's page ranking service.	Contribute to page ranking	Browser Plugin: Google toolbar	on behalf of user
8	m1.2mdn.net	A request is sent to some advertisement host.	Espionage	Browser: Webb application	on behalf of Amazon

refer to such series of HTTP requests as “clickstreams”, which can be used to, for example, maintain unique visitor counts, understand web usage patterns, assess the diffusion of advertisements, delivery of personalized offers, and general tailoring of web site content. Series of HTTP requests can thus be monitored through tracking cookies, which are stored, and used for various commercial purposes. It should be noted that there is information available about the use of cookies, both from Amazon and their partners in the advertising business. Also, the Google toolbar provides a reference to a privacy statement detailing what information is collected and what it is used for.

Apart from the recipients of the requests, it is also likely that there are additional logs of the requests, i.e. by the organisation responsible for providing access to the Internet.

4. DISCUSSION: A SOCIO-PRAGMATIC VIEW OF WEB ARTEFACTS

The Web artefact seems to have some characteristics that separate it from more conventional views of the IT artefact, i.e., in intra-organizational settings where users' tasks (as part of a pre-determined business process or similar form of institutionalized context) are often in focus. Based on the Amazon.com case we have identified four principles concerning the web artefact's communicative and agency characteristics, with consequences for the conceptualization of the IT artefact as presented in Section 2.

First, navigation actions needs to be recognized as user-to-user communication. Even though the primary intention of the user may not be to communicate, there are many recipients of the “message” or request that is sent to the Web server when a user requests a new page. In the technical implementation of HTTP requests, there is no differentiation between “navigation” and

other types of action. On the social side, however, there are many parties apparently interested in the moves we make on the Web. Thus, we need to take into account the communicative dimension of navigation on the Internet. This way, our conceptualization allows for future studies where, for instance, social or ethical issues of the Web can be addressed. We refer to this as the principle of “communicative navigation”.

Second, in a web context, we need to handle users primary intentions and the more or less incidental representations that are the results of user actions. The incidental representations – the “technological give offs” – are put in place by commercial actors as instruments for positioning themselves or their partners. While O'Reilly [17] speaks of data as the next “Intel Inside”, this commercial interest in information about people as a vehicle to position themselves is also a part of building a corporate identity [11]. Flores' analysis of the identity concept also explains the behaviour of people who actively share their opinions or experiences on the web. Take, for instance, the case of the identified reviewer on Amazon.com, Mike Tarrani. Apparently, his actions as a reviewer is an endeavour connected to the institution of identity. The Amazon.com web site can be explained as an instrument, which is used by parts of the user community to create and maintain their identity. From a commercial perspective, this information, contributed by the users, enhance the commercial value of Amazon.com and their services, in line with the Web 2.0 ethos. There appears to be huge incentives for individuals and companies to create and collect data in these continuously ongoing communication processes, supported by the great number of Web applications that are out there. We would argue that any useful conceptualization of the Web artefact needs to take into account these communicatively oriented issues related to people, corporations, and the Web as an arena for identity building activities. People sow seeds of themselves when acting on the Web. The Web then has to provide

a fertile ground for growing these into a total commitment to some cause that can disclose a new world for an individual and a working out of that commitment so that others recognize that new world as making more sense than their former world, to paraphrase Flores [11] as cited above. In other words, the traces of action that we leave behind, essential *and* incidental, are the foundation for our Web identity. In order to leverage the signalling incentive, Web sites then need to provide users with instruments to develop a proper understanding of the ongoing conversations and their contribution to the development of their own identity. We refer to this as the principle of “identity cultivation”.

Third, there is a risk that many users install plugins such as Google Toolbar, and activate features such as “safe browsing” and “page ranking” without actually understanding the consequences with respect to communication and privacy. This can be regarded as an unreflective delegation of tasks to the IT artefact, which is unlikely to occur when communicating through some other medium. Therefore, issues of delegating actions to the IT artefact, and the ways in which such delegation is presented by designers and conceived by users, is an increasingly important issue from an ethical standpoint. This is also related to the more or less hidden communication taking place in the background in our case study, as a result of commercial interests. The scattered information about privacy policies raises the question if the users are really aware of the ongoing communication, which can be thought of as a type of surveillance of web site visitors [16]. We refer to this as the principle of “reflective delegation”.

Fourth, in relation to the distinction between essential and incidental action, it seems that some features of an IT system are configured once and then used for a long time. Over this period of use, the awareness of the particular configuration may fade. For example, consider the case of the Google Toolbar plugin. A user may have had an understanding of, and an intention to actually share their surfing behaviour with Google. However, it appears this intention will become weaker or forgotten as time passes by. In a sense, then, the essential action changes into an incidental one. We refer to this as the principle of “maintained intentionality”.

5. CONCLUSION

The aim of this paper was to derive a conceptualization of the IT artefact from a communication action perspective, given the characteristics of Web applications in general, and Web 2.0 in particular. Through a case study of Amazon.com we have identified four principles with consequences for the conceptualization of the IT artefact as presented in Section 2.

The *principle of communicative navigation* tells us that there are always “technological give offs” when performing navigation actions in a Web setting. Based on this, we conclude that it is necessary to recognise navigation actions as communication actions with social consequences.

The *principle of identity cultivation* emphasizes the role of web applications as instruments for identity creation and cultivation. The strive for recognition in some community motivates users’ seemingly altruistically co-contributing through “essential actions”. In the quest for strong corporate identity, “Web 2.0

aware” companies such as Amazon.com build their services around user engagement. This attracts people to their web site, and engages them in the co-development of the site, which in turn gives Amazon.com a strong corporate identity. Their strong identity and large number of committed visitors also leverages Amazon.com as a platform for third parties to build their identity through personalized advertisements. This has an impact on our view of the web artefact: we need to acknowledge multiple interests and the implications for gathering and storing information about both essential actions and give offs.

The *principle of reflective delegation* holds that users sometimes unknowingly delegate communicatively oriented tasks to the IT artefact. The problem may stem from the multiple interests mentioned above – there are no apparent reasons to excessively inform users beyond legal requirements. Although the importance of acknowledging responsibilities in relation to the agency of IT artefacts has been stressed previously [1], the multiple interests and “ecological growth” of Web communities suggest that this is particularly important to consider in a Web context.

The *principle of maintained intentionality* suggests that although users may initially be aware of their action responsibilities and commitments, this awareness may eventually fade. Clearly, understanding such dynamics has to be taken into account when analysing communication action on the Web where parts of the communication is “hidden” in the infrastructure. Also, Web artefacts should be designed as to support the maintaining of intentional awareness.

6. ACKNOWLEDGMENTS

This work has been financially supported by the Science Foundation Ireland Investigator Programme, Lero – The Irish Software Engineering Research Centre, and by the EU FP6 project OPAALS (Open Philosophies for Associative Autopoietic Digital Ecosystems), and by the Swedish Governmental Agency for Innovation Systems (VINNOVA).

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APPENDIX: HTTP REQUEST AND RESPONSE HEADERS WHEN SEARCH FOR A BOOK AT AMAZON.COM

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http://www.amazon.com/s/ref=nb_ss_gw/002-6061363-2284806?url=search-alias%3Ddaps&field-
keywords=Fitzgerald+Open+Source&Go.x=0&Go.y=0&Go=Go

GET /s/ref=nb_ss_gw/002-6061363-2284806?url=search-alias%3Ddaps&field-
keywords=Fitzgerald+Open+Source&Go.x=0&Go.y=0&Go=Go HTTP/1.1
Host: www.amazon.com
User-Agent: Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US; rv:1.8.1.3) Gecko/20070309 Firefox/2.0.0.3
Accept: text/xml,application/xml,application/xhtml+xml,text/html;q=0.9,text/plain;q=0.8,image/png,*/*;q=0.5
Accept-Language: en-us,en;q=0.5
Accept-Encoding: gzip,deflate
Accept-Charset: ISO-8859-1,utf-8;q=0.7,*;q=0.7
Keep-Alive: 300
Connection: keep-alive
Referer: http://www.amazon.com/
Cookie: session-id-time=11798172001; session-id=002-6061363-2284806; ubid-main=104-1608502-5738317

HTTP/1.x 200 OK
Date: Tue, 15 May 2007 12:53:56 GMT
Server: Server
x-amz-id-1: 0TEF1VDYtCHV9EFAAA7J
x-amz-id-2: DytYOW9qtrroJIdEMW6eqUoJ0nU6+DXKW
Set-Cookie: session-
    token=G9gqQ3EnFgIKORm3b72bAXDLMoo0u8yLH/huNZIyoySaZWSX5/7JtqIVpq5F3kawErff7HRI/Q6a186ctf1HcVobYxfanaAr+M1C
    RxmQPARK6uRaarF+n+00FtID4bFWZCo9xfrbj7U2RG47MPXDXdK1t06bZs/OtThs7LlawcHaziiEhfPoer/2McrRk4GRWewyh3fX0uF
    m0U=: path=/; domain=.amazon.com; expires=Tue May 15 13:03:56 2007 GMT
Vary: Accept-Encoding,User-Agent
Content-Encoding: gzip
Content-Type: text/html; charset=ISO-8859-1
Connection: close
Transfer-Encoding: chunked
```

Exploring the gap between interaction and institutional orders in Pragmatic Web design

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ABSTRACT

This paper explores the call to attend to the communication pragmatics of the pragmatic web by examining instances of institutional talk and internet based support for deliberative communication. The examples map the terrain between the intentional design of communication support and the tacit, often unintentional aspects of communication that shape what is made explicit. Even though there is ever more designed support for communication and increasing capacity to design support, the tacit dimension of communication still plays a role in how people formulate moves in web-based interaction and in what becomes explicit in online interaction. These moves may have subtle but profound consequences for the discourse that emerges from designs intended to augment interaction and reasoning.

Categories and Subject Descriptors

H.4.1 [Office Automation] – groupware; H.4.2 [Types of Systems] – decision support; H.4.3 [Communication Applications] – computer conferencing; H.5.3 [Group and Organization Interfaces] – collaborative computing, theory and models, web-based interaction

General Terms

Management, Design, Human Factors

Keywords

Communication Support, Tacit Communication, Interaction, Deliberation, Discourse, Articulation.

1. INTRODUCTION

In many aspects of life, such as ordinary conversation, conjuring up and sustaining interaction is an end in and of itself. Even the public sphere can have this type of freewheeling quality where the point is to carry on the conversation. As Goffman [3] puts it, conversation is like starting a fire that once started will burn anything put into it. The Pragmatic Web community is not, for the most part, interested in open ended conversation-for-

conversation's sake type interaction. Instead, the interest is in conjuring up and sustaining forms of interactivity that achieve certain states of existence among participants (e.g., being understood, collaborative, legitimate, knowledgeable, entertained) and that produce particular intellectual, symbolic, and material products (e.g., ontologies, plans, agreements, decisions, policies, contracts). This reflects a concern for institutional orders moreso than the interaction order [4, 5].

The Pragmatic Web community aims to improve “the quality and legitimacy of collaborative, goal oriented discourses in communities” through the design and use of web-based technology [13]. What distinguishes the pragmatic web movement from the semantic web movement is an orientation toward process and context over data; services as agents in a rich system of interaction not simply distributed objects; grass roots meaning negotiation among community members; and the negotiation of commitments [9, 11, 13, 14]. It is a quest to understand and develop what Douglas Engelbart refers to as the augmentation of interaction and reasoning.

Schoop, de Moor, and Dietz [13] illustrate the interest of the pragmatic web community with the example of an architect responsible for building a low-energy house. The architect must work with several trades to complete the task and in so doing the members of this emergent community negotiate meaning and coordinate action. To do this the community must take into account the tacit, non-formalizable aspects of the social context. This example is characteristic of contemporary organizational and societal contexts where different professional, social, and cultural backgrounds need to work out what they can assume to be the shared background and commitments necessary to sustain their joint activity. The practical challenge for the pragmatic web community is to build socio-technical infrastructure that supports the negotiation of meaning and the coordination of action. Underpinning this practical challenge are the yet to be examined assumptions about the relationship between the tacit dimensions of communication and the dimensions of communication made explicit by technology (and by the participants themselves).

A fundamental challenge, and opportunity, for the pragmatic web community is found in the fact that discourse typically takes a life of its own. Goffman [4,5] shows how interaction is an order unto itself that serves its own ends and is not easily tamed by institutional orders. Interestingly, the Pragmatic Web marks off an arena of activity interested in disciplining and shaping the interaction order, which presupposes some understanding of communication pragmatics in web based environments.

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2nd International Conference on the Pragmatic Web, Oct 22-23, 2007, Tilburg, The Netherlands.

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This paper explores the call to attend to the communication pragmatics of the Pragmatic Web by examining how the tacit, unexpressed dimensions of interaction matter for web-enabled communication. The paper does not present abstract models or stylized presentations of systems but instead works from detailed examples. First, examples from institutional forms of talk, airline crew interaction and dispute mediation, are discussed to illustrate how the tacit dimension of communication matters in institutional settings designed to support deliberation and decision-making. Second, examples from internet-based interaction that use threaded discussion and chat to support deliberation are discussed to illustrate how the tacit dimension of communication matters in ways similar to the problems identified for institutional talk. Third, an example from a web-based online discussion forum designed to support reflective dialogue is discussed. These examples sketch how relational, actional, and clashing interactional expectations – tacit dimensions of interaction – shape, often in unintended ways, the discourse participants produce when interacting through institutional formats designed to augment their interaction and reasoning.

2. Institutional Interaction

Institutional forms of talk are designed to achieve particular purposes. Institutional interaction can be characterized by its goal orientation for interaction, constraints on interaction, and preferred patterns for reasoning and inference making through interaction [3]. The attempts to shape and discipline ordinary interaction through information devices, formal roles, turn-taking procedures and so on in institutional forms of talk such as found in airline cockpits and dispute mediation provide a place to begin inquiring into the ways in which the tacit dimension of interaction plays a role in what is communicatively taken up, or not, in the interaction among the parties involved.

2.1 Airline Crew Indirectness

Despite the rich information environment of the airline cockpit and the structure of airline crews, the research by Linde [7] illustrates how these highly designed environments intended to support decision-making communication remain subject to the tacit dimensions of communication. Linde examined recordings of the cockpit interaction among airline crews in the context of real and simulated airliner crashes. In an early case study of an airline crash where 69 people perished and five survived, Linde found the copilot's attempts to point out errors in the pilot's judgment about takeoff readiness were not taken up by the captain. One reason for this may be that the co-pilot's warnings were formulated indirectly, as seen in the following examples [15]:

- (1)
Copilot: Look how the ice is just hanging on his, ah, back, back there, see that?
Captain: Side there
- (2)
Copilot: See all those icicles on the back there and everything?
Captain: Yeah.
- (3)
Copilot: Boy, this is a, this is a losing battle here on trying to de-ice those things, it (gives) you a false feeling of security, that's all that does.

- (4)
Copilot: Let's check these tops again since we been setting here awhile.
Captain: I think we get to go here in a minute.
- (5)
Copilot: That don't seem right, does it? (3 second pause). Ah, that's not right. (2 second-pause) (Well). . .
Captain: Yes, it is, there's eighty.
Copilot: Naw, I don't think that's right. (7 second pause). Ah, maybe it is.
Captain: Hundred and twenty.
Copilot: I don't know

The airliner crashed but not for lack of the copilot calling attention to problems such as the weather and ice build-up on the other planes. Upon further examination of other cockpit recordings made during actual crashes and flight simulator training, Linde found that indirectness was prevalent when copilots spoke to captains. Indirection, such as seen in this case, can make it easier for someone to misunderstand or to ignore what another person is saying. This finding suggests a clear remedy – be direct. It would seem that had the copilot been more direct in representing his sense of the situation to the captain the situation and doubts of the copilot would have been more available for the captain to act accordingly.

Linde examined the merits of the directness remedy and came up with some surprising results. She found that (1) people from different parts of North America recognized and interpreted indirectness differently; (2) there are ways of making requests that are technically indirect but that pilots treated as direct; and, perhaps most surprising, (3) that crews classified as highest in safety performance had higher rates of indirectness in their cockpit communication. The directness remedy misses how communication is multifunctional. Any communicative move may perform a representation of some aspect of the world while at the same time adapting to or extending in some way the relationship among the participants. In the case of the crews, the issue is not simply about communicating the most direct representation of the world but also situating a move within the ongoing relational expectations of the crew and the ongoing context of activity. Thus, any training in directness, as Linde suggests, would have to involve teaching subordinates to respectfully and successfully challenge superiors.

The cockpit communication case illustrates how the problems in the institutional order of the cockpit arise in the uptake of requests and challenges. These errors in deliberation and decision-making are interactional achievements that occur despite the shaping of the context to augment interaction and reasoning. The tacit dimension of communication seems to be the central source of the decision-making troubles more than the semantics. In particular, the trouble interactants have in formulating a new line of interaction rather than staying in the 'programmed' line of interaction.

2.2 Relevance and Digression in Dispute Mediation

Dispute mediation is another type of institutionalized format for interaction that provides special procedures and roles so that disputing parties can amicably resolve their differences of

opinion. Jacobs and Jackson [6] have examined transcripts of divorce mediation sessions where formerly married spouses attempt to renegotiate aspects of their divorce decrees regarding the care of their children. Jacobs and Jackson note that these interactions often digress from the purpose of working out an acceptable custody proposal. In so doing, the potential for argumentation to resolve their differences and work out an agreement is lost. Digressions are collaborative achievements of the disputants that occur even though the resources of mediation are present. This can be seen in the example that follows:

(6) An example of digression in custody negotiation from Jacobs & Jackson (1992). The brackets indicate overlapping talk, the equal sign indicates contiguous talk, the single parentheses indicate inaudible or hard to distinguish words, and double parentheses indicate transcription notes.

398 W: I still have my basic feelings, that maybe at some point, something like this could be worked out
but I don't, feel at this time
399 H: [Isn't this kind of a method, uh I-aren't you basic feelings ((Pause)) basically trying to punish me, as opposed to what the children ((Pause)) (that's all)
400 W: [No it's not not trying to punish] you ((Pause)) I am not trying to punish you at all I, think you, I'd be punishing myself by going with something like this at this time=
401 H: =why
402 W: Number one I know your involvement with the children ((Pause)) and how you have stated in the past you would be involved and you would do certain things and then you do not
403 H: Like what
404 W: Like homework schoolwork ((Pause)) Also too, I do not feel that you're mentally stable at this point in your life
405 H: I don't feel you're mentally stable either
406 W: Okay ((Pause)) um, so maybe we should go for the psychiatric examinations ((Pause)) I'm more inclined to do that I've asked John to go to counseling for years, and he's refused I have been in counseling
407 H: Vivian I recommended a marriage counselor and (you said no) and your attitude was you didn't want to go it was a waste of time
408 W: [Not at that time, not at that point I didn't want the marriage
409 H: [When we] went to marriage counsel on our first separation and he said a few negative things to you, you, immediately dropped out.
410 W: We didn't go to a marriage counselor
411 H: [Yes we did]
412 W: Who
413 H: In fact it was even he was our psychiatrist he, wanted to talk to us about marriage counseling=
414 W: =No, we went to Dr. H() for Michael
415 H: [That's not what I'm talking about, I'm talking about I'm talking about the, psychiatrist on () Boulevard, who we went to, on two occasions and you just said, I don't agree with what this guy is saying so we're not going back
416 W: [Oh okay] I know who you're talking about sure
417 H: Okay
418 W: Then, I went to a different one, and I wanted to go to=

419 H: [()]
420 W: =a
different one
421 H: [Yeah] because he didn't agree with you that' why you didn't want to go there, that's the whole problem=
422 W: =No, no I've got other feedback from other people
423 H: [How about Dr. (Frankel)]
424 W: How 'bout Dr. Frankel
425 H: [We stopped] going to Dr. Frankel because you didn't like what he was saying to us
426 W: John, we, you were the one who stopped going, you were the one who said that we should stop., Michael from going to Dr. Frankel because you saw no progress being made
427 H: That's right, I saw no progress being made but you didn't want to go to him because he started asking about your background and you thought that was irrelevant
428 W: No I didn't

This segment of discussion between the ex-husband and ex-wife begins (lines 398-406) with each making moves that appear to address the relevant issue of parental competence in regard to the custody proposal at hand. While morally tinged, each move also brings information to bear on the question of the custody negotiation by making and contesting plausible arguments about the other's parental involvement and stability. The discussion begins to shift at about line 407 when they begin making accusations and complaints about who had recommended and who had resisted therapy and counselling in the past. At about line 415 the discussion is fully an exchange of criticism, accusations, and complaints about each other's past behaviour in regard to attempts at marriage counselling.

Jacobs and Jackson point out that the argumentative potential of what is said is realized through the relationship between information relevance, which is the bearing of information on deciding the acceptability of some proposition, and pragmatic relevance, which is the "use of information to justify or refute a contested standpoint." The digression in example 6, and digressions in general, happen because participants' moves often do not bear on the issues at hand (i.e., lack information relevance) but also because the moves refocus attention away from the argumentative potential of the move and toward some other potential [6]. Whatever argumentation takes place in example 6, takes place indirectly as the parties are not making arguments so much as they are making complaints, accusations, and criticisms. The digression happens because the argumentative potential of these moves is not drawn out but abandoned.

Digressions happen in custody negotiations due to the use of otherwise relevant information in argumentatively unproductive ways and to superfluous defense. These types of pragmatic irrelevance are generally "a collaborative failure, a problem produced jointly by the expressive choices of one party and the responsive choices of another" [6]. As Jacobs and Jackson point out, the problem with irrelevant moves is not so much that they somehow distort the way individuals' reason but that such moves create possibilities for others to take up what was said in unproductive ways. Moreover, problems for argumentation do not arise simply due to the way information is framed but from how others respond to the framing of information.

Sections 2.1 and 2.2 point out how two aspects of the tacit dimension of communication, the relational and the actional,

shape interaction over and above the institutional aims for interaction. Despite an intensive information environment, the pilots' attention to the relational shaped the possibilities for expressing and managing differences of opinion in cockpit decision-making. Despite procedures and specialized roles, the disputants' responses abandoned development of the argumentative potential of their contributions for resolving differences and instead expanded the conflict potential of their contributions.

3. Technological Support for Deliberation

In this section, attention is turned to the relation between the tacit dimension of communication and web based interaction. Internet-based technologies for interaction, such as threaded discussion and chat are meant to be generic tools for communication support that presumably leave the articulation of communicative possibilities to the ad hoc improvisation of the participants. The technological design, however, highlights some aspects of making a move in an interaction while leaving other aspects unmarked in the way the technology reflects choices about roles, turns, types of turns, goals and such matters related to the interaction to be supported. Thus, like other forms of institutional talk internet-based technologies make visible goals for interaction, constraints, and particular ways of drawing inferences about participation [3]. The examples that follow examine problems that arise for designs intended to augment human interaction and reasoning in deliberation about important public matters. The examples illustrate a clash between the institution for talk and the type of talk the community of users pursues. The clash resembles the problems the relational and the actional dimensions of communication raised for institutional formats. And, as foreshadowed by the examples in section 2, the examples of threaded-discussion and chat that follow begin to shed light on how clashes between designed affordances and community use can have invisible, unanticipated, and possibly perverse effects for discourse quality from technological interventions.

3.1 Threaded Discussion and Community Sense-Making

Aakhus [2] examined an episode of online discussion following a national broadcast of an investigative news story in 1999. (At this time, news organizations were first linking news broadcasts with internet-based support for further exploring the news story.) The online discussion was conducted via a threaded discussion forum. The discussion occurred in an information rich environment. The transcript of the story was posted along with other information and links to related sources. This setup would seem supportive of a vibrant public deliberation.

After the broadcast of the story, the first 111 messages posted to the website during the first 24 hours following the broadcast were primarily criticizing and complaining about the quality of the investigative report (see table 1). For the most part, the contributions were against the story. The news organization's 2 contributions occurred 24 hours after the threaded discussion began and warned people not to post advertisements or phone numbers. This is contrary to what would be expected if the web-based interaction were being used as a means for the audience to engage the shows producers.

The analysis of the online discussion suggests that there were differing expectations about the relationship between the news organization and the viewing audience. The viewing audience that participated in the threaded discussion appear to be pursuing the online dialogue as though the news organization would respond. In addition, there were differing expectations about the form of interactivity. The viewing audience was treating the online forum as an opportunity for debate but the threaded discussion treated the interaction more like a quarrel among the masses. The upshot was that there was no engagement between the viewers and the story creators despite many features of the story and challenges that could easily be refuted or turned into an opportunity to advance the argument of the news story.

Table 1: Message Type

3.2 Internet Chat and Argument

Message Type	Number		Example
	For	Against	
Supportive by thanks or by acknowledging report's truth value	5		Thanks for this interesting report. Although, I don't plan to stop using my cellular phone, I appreciate your explaining how to use it more safely.
Questions seeking clarification of report or its implications	10		So, you move the phone away from your head. You are not getting the maximum risk of radiation but, what about the cell phone emitting radiation to other parts of your body...while it is in your pants pocket, your purse, sitting next to you on the car seat? Should this also be a consideration? Other than giving up the use of our phones, is there a way to avoid this potential hazard?
Challenge report's conclusion or implications		42	Come on...the "cell phones cause cancer" thing a-GAIN? Get real. If two-way radios caused cancer I think we'd see an increase in the incidence among emergency service workers, who have been using higher powered two-way radios in these frequencies for decades. Your microwave oven is legally allowed to LEAK about 30,000 times the energy it takes to power a cell phone.
Replies to others that support the reporting of the news	13		I sort of agree and disagree with this posting. You can only cover so much on the television. TV is not the media for extensive coverage. A better choice is to ask Consumer Reports to do a thorough study of all wireless devices, such as remote controls, pagers, Palm VII, GPS, cordless phones, cellular phones, walkie-talkies, etc., to see what effect they have on human biology. Perhaps a new standard will be developed to not just apply to Cellular phones, but to all wireless devices that transmit and receive data.
Replies to others challenge the report		41	I guess the "news" industry had to go Hollywood to pay the "reporters" the salaries they demand these days. A favorite quote of mine that perhaps the powers that be should heed is "your standards are a reflection of what you allow" it is clear to me that abc standards are not worth the paper they are printed on. What a shame!
	28	83	
	For	Against	

Weger and Aakhus [17] examined chat room interaction about public issues. While many commentators complain about the state of argumentation in online environments, Weger and Aakhus chose to focus on how the design features of chat rooms contributed to discourse quality. They found that there is a lack of conversational coherence, under-developed arguments and flaming. The features of chat rooms – continuous scrolling transcripts, contribution limits, and unidentified participants – contribute to these conditions and appear to afford a form of interactivity organized around having-arguments rather than making-arguments. Thus, at least from the perspective of argumentation ideals there appears to be no argument happening in Internet chat. The interaction bears a resemblance to digressions in divorce custody.

It should be noted that Chat turn taking resembled something more like the several conversations that take place at holiday dinner tables or parties where people are focused on being together but not necessarily on sustaining one line of conversation for the group. However, at these occasions the group can quickly organize itself around one line of conversation and then back to several conversations. Indeed, in the chat interactions participants had worked out ways of attending to particular lines of "conversation" amidst all the "chatter." A common strategy was to begin each turn with the name of the person being addressed.

In the following example (7), taken from [17], the interaction between two participants was carried on in the midst of chat room chatter and is here represented as only their turns not all the turns in the chat. The two have been arguing about the legality of Linda Tripp's taping phone conversations with Monica Lewinski regarding Lewinski's illicit affair with U.S. President Bill Clinton.

(7) Chat Transcript taken from Weger and Aakhus (2003).

- 01 Insolente: AUB...YOU SAID that she did not know she was breaking the law and that's why she leaked the
- 02 Insolente: the tapes
- 03 AUBldr: INSOL....nope, not once...
- 04 Insolente: AUB...I'm tired for your moronic laugh
- 05 Insolente: Oh really AUB? What did you say then?
- 06 Insolente: AUB..why are you lying?
- 07 Insolente: AUB.. what did you really say AUB?
- 08 AUBldr: INSOL....I said in many states only 1 person has to know tapes are being made, thats all..
- 09 Insolente: I gotta hear this one
- 10 Insolente: AUB..Meaning what?

11 AUBldr: INSOL...but apparently you still can't read...
 12 Insolente: AUB...That she thought she was cleared?
 13 AUBldr: INSOL....Nope...
 14 Insolente: AUB..What do you mean by that?
 15 Insolente: AUB..what is the point you are trying to make?
 16 AUBldr: INSOL...How many things can that mean?
 17 Insolente: If any?
 18 Insolente: AUB...Is this how you do this?
 19 AUBldr: INSOL...you are too childish to debate with
shoo...
 20 Insolente: AUB...Your reasoning means shit so you don't
 answer direct questions?
 21 Insolente: AUB...Shoo?
 22 Insolente: LMAO
 23 AUBldr: INSOL...lol shoo
 24 Insolente: AUB...Is this how you do this>?
 25 AUBldr: INSOL...child

This example ends with an exchange of ad hominem attacks. In contrast to standard explanations of flaming as errors in reasoning and misuses of emotion, the emergence of flaming – in the form of ad hominem – by Insolente and AUBldr appears to result at least in part from mutual efforts to exert norms of a good argumentation. Indeed, ad hominem arguments often take place to force unexpressed commitments into the discussion [17]. Early in the example Insolente begins a line of questioning to draw out the reasons AUBldr's has for the position taken and this shifts into the ad hominem attacks.

The flaming evident in this example, and possibly more generally in chat rooms, may result from strategic responses to the opportunities and resources afforded by the chat room – that is there are limited ways to develop positions and refutations. Thus, what appears on the surface as poor argumentation could indeed result from the effort to engage in good argumentation but that was not afforded by the forum where the participants engage each other.

In both examples 3.1 and 3.2, there was a struggle over the interactivity to be pursued in the web-enabled interaction that was consequential for the discourse produced. In 3.1, the community of viewers presumes their relationship to the producers of the investigative report to be that of engaged interlocutors. Yet, the interactional design of the threaded discussion rendered the

producers distant and inaccessible. The community of viewers could not use the information rich environment to effectively raise their objections and requests – something like the situation of the co-pilots in example 2.1. In 3.2, the parties were able to express their disagreement but could not make it productive. This is in part follows from their struggle with the affordances of the chat system in producing their positions and responses. As in the mediation example (2.2) there was little support for drawing out the argumentatively productive aspects of the contributions made and thus the interaction became digressive. In both cases, it appears that the community of users attempted to handle differences through normatively good argumentation but were thwarted by the affordances of the internet-based technology. The relational, the actional, and the technological combine to shape the communicative possibilities and what might otherwise be seen as the ad hoc improvisation of the participants. Moreover, the preceding examples suggest how the clash between designed affordances and the community of users is consequential for discourse and any record of that discourse.

4. Design

The examples in section 3 are drawn from uses of Internet-based technologies for interaction that principally provide platforms for interaction. Threaded-discussion and chat obviously provide affordances and constraints for interactivity. The articulation of communicative possibilities, however, was largely ad hoc articulation, in Schmidt & Simone's [12] sense where the users were left to their own devices to articulate the activity they wanted. It was the next generation of groupware technologies that went further in providing “designed articulation” (Schmidt & Simone, 2000) of communicative possibilities. The groupware technologies provided further specification of interactional features that were intended to guide the users toward particular forms of interactivity. Not only was this seen in group decision support systems (GDSS) but it was also evident in the interactional resources websites provided to support communities such as RedHerring.com, MotleyFool.com, Amazon.com, and Ebay.com. This wave of technology, which continues today, provides more specific and sophisticated support for orchestrating interaction among groups, communities, and organizations. These web-based discussion technologies are used to support interactions that in turn create knowledge repositories used by knowledge communities [8].

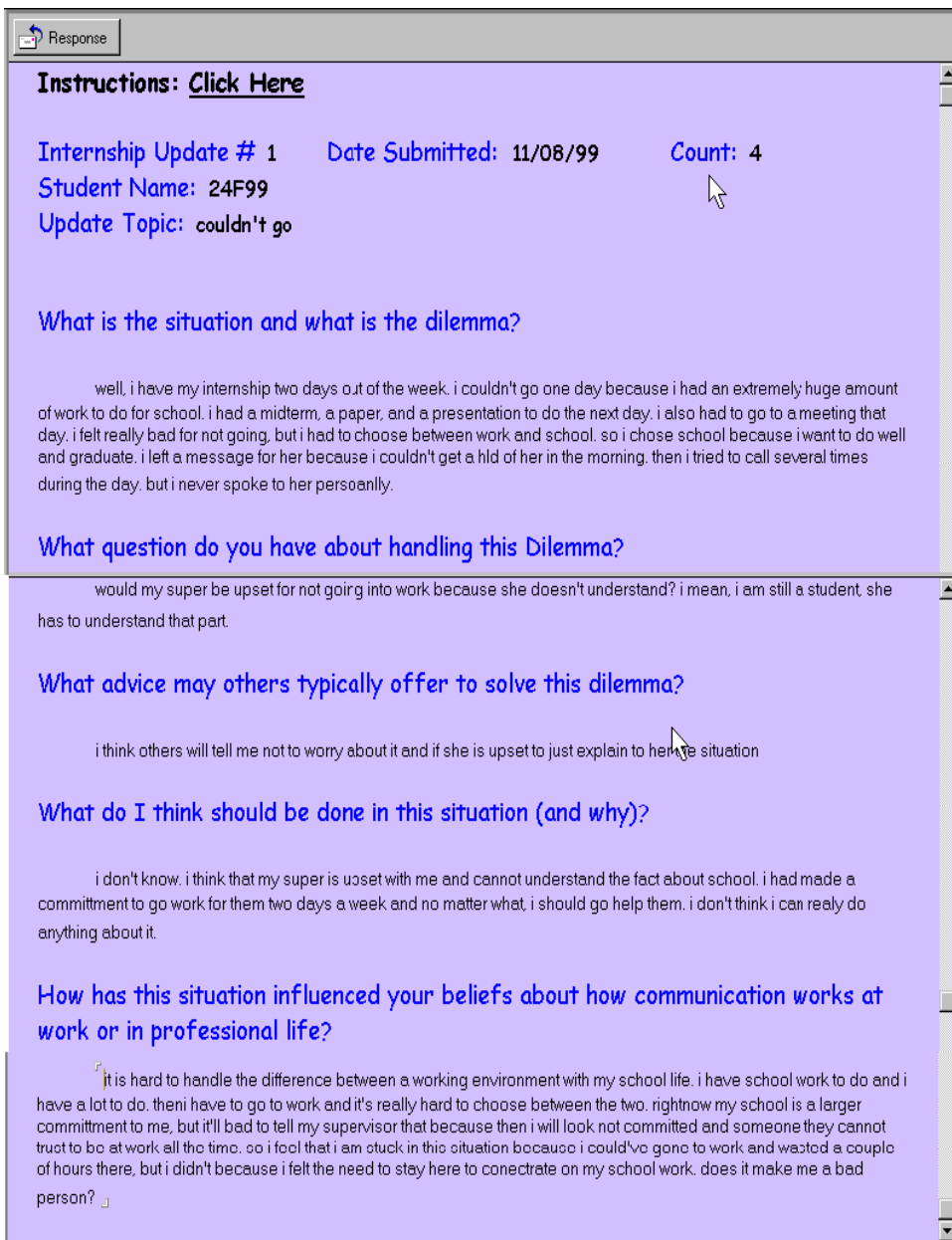


Figure 1

The ad hoc and unintentional aspects of discourse may exert directions on online interaction in ways similar to the institutional talk and web cases previous. Aakhus [1] examined the online discussion of a community of practice supported by an online web-based discussion forum. The participants in the community were undergraduates in an internship program who used the online forum to discuss what they were experiencing in work and professional life. The participants were asked to share dilemmas they experienced at work and how they handled these dilemmas by contributing updates to the discussion forum. To complete an update, the participant answered a set of questions that guided the participant toward describing and articulating background

assumptions related to the event reported. Participants were also encouraged to contribute responses to others' updates. Responses were made by answering questions about the update in way that drew out underlying assumptions the update makes about work. The updates and responses were posted in threads and formed a repository of experiences and opinions used for other course assignments.

Over the course of the semester and over different semesters a common theme emerged in the way participants responded to others' updates. It was not unusual for respondents to ask questions or make suggestions about talking-to-the boss as a way to solve the reported dilemma. The "couldn't go" update (see Figure 1) represents a common dilemmatic theme interns wrote about in their updates about making choices to balance commitments to school and their internship work.

The update describes the intern's concern that the internship supervisor would be upset with the intern's course of action. The update describes how the intern attempted to make the situation right but the update is ultimately framed on the theme that "I am not a bad person, I simply chose school over work."

The update is particularly interesting when it is treated not simply as a report about an event but instead as an account constructed for an overhearing audience of peers (the relational dimension). The update appears to be formulated to anticipate potential criticism or advice based on the ideal of open-communication between supervisor and subordinate. The update has built in evidence and implicit objections to any advice built on the idea of go-talk-to-your-boss. Here we see the possibility that the content contributed to the online form is shaped by anticipation of particular lines of advice and criticism (the actional dimension).

The micro-level design that defines the types of turns to be taken enables the sharing of updates and responses. It also helps surface participant assumptions about the domain of interest. The challenge posed by the example discussed here is that while the designed interaction appears to realize preferred aspects of

interactivity, the product of that interactivity is a corpus or a macro level of interaction organized around premises that individuals may not be committed to but to which the community members hold each other accountable. The premises play a role in shaping what types of turn are taken and what subsequent content is developed.

This last example, in the context of the other examples, suggests that information technologies such as databases, knowledge repositories, and ontologies representing these entities may be subtly influenced by tacit dimensions of communication. Such influence is a challenge that arises at the interface of interactional and institutional orders as well as an opportunity for developing ways to support the collective management of participation and meaning. In particular, tools that render the processes of discourse production available for reflection and intervention.

5. Conclusion

This paper has briefly explored the terrain between designs for interaction and communication and the tacit dimensions of the interaction order that shape the communication patterns people observe.

Even though there is ever more designed support for communication and increasing capacity to design support, the tacit dimension of communication still plays a role in how people formulate moves in online interaction and in what becomes explicit in online interaction. These influences may have subtle if not profound effects on how moves are made, what is made explicit in online forums, and what is regarded as the representation of the communities discussion. Efforts to build ontologies, for example, are undoubtedly subject to the tacit dimension of communication identified here in terms of the relational, actional, and design clash features of supported communication. These emergent aspects of interaction and communication present both problems and opportunities for pragmatic web design.

Technologies, just like institutions, are not merely information conduits or neutral platforms for interacting but technologies, especially those emerging in the era of the pragmatic web, are acts of intervention, reconstruction, and representation. Looking at institutional forms of talk and then using that as scaffold for appreciating web-enabled interactions that begins a mapping of the territory of the pragmatic web and the opportunities and constraints that exist therein.

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