

Passive Technologies for Active Listening: Design Solutions for
Participation Inequality in Collaboration and Communication Systems

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Research Report

Introduction

As a CSCW medium supporting distributed, asynchronous collaboration, shared or public annotation groupware has had a significant effect on communication and workflow in corporate and academic settings. Previous research on the deployment of the technology has focussed solely on the study of annotations logged, thereby privileging the practices of a subset of ‘active’ users and excluding those whose behaviour comprises annotation readership, not contribution. This report explores annotation readership and similar manifestations of non-public participation across comment boards and discussion-enabled websites. It argues that a user-centered approach to online design must acknowledge and accommodate the behaviour of readers, or lurkers, and provides a brief overview of a sampling of system affordances that seek to do so.

Understanding Non-Public Participation

In 2000, Cadiz, Gupta, and Grudin examined the annotation behaviour of a software design company made up of more than 1,000 employees. A classification of the employees (based on the amount of individual annotations logged over a course of 10 months) produced a three-tier taxonomy of annotation behaviour, with one-time users, occasional users, and regular users accounting for 33%, 32%, and 32% of annotators, respectively. The authors also studied the usage of the annotation system’s notifications, a subscription service that allowed users to receive alerts of new annotations made to shared documents; 25% of system users who chose to make use of notifications still did not contribute any annotations of their own, leading the authors to speculate that these users were only ‘readers,’ much like the ‘lurkers’ of other discussion-enabled websites. Beyond an extrapolation or inference of non-annotating behaviour, however, the study’s methodology yielded no quantitative data on the frequency of annotation readership or any other occurrences of non-public participation.

Through the aforementioned research approach, annotation readership is conceived only in relation to that which it fails to be, namely, annotation contribution. However, it remains to be seen if an understanding of what motivates annotation readership can be seen as synonymous with that which discourages annotation contribution. From task-dependent and system-specific constraints to organizational practices and individual preferences, a variety of factors has been cited to explain the resulting behavioural dichotomy; reasons identified in Cadiz et al.’s (2000) case study as possible deterrents to annotating include the availability of other communication channels for users to register feedback, and the inconsistency of system usage internally, between different groups within the software design team.

The very nature of making annotations available to a group poses its own unique challenges and disrupts patterns of behaviour. The mere act of posting comments and opinions to a public display that can be viewed, and re-viewed, by multiple and unknown audiences can affect the way people express themselves. For example, users who are acutely aware of others’ interpretations—and misinterpretations—of comments, may self-censor or indeed decide against contributing at all out of fear of appearing stupid, uninformed, harsh, or purposefully disagreeable (Cadiz et al., 2000). Literature on lurker behaviour similarly cites this a chief factor for why users fail to participate fully on online discussion boards, comment sections, forums, social networks, and user-generated review sites (Nonnecke, Andrews, & Preece, 2006). Whether articulated as shyness, self-consciousness, or submissiveness, this behaviour is

reminiscent of conflict avoidance, and representative of technology disengagement, although it remains unclear to what extent the former is dependent on the latter.

The technology, or medium, may itself result in users deciding against annotating or expressing 'conflict' (or a conflicting opinion). Despite its potential to support dynamic communication and foster community development, distributed annotation systems may actually decrease or discourage dialogue between users (Cadiz et al., 2000). Specifically, within the context of collaboration software (typically used in order to edit, suggest changes, and thereby communicate a certain level of disagreement with another user), users may prefer a non-virtual or at least synchronous setting to provide constructive criticism; such users may then be perceived as 'readers' if they elect to convey potentially sensitive remarks in an environment not divorced of the communication cues necessary to ensure mutual understanding. Finally, users may be discouraged from publishing comments publicly if they perceive that such an action implies a certain level of accountability or commitment on their behalf to defend, uphold, and maintain the expressed opinions.

There is also evidence to suggest that there is considerable effort involved in producing annotations for public consumption; the process is not just as simple as sharing one's personal annotations. Marshall and Bernheim Brush (2004) found that students chose not to make use of e-learning system WebAnn's easy export of personal annotations to a public display, and instead chose to manually input comments to a classroom discussion board. A comparison of students' personal and public annotations of the same documents indicated a discrepancy between the amounts of each type of annotation made, with students making "far more annotations while they were reading than they shared with each other" (Marshall & Bernheim Brush, 2004, p. 353). Additionally, students had to make substantial changes to their personal annotations in order to render them intelligible to others; this problem was especially compounded by the fact that most personal annotations were 'anchor-only' highlighting or underlining, without any discernible written content or commentary.

Designing for Non-Public Participation

Understanding the needs and motivations of users who choose to remain readers, or lurkers, rather than active participants, or contributors, should be considered an important first step in a user-centered approach to collaborative or communication system design (Muller, Shami, Millen, & Feinberg, 2010). However, measuring the outcomes of such a design approach is dependent on how system success is to be defined; if the system must require a critical mass of users to be deemed successful (Grudin, 1988) and only contributors are understood as users, then lurkers will be perceived as problematic, and redesigns during the usability lifecycle will target lurking and endeavour to 'solve' it or transform it into contributing behaviour.

Alternatively, lurkers may be acknowledged and appreciated in their own right; in this design approach, proposed changes to existing designs or development of new ones would be informed by the needs of the lurker community, with careful consideration for subtle changes to software, applications, and interfaces that may isolate lurker users, or even cause them to leave the community or system entirely (Muller et al., 2010; Takahashi, Fujimoto, & Yamasaki, 2003). The latter, worst-case scenario, could have potentially devastating effects for a technology.

While acknowledging that lurking levels for a given system vary depending on the “size of the community, frequency of posting and number of single messages,” Nonnecke, Andrews, and Preece described lurking behaviour as normal, and indeed normative, insofar as the overwhelming majority of behaviour is often lurking rather than contributing; the authors mention one computer-consulting report that found that 98% of users on open forum sites like MSN and Slashdot were lurkers (2006, p. 8). Nielsen (2006) put the proportion at 90% across all on online communities—a phenomenon he refers to as ‘participation inequality.’

Despite the sizeable share of total system users, lurking has long been perceived and construed as negative by system designers and developers who see lurkers as content freeloaders (Muller et al., 2010; Nonnecke et al., 2006; Takahashi et al., 2003). Recently, however, researchers have begun to recognize the role of lurkers, with Muller et al. (2010) even advocating for a research agenda for lurkers in social media.

There is emerging evidence to suggest that lurking can be beneficial for online collaboration or communities in a variety of ways, such as quality control through the deliberate decision not to add unnecessary and redundant content, or demonstrated deference to other users who have more expertise or knowledge on a certain subject matter (Muller et al., 2010). Outside of a given system, lurkers contribute by furthering the reach of a community, sharing its content with outsiders, and raising its profile (Takahashi et al., 2003). Within a given system, lurkers may be perfectly positioned to absorb and digest ‘awareness’ information through observation of workflow dynamics, protocol, and other users’ behaviour, thereby potentially “harvesting insights for knowledge management” (Muller et al., 2010, p. 208). Interviews with lurkers suggest that non-public participation is often motivated by a desire to get to know a community and gain a general understanding of its practices, relationships, and idiosyncrasies (Nonnecke et al., 2006); the extent to which lurkers could leverage this knowledge and contribute to improved distributed awareness remains to be seen.

Some researchers have speculated that those whose lurking behaviour is motivated by their acute sensitivity and self-consciousness surrounding public dialogue and disagreement would stand to benefit from systems that themselves provide greater awareness to its users, whether through visualizations of communities or other interface manipulations (Takahashi et al., 2003). Certain design features that facilitate the ‘learning’ of a community or help to establish a sense of belonging in less time could even potentially encourage a shift in users’ behaviour from lurking to contributing.

Non-Public Participation Designs and Directions

An example of system design that accommodates the lurker can be found in Reflect, an interface add-on for online discussion sites that creates space within comment sections for users to provide evidence of reading behaviour via the summarization and restatement of other contributors (Kriplean, Toomim, Morgan, Borning, & Ko, 2012). In a paper outlining the development and deployment of the design, the authors outlined their explicit intention to support active listening, rather than speaking, on online discussion boards—a behaviour that is often overlooked or ignored by systems that privilege users’ content contributions over their proof of processing or understanding.

The authors argue that listening must be adequately supported in order for meaningful dialogue to occur online; to that extent, Reflect provides “a backchannel for people to demonstrate evidence of listening by restating the points they hear the commenter making” (Kriplean et al., 2012, p. 1559) with the hope that such design provisions and affordances will address some of what is lost in translation when asynchronous, virtual communications replace face-to-face conversations—themselves host to rich yet subtle cues about listener comprehension. A case study of Reflect usage on four stories hosted on Slashdot, a technology news website, suggests the system was successful in its approach; during the trial, 69% of logged restatement bullet points “Reflected back meaning” or captured the essence of the original post (Kriplean et al., 2012, p. 1564), thus demonstrating user listening; additionally, 58.8% of bullets were added by those who did not author comments on the stories, and therefore were “contributed by people we may previously have labeled as ‘lurkers’” (p. 1563) because their otherwise non-public participation would have left their readership invisible. Through its emphasis on dialogue, establishing common ground, and ensuring understanding of communication, Reflect further supports lurkers who may avoid contributing or else disengage from system use because of inflammatory or confrontational comment boards.

The Reflect space is only one instance of an interface that supports lurking, and despite its focus on listening and not speaking, the system still hinges on the willingness of users to publicly annotate via the creation of bullet points. There are other avenues for lurking-centered systems that may not be as extensive or explicitly participatory and the authors themselves acknowledge the richness of the listening design space and the many still unexplored opportunities available for non-public participation; even a simple button could be employed as “a minimal listening mechanism” (Kriplean et al., 2012, p. 1561), and be labelled in such a way that eschews conflating the act of listening with judging (for example, “I hear you” instead of “I agree” or “I disagree”).

Alternative listening options could also include the use of symbols; Asana, an online shared task management system, recently introduced hearts as a way for users to express thanks and demonstrate gratitude to their colleagues and collaborators (Stahl, 2013); a listening symbol could similarly be selected to represent acknowledgement of another’s opinion or show that a comment has been read.

Automatic tracking applications similar to e-mail read-receipts or Facebook’s ‘seen by’ feature (Constine, 2012) also provide distributed awareness of reading and lurking, however the use of such technology can be seen as obtrusive and unwelcome by those who value their privacy (Cadiz et al., 2000); the difficulty in knowing if and when other users have disabled the functionality makes it also an unreliable report of reading behaviour.

Despite the incompatibility or inconsistency between personal and public annotation practice—and the need for users to alter and expand upon their comments in order to render them intelligible to others—a tool that exports users’ personal highlighting of material and aggregates it with all other anchor-only behaviour across a system could provide a useful visualization of passive annotation (Marshall & Bernheim Brush, 2004). Users within public annotation systems may choose not to contribute in order to avoid repetition and decrease redundancy of comments (Cadiz et al., 2000); a mapping mechanism of personal annotations, however, could function to capture consensus and leverage non-public participation to flag the potentially thought-provoking and ‘comment-worthy’ content as identified by a community.

References

Cadiz, J.J., Gupta, A., & Grudin, J. (2000). Using Web annotations for asynchronous collaboration around documents. In *Proceedings of the 2000 ACM Conference on Computer Supported Cooperative Work* (pp. 309-318). New York, NY: ACM.

- **reports on the annotation activity of a large software development team using Microsoft Office 2000 to edit and comment on shared documents; provides an analysis of user behaviour based on logged annotation contributions and subscriptions to notifications**

Constine, J. (2012, July 11). *Facebook Groups Start Showing Exactly Who Saw Each Post* [Web log message]. Retrieved from <http://techcrunch.com/2012/07/11/facebook-group-read-receipts/>

- **blog entry on Facebook ‘Seen By’ feature that highlights some of the potential privacy concerns of site users and compares the application to e-mail read-receipts**

Grudin, J. (1988). Why CSCW applications fail: problems in the design and evaluation of organizational interfaces. In *Proceedings of the 1988 ACM Conference on Computer-Supported Cooperative Work* (pp. 85-93). New York, NY: ACM.

- **discussion paper on some of the common pitfalls of CSCW design and deployment, and the challenges of evaluating the relative success of organizational interfaces with respect to adoption rates and activity by users**

Kriplean, T., Toomim, M., Morgan, J., Borning, A., & Ko, A. (2012). Is this what you meant?: Promoting listening on the Web with Reflect. In *Proceedings of the 2012 ACM Annual Conference on Human Factors in Computing Systems* (pp. 1559-1568). New York, NY: ACM.

- **overview of Reflect, an interface design intended to promote listening and encourage dialogue and deliberation in online discussion settings**

Marshall, C.C., & Bernheim Brush, A.J. (2004). Exploring the relationship between personal and public annotations. In *Proceedings of the Joint ACM/IEEE Conference on Digital Libraries* (pp. 349-357). New York, NY: ACM.

- **comparative study of students’ personal and public annotation behaviour of assigned papers in preparation for online academic discussion activity; discussion of the strategies undertaken by individuals in order to transform personal annotations into public annotations**

Muller, M., Shami, N.S., Millen, D.R., & Feinberg, J. (2010). We are all lurkers: Consuming behaviors among authors and readers in an enterprise file-sharing service. In *Proceedings of the 16th ACM International Conference on Supporting Group Work* (pp. 201-210). New York, NY: ACM.

- **case study of user behaviour on a file-sharing system that compares lurking activity to contributing and uploading activity; comprehensive literature review on lurking behaviour and discussion of design implications and research agenda in support of lurking behaviour**

Nielsen, J. (2006). *Participation Inequality: Encouraging More Users to Contribute*. Retrieved from <http://www.nngroup.com/articles/participation-inequality/>

- **write-up on lurking and the issue of participation inequality across web applications; appeal to developers to consider lurking behaviour during design stages and provide alternative means for users to participate on a system**

Nonnecke, B., Andrews, D., & Preece, J. (2006). Non-public and public online community participation: Needs, attitudes and behavior. *Electronic Commerce Research*, 6(1), 7-20.

- **survey of self-identified lurkers and collection of demographic information to develop a model of the behaviour, personalities, needs, motivations, and attitudes of lurkers; articulates directions for future research and design**

Stahl, J. (2013, February 13). Asana: Share Gratitude And Enthusiasm with Your Team [Web log message]. Retrieved from <http://blog.asana.com/2013/02/introducing-asana-hearts/>

- **Asana blog entry on new feature that allows users to indicate gratitude to other system users by selecting a heart symbol**

Takahashi, M., Fujimoto, M., & Yamasaki, N. (2003). The active lurker: influence of an in-house online community on its outside environment. In *Proceedings of the 2003 International ACM SIGGROUP Conference on Supporting Group Work* (pp. 1-10). New York, NY: ACM.

- **study of lurking behaviour with respect to lurker activity outside of a given online community; classification of lurkers based on the influence, awareness, and social capital they derive and demonstrate from lurking in a community**