

# “Us vs. Them”?: Negotiating Tensions among Multiple Audiences for Critical (Technical) Practices

Eric P. S. Baumer

Communication Department and Information Science Department

Cornell University

118 Gates Hall, Ithaca, NY 14850

ericpsb@cornell.edu

## ABSTRACT

To whom is critical technical work accountable? How do accountabilities differ among audiences? What tensions emerge in navigating these difference audiences' accountabilities?

## Author Keywords

Critical technical practice; tension; discourse; audience.

## ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

## PROLOGUE

During the summer of 2012, several students and I developed a system called Reflex (Baumer et al., 2014). An interactive visualization based on computational analysis of linguistic patterns in political blogs and news coverage (Figure 1), it was designed to support frame reflection (Schön & Rein, 1994). That is, using Reflex was meant to support a process wherein “assumptions, views of the world, and values that have heretofore remained in the background, giving shape to foreground inquiry but keeping, as it were to the shadows, become foreground issues, open to discussion and inquiry in their own right” (Rein & Schön, 1996, p. 94). Reflex is but one system designed under the auspices of a project developing *computational supports for frame reflection*.

More recently, I have been collaborating on a project comparing interpretive and computational text analyses of the same data. Drawing on free text responses from a survey of people who voluntarily pledged to give up FB for 99 days (<http://99daysoffreedom.com/>), separate researchers analyzed the same data using either grounded theory method or statistical topic modeling. To our surprise, a high degree of similarity occurred in the results from each

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method. Based on this approach, we have suggested some compelling possibilities for combining the interpretive and computational approaches (Baumer, Mimno, Quan, Guha, & Gay, n.d.).

Both these projects offer examples of critical technical practice, in that they invert a traditional paradigm in natural language processing and artificial intelligence research. Classical AI often asks, “Can people make computers think?” That is, can we enable computing technologies to do things that, if done by humans, we would call intelligent (Minsky, 1968; Rich & Knight, 1991)? My work inverts that question, asking instead, “Can computers make people think?” Can we design computational systems that provoke users to consider familiar concepts or situations from novel or different perspectives? This inversion embodies a critical approach to the design of technical systems by identifying a commonly held assumption and adopting an alternative (cf. Agre, 1997).

A number of tensions emerged over the course of this work, partly arising from the diversity of audiences with which the work sought to engage. This position paper uses these two examples to articulate this diversity of audiences for

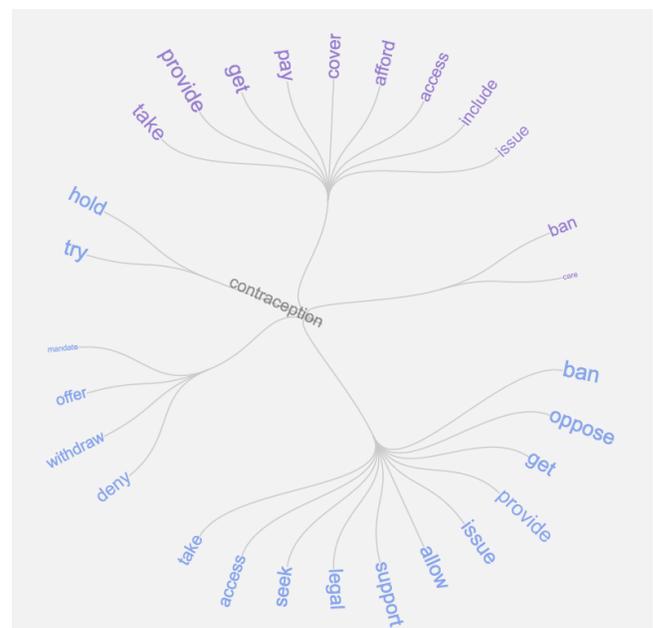


Figure 1: Screenshot of Reflex showing how language frames contraception differently in content about healthcare (top, purple) vs. content about abortion (bottom, blue).

critical technical practice, as well as the tensions that arise when appealing to multiple audiences. I will conclude by drawing from these personal experiences points of discussion for the workshop.

### **SOME AUDIENCES**

In the main papers track of this conference, my co-authors and I have articulated some of the tensions and constraints on evaluation practices that when critically-informed HCI research appeals to multiple audiences (Khovanskaya, Baumer, & Sengers, 2015). This position paper articulates in more detail who those audiences are and considering tensions beyond evaluation methods.

The examples here arise from my and my colleagues work on *Reflex*, *99 Days*, and related projects. This list is not exhaustive but rather includes just “some” of the audiences with which critical technical practice might engage.

#### **Academic Audiences**

In many ways, critical technical practice (CTP) fundamentally seeks to shift the discourse within a field. To do so, it engages with multiple sub-audiences of academics.

First, CTP generally operates in a “host” discipline (Blackwell, 2015), the discourse of which the work attempts to shift. Some members of this sub-audience may be your own collaborators! For *Agre*, the host discipline was artificial intelligence. My work has focused on human-computer interaction (HCI) and computer-supported cooperative work (CSCW).

Second, cognate disciplines may influence the host discipline. The style of AI in which *Agre* (1997) sought to intervene drew heavily from cognitive science and related processual models for human cognition. For *Reflex* and *99 Days*, cognate disciplines included interaction design, social computing, information visualization, and natural language processing.

Third, the critical technical practitioner draws on informing discipline(s) whose perspectives s/he wishes to levy in shifting the discourse within the host discipline. *Agre*, in many ways, was informed by sensibilities in the philosophy of technology and in science and technology studies, explicitly connecting his work with, for example, that of *Suchman* (1987). Similarly, my work has incorporated perspectives from communication, sociology, and political science.

One difficulty in bringing these various academic sub-audiences into conversation arises in making the work legible to, and published in, venues devoted to these different disciplines. For instance, elements of work related to *Reflex* and similar projects have been published both in social scientific venues (e.g., *Baumer, Polletta, Pierski, & Gay, 2015; Polletta, Pierski, Baumer, Celaya, & Gay, 2014*) and in technically-oriented venues (e.g., *Baumer, Elovic, Qin, Polletta, & Gay, 2015*). In doing so, though, I often fear that part of what makes such work so compelling

– its unique ability to synthesize perspectives from multiple disciplinary orientations and epistemic paradigms – gets lost in the translation for particular disciplinary audiences.

#### **Lay Audiences**

Critical technical practice might engage with a variety of lay audiences not familiar with the dominant disciplinary discourse being critiqued. These audiences might include members of the popular press media, or perhaps visitors to galleries in which such is exhibited. Here, I want to consider here one specific kind of audience: users.

The category of “user” applies to a certain kind of critical technical practice, that which engages in the development of interactive systems (again, cf. *Khovanskaya et al., 2015*). In particular cases, these users also participate in various forms of evaluation (laboratory experiments, usability trials, field studies, surveys, etc.) of the technologies being developed. This audience cares less about, for instance, the underlying discourse a technical system may be critiquing and more about what they (can) do with the system or how it might integrate with their daily practices.

#### **Review Audiences**

Virtually all academic work is subject to (peer) review. While the members of these review audiences may overlap with those of academic audiences, they perform importantly distinct functions.

For instance, funding bodies make decisions about which work receives material and monetary support. These audiences may include other academics who review funding proposals, but they also likely include publicly elected representatives and other official members of government bureaucracies. Such audiences review not only funding requests and proposals but also reports on the work done with funding that has been received.

Review audiences also include committees that make decisions about hiring, promotion, tenure, and even granting Ph.D.’s. Again, these audiences overlap with academic ones, but their positions of authority give them influence that differs from the academic audiences described above.

### **SOME TENSIONS**

Now I want to consider some of the tensions that may arise when critical technical practice engages, as it often needs to, with multiple of these audiences simultaneously.

#### **Academic-Lay Tensions**

As mentioned above, lay audiences may not be savvy to, and/or may not particularly care about, the discourse a critically-informed technical system critiques. The issues here go beyond simply whether or not a lay audience “gets” it. I will draw out one example here (*Khovanskaya et al., 2015*).

In designing Reflxt, we intentionally strove for interpretive flexibility (Pinch & Bijker, 1987; Sengers & Gaver, 2006), presenting computational analysis of linguistic patterns without a specific interpretation of their meaning. This maneuver was intended as an alternative to more prescriptive uses of language technologies in interactive systems, e.g., showing positive vs. negative comments in restaurant reviews (Yatani, Novati, Trusty, & Truong, 2011). However, users who participated in our field study of Reflxt described wanting a more prescriptive analysis that would tell them, e.g., whether a given source leaned more conservative or more liberal, or which of two sources was more biased and which more objective.

Thus, tensions arose in simultaneously meeting the project's various goals. On the one hand, we wanted to shift the academic discourse from strictly prescriptive computational linguistic systems to ones that provide the user more room for interpretation. On the other hand, we wanted to shift the ways that users engage with technology or the types of engagements that they conceive as possible. As the example here shows, doing both simultaneously proved challenging at best.

### **Lay-Review Tensions**

Review committees of various sorts often seek a combination of efficacy and impact. Did it work, and how did you know it worked? In the case of designing interactive technological systems, the lay users of those systems represent a key means by which one might demonstrate a working system. Evaluation becomes a matter of demonstrating that users responded in the desired way. This kind of cause-and-effect demonstration, however, subscribes to a particular scientific paradigm. Critical work, though, often takes other epistemological approaches to engaging with technology users, ones that might not be as easily made legible to, say, government funding bodies.

For instance, part of the goal with Reflxt was to provide tools that helped draw attention to, and supported reflection about, the framing of political issues. The grant proposal was written in such a way to highlight the benefits that such reflection can have in improving the quality of citizen engagement. However, many (perhaps most) citizens do not have a vested interest in improving the quality of their civic engagement and indeed may be disinclined to discuss political issues at all (Eliasoph, 1998). Essentially, the kinds of outcomes of interest for review audiences and those of interest to lay audiences (e.g., of users) may differ, often dramatically so.

### **Academic-Review Tensions**

In engaging with academic audiences, critically-oriented work often seeks to shift the existing discourse. When individuals are being reviewed for, e.g., hiring and promotion, such goals, if and when achieved, can constitute the kinds of impact for which these committees look. For funding agencies, though, shifting of discourse is not

usually listed among desirable outcomes. One might develop novel methods, create new products/technologies, generate findings that advance knowledge, etc. Results of this type can be demonstrated for constituents as evidence of the work a government funding body (and, implicitly, constituents' tax revenue) supports. Shifts in discourse are less presentable in the same fashion.

In another example, while writing the results of our comparison between grounded theory and topic modeling (Baumer et al., n.d.), I had engaged with some tensions between positivist and interpretivist research paradigms. However, one of my co-authors suggested not only that we did not have much to say along epistemic lines but, furthermore, that s/he did not think it was particularly interesting. In the paper's reviews, the harshest critiques came from a reviewer who asked for "a statement about the epistemological commitments of the researchers" and how "the authors' biases [...] influenced their use, comparison and proposed integration of the methods." As suggested above, tensions may emerge with one's own collaborators.

Furthermore, shifting discourse takes time, potentially much longer than the three- to five-year funding cycles followed by many grant programs. Thus, it becomes difficult to state in a report that the grant-funded work that will, eventually, change the discourse but has not yet done so. For instance, the grant under which Reflxt was funded lasted three years<sup>1</sup>. Some of the publications about the project, due in part to the length of review processes, will not even have a chance to be published until after the grant has terminated, let alone impact dominant discourse. Such points about disconnects between the length of funding cycles and the time required to conduct research are not novel, but they have particular ramifications for the accountability of critically-oriented work.

### **POINTS FOR DISCUSSION**

This discussion of multi-audience tensions raises numerous points, at least two of which bear particular relevance for this workshop.

First, some of the tensions articulated here arise from the ways that critical *technical* practice differs from other kinds of critically-oriented work. These differences are brought to the fore by the various audiences to which technical work speaks and, moreover, the different kinds of accountabilities the work has to those audiences. Technical work is expected to create functional systems, things that "work." As a contrasting example, a radical re-reading of Heidegger may represent a valid and valued philosophical contribution, but that re-reading might not be expected to create a "working" system in the same way that technical work would be. Furthermore, what constitutes a "working" system can become contentious (Khovanskaya et al., 2015). In the case of Pengi (Agre, 1997), the system's functionality or

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<sup>1</sup> Hopefully the reader appreciates the potential irony of the statement acknowledging support from this grant.

“workingness” depended on the system itself. When technical systems are meant for some population of users, the “workingness” is constituted not simply through the operation of the system itself but through system-cum-evaluation in the form of a user study. This complexity co-occurs with the academic-lay and lay-review tensions articulated above. Similar tensions may arise in the 99 Days example. Rather than asking a computational system to capture or present a veridical representation of reality, we instead considered the results of computational analysis as a resource for interpretation (cf. Leahu & Sengers, 2014). This kind of a shift may align more or less with different kinds of social scientific and/or humanist approaches to tools and methods, not to mention perceptions and expectations of lay members of the public.

Second, the tensions articulated in this position paper resonate with, or perhaps enumerate, some of the political and institutional “borderlands” and “multiple accountabilities” mentioned in the workshop CFP. As a fairly junior scholar, I have limited recommendations for or experience with navigating these. Participatory approaches (e.g., Hayes, 2011; Muller & Druin, 2012) may help bridge some of these tensions (e.g., academic-lay tensions), but others will likely remain. At the workshop, I would be most interested to hear how other researchers have negotiated among these tensions, the strategies they have employed at different times, and what kinds of approaches they have found the most (and least) successful.

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