# SOCIAL TRANSLUCENCE

## DESIGNING SOCIAL INFRASTRUCTURES THAT MAKE COLLECTIVE ACTIVITY VISIBLE

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**Making social cues visible and persistent helps online groups govern their activities.**

We are concerned with designing systems that allow groups to collaborate over computer networks. We are particularly interested in the question of how to design such systems so they support coherent interactions that enable groups with a shared aim to make progress toward a common goal. It is our experience that such coherent interaction is difficult to achieve in online environments, and thus our work begins with a question: How is it that, in the physical world, we are able to manage our group interactions so gracefully? Our answer is that humans are remarkably skilled at using subtle cues about the presence and activities of others to govern their interactions.

We use a story to elaborate on our answer. In the building where we work there is a door that opens from the stairwell into the hallway. This door has a design flaw: opened quickly, it will slam into anyone entering from the other side. In an attempt to remedy this situation, a sign was posted: "Open Door Slowly." As you might guess, the sign is not very effective. We like to contrast the sign approach with a different sort of solution: putting a glass window in the door. The glass window approach is effective for three reasons: First, as humans, we are *perceptually attuned* to movement and human faces and notice them more readily than we notice a sign. Second, once we become *aware* a person is present, our social rules come into play. I don't open the door quickly because I know you're on the other side, and I've been raised in a culture that frowns upon slamming things into others. There is a third, subtler reason for the glass window's effectiveness. Even if I haven't been properly acculturated and don't care about harming you, nevertheless, I may still refrain from slamming into you because I know that you know that I know you're there, and therefore I will be held *accountable* for my actions.

This example is quite ordinary. Every day we make countless decisions based on being able to see traces of others' activities. We wrap up a talk when the audience starts to fidget; we forego the grocery shopping when we see the parking lot is jammed; we follow the crowd at the reception assuming everyone is headed toward the food. We are also aware that our own activities provide information to others. Thus we may take pains to project particular cues in public situations, and conversely, may pretend not to notice the

cues of others to which we would rather not respond. (Readers interested in thorough accounts of the ways in which social cues shape behavior should see the work of sociologists such as Goffman [4] or Whyte [7], and work in the ethnomethodological tradition such as that by Heath and Luff [5]).

## A Design Approach for Social Translucence

We are interested in designing digital systems that make perceptually based social cues visible to their users. We believe that such systems—by supporting mutual awareness and accountability—will make it easier for people to carry on coherent discussions; to observe and imitate others' actions; to engage in peer pressure; to create, notice, and conform to social conventions; and to engage in other forms of collective interaction.

We use the phrase "social translucence" as a rubric for our approach to designing such systems. "Social," of course, signals our interest in providing cues that are socially salient. "Translucence" has a more nuanced role: Most evidently, in an implicit contrast to "transparence," it indicates our aim is *not* to make all socially salient information visible. However, translucence also stands in for the notion that, in the physical world, cues are differentially propagated through space—something which, as social creatures, we understand and make use of in governing our interactions. Thus, we know that those across the room may *see* we are talking, but will be unable to *hear* what we say; and we adjust our interactions to take advantage of this. (See [1] for a more complete discussion.)

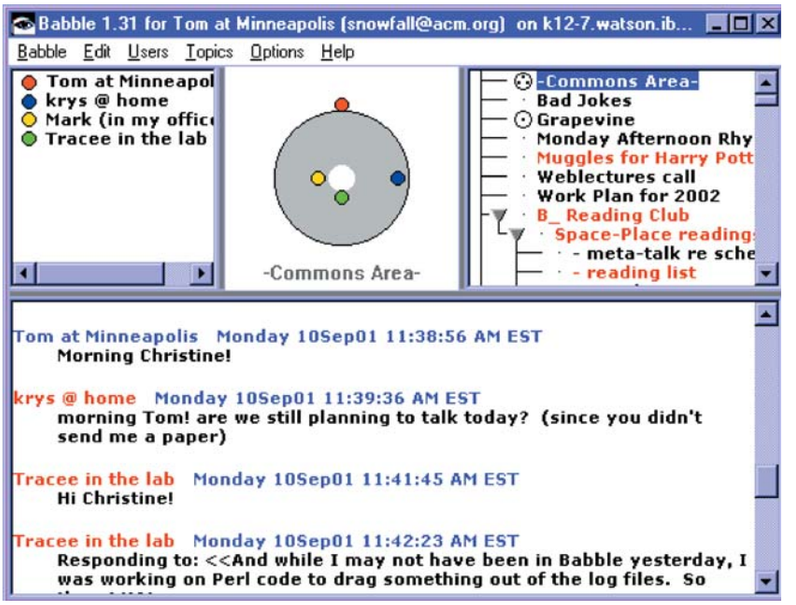


**Figure 1. The Babble user interface.**

In this article we describe a number of systems that illustrate social translucence. In particular, we introduce the notion of the *social proxy*, a minimalist visualization of people and their activities. Our primary example is a system called Babble [2, 3] that we've designed, deployed, and studied. We also describe several concept prototypes that illustrate other applications of this approach and begin to suggest the power and flexibility of the concept of social proxies. (See article by Donath in this section for other work in a similar spirit.)

## The Babble System

Babble was designed to serve the communication needs of small- to medium-sized corporate groups. It was intended to provide a semi-private online conversation area where members of groups, such as teams, work groups, committees, and special-purpose task forces, could have text-based synchronous or asynchronous conversations.

Figure 1 shows a screenshot of the Babble user interface. For our purposes, what is important is the visualization in the upper middle pane of the window. This is the social proxy, and its purpose is to

**The social proxy is a collective resource; IT IS INFRASTRUCTURE, NOT STRAIGHTJACKET.**

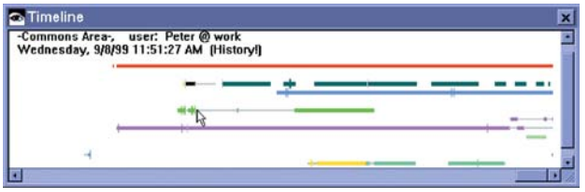


**Figure 2. The Babble Timeline shows activity over the last week.**

provide cues about the presence and activity of those in the current conversation. The way it works is that people in the conversation are shown within the circle; people logged on but in other rooms (shown in the list to the right) are positioned outside the circle; and, most importantly, when people are active in the conversation, meaning they either 'talk' (type) or 'listen' (click and scroll), their dots move to the inner periphery of the circle, and then gradually drift back out to the edge over the course of about 20 minutes.

Over the last four years we've deployed Babble to about 20 groups, and conducted a variety of studies of its adoption and use. In general, our users report the social proxy is engaging and informative. They speak of seeing who is "in the room," noticing a crowd "gathering" or "dispersing," and seeing that people are "paying attention" to what they say (when other dots move into the center of the proxy after they post). Note that many of the things our users report "seeing" are inferences. For example, the social proxy does not show that people are paying attention, only that someone has clicked or typed. Someone might be paying attention, or they might be *pretending* to pay attention; we believe it is crucial to maintain such socially useful ambiguities, and that is one of the reasons we emphasize *social translucence*.

Although Babble resembles a synchronous, multichannel chat system, it is important to note its conversations persist across sessions. So while users can carry on synchronous chat-like conversations, they also carry on conversations whose turns are separated by hours, days, or weeks. To support asynchronous conversations like these, we designed a different sort of social proxy called the "Timeline" (Figure 2). In the Timeline each user owns a row: they leave a trace if they are logged on, and a blip when they speak. If they are in the conversation being viewed, the line or blip is in color, otherwise it's gray. Users report being able to "read" the timeline to see who was around when, to determine if someone has "read" their post (that is, entered the topic after the post was made), and to understand the patterns of the community (for example, when people tend to show up and depart).

## Visualizing Collective Interactions with Social Proxies

We have developed prototypes of social proxies for other online activities. Although these have not been implemented, they give a sense for some of the other roles social proxies might play in supporting collective behavior on the Internet.

*Lectures.* Imagine an online lecture, perhaps delivered via some textual conversation system, but more likely delivered via audio over, say, a conference call and accessed by people using screen phones. The lecture proxy shown in Figure 3 assumes we have some way of identifying who has spoken. Given

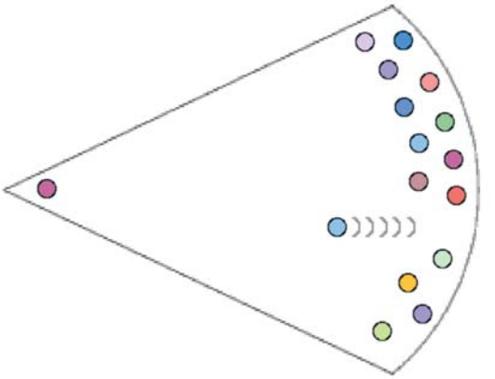

**Figure 3. A lecture proxy.**

that, the positions of the dots reflect a running average of the number or length of comments during the last five minutes. The lecturer starts out on the left, the members of the audience on the right, and the proxy is dynamically updated. As long as the lecture follows its canonical interaction pattern, with the lecturer speaking and the audience being silent, it retains its initial form. However, if a person interrupts with a question or a comment, his or her dot will move a bit to the left, and if the interruptions continue, that person becomes, quite literally, "out of line" (as shown in Figure 3). The proxy is seen by everyone, and so everyone knows (and knows that everyone knows) what is happening. How the group makes use of this information is up to the group. The social proxy is a collective resource; it is infrastructure, not straightjacket. It may be used to help enforce norms about how to behave during a lecture; or it may be used as a signal that it's time to shift to a different interactive genre.

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*Auctions*. Social proxies aren't just about conversation—they can support any sort of collective interaction. To illustrate this, let's turn our attention to online auctions. In the physical world of face-to-face interaction, auctions are social events. People

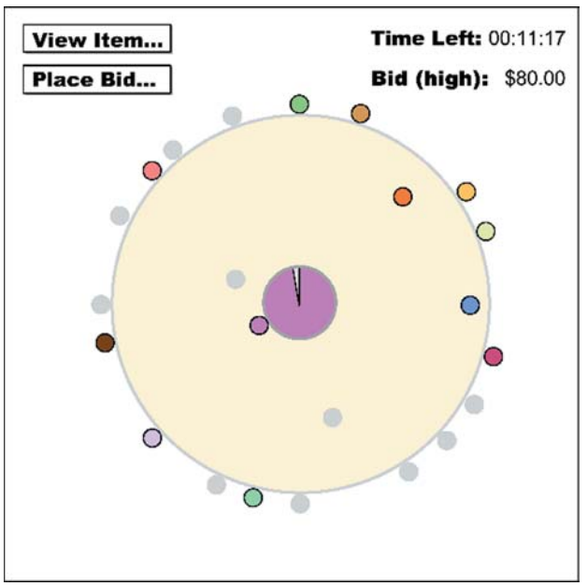


**Figure 4. An auction proxy.**

gather, inspect the items being offered, and participate in a public bidding process. Participants not only look at what is being auctioned, they also observe who is interested in what, and who bids for what. They are conscious their own actions and gazes are being watched by others. That is, people not only bid for items, they also bid against other participants. All this contributes to making auctions intensely social and dramatic experiences, as well as enabling them to function as social mechanisms for computing the value of items, asserting the social or professional status of the bidders, and, of course, actually carrying out transactions [6].

However, when we look at online auctions, the social cues that make their face-to-face counterparts such rich and engaging experiences have vanished. The social proxy shown in Figure 4 is an attempt to restore some of these cues. As before, each participant is represented by a colored dot. If they have accessed the auction page within the last three minutes, their dot is shown in color; after that, it turns gray. People who only look at what's for sale are shown around the outside of the circle. When people place bids, they move into the circle and are positioned in a way that shows the relative magnitude of their bids. Thus, the auction proxy reveals how many have shown interest, how many have bid, what the spread of bidding is, and how many people are present and thus, perhaps, candidates for entering the bidding at the last minute.

*Lines.* Auctions are a special case of commerce-oriented interaction. For a different example of supporting nonconversational interaction, let's turn to the most ubiquitous hallmark of commerce-oriented interaction: the waiting line. As experienced users of waiting lines we understand a lot about

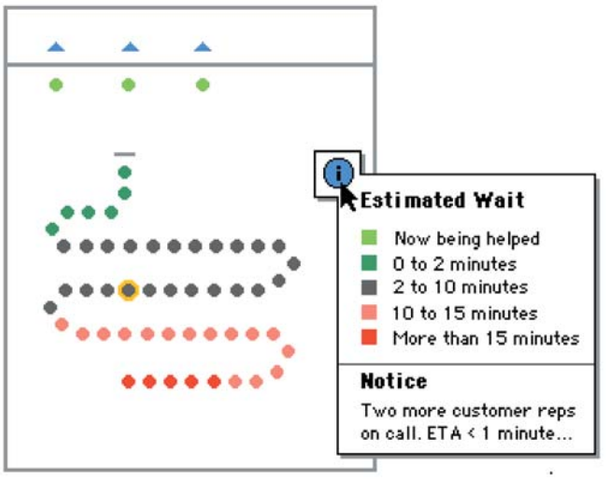


**Figure 5. Online lines.**

them. We understand the implications of their length; we make estimates of their speed; we mutter when someone with a problem slows the line; we become irritated when others cut in front of us; we feel elation if extra personnel show up to handle a lengthy line. We may decide to postpone a transaction if a line we are in appears to be moving slowly, only to change our minds if we notice that the growth of the line behind us has accelerated. However, when we move into the digital medium, the lines have vanished. But, as anyone who has listened to the "your call is important to us please remain on the line and your call will be answered in the order in which it was received" message knows, "vanished" doesn't mean that they're gone. They have simply lost most of the cues that transform a really annoying experience into a mildly annoying, or very occasionally, a mildly interesting experience.

Figure 5 shows another social proxy designed to support online situations where customers are, for example, waiting to chat with a technical support person at a Web-based help desk. Such a proxy conveys information about the wait, the number of support personnel present, and the speed of the line. It also might enable other activities such as waiting in multiple lines simultaneously, chatting with others in the line, or allowing someone in a hurry to go first.

## Closing Remarks

Both the Babble system and the design prototypes we've described illustrate our approach of making the online presence and activity of others visible. By making social cues visible, and allowing visible traces to accumulate over time, we create a resource that allows people—especially those familiar with the interactive context—to draw inferences about what is happening which can, in turn, shape their collective activity. This emphasis on visibility raises a number of issues, two critical ones being trustworthiness and privacy. In terms of trust, the role of the social proxy as a collective resource for governing interaction makes it an attractive point of leverage for those who wish to control interactions. Thus, it is easy to imagine unscrupulous online auctioneers who might wish to create counterfeit crowds, even as face-to-face auctions may have their shills. Mechanisms for addressing this sort of concern range from the technical to the social and legal. With regard to privacy it is important to note that neither privacy nor visibility are inherently good or bad; each supports and inhibits certain types of behavior. By making careful choices about which cues to reveal or suppress, we can design environments to support particular types of interactions. For example, the perceived validity of elections depends crucially on keeping certain elements of behavior very private, and others very visible. It is both important that a voter be alone in the voting booth, and that it be visible that the voter is alone (hence the knee-length curtain). Privacy and visibility stand in tension with one another, and understanding how to strike a balance appropriate to the situation is one of the critical issues in designing to support social interaction. C

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