

# Cooperation Among Strangers: Visualizing Norms as a Means of Supporting Cooperation in Online Systems

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## ABSTRACT

This position paper explores the possibility of using social proxies – minimalist visualizations of people and their activities in online environments – to increase the likelihood of socially positive behaviors (trust, compliance, cooperation) in online systems. The paper begins by discussing the assumption underpinning the work: that making participants mutually visible produces social pressures for them to behave in accordance with social norms. Next it briefly describes social proxies. Finally, the paper discusses two examples that illustrate how interactive norms are more visible, and how that might in turn shape users’ behavior in online systems.

## INTRODUCTION

It is clear that people are very skilled at cooperating with one another in face to face situations. In conversation we notice if our partner wants to say something, and yield the floor with a glance. When giving a presentation we may pick up the pace or change course on the fly if our audience begins to fidget. And even though we may not be paying much attention, we skillfully avoid bumping into others as we navigate a crowded reception.

Underlying this cooperative behavior are norms. Norms are sets of socially agreed upon ‘rules’ that we draw upon to structure our behavior. Norms vary in their strength. Some norms are so strong that their violation may raise questions about the violator’s sanity: e.g., dancing naked in the street; jumping on strangers. Other norms are weaker: when and where it is appropriate to talk on a cell phone; when it is appropriate to interrupt someone. And of course norms vary according to situation and culture. Dancing naked in the street may be acceptable (if only barely) during Mardi Gras celebrations; and jumping on strangers is proper behavior if it’s part of wrestling match or happening in a mosh pit. Or to consider a more sedate example, the practice of interrupting a speaker may be acceptable in a small meeting, but not in a large public lecture.

As humans, we are skilled at noticing the presence and activities of those around us, and at understanding and adhering to the norms that govern the situation. Even when we may not wish to obey a norm – I may be in a hurry and would prefer to go right to the head of the queue – the

presence of others and the possibility of their disapproval (or of their active interference, or of the summoning of an authority) can compel our compliance. A large literature testifies to the many ways in which norms shape behavior and enable us to cooperatively interact others (e.g., [6, 7, 9].

Given this workshop’s emphasis on examining means for supporting socially positive behavior that does not rely on a traceable identity (and the contingent possibility of disciplinary action by an authority), it is apposite to note that these types of effects occur even in situations where people do not know one another. We navigate crowded streets, stand patiently in queues, and sit quietly at the symphony even though surrounded by strangers, and even when no authority is at hand to compel our good behavior. Generally, the exceptions occur when we find ourselves in a foreign culture whose norms differ from our own (e.g. the ‘rules’ for forming a queue), and our attempts at good behavior go inadvertently astray. (Morrill, et al [8] provide many examples, both of the power of norms among strangers, and the norm-based conflicts that arise when members of different (sub)cultures interact.)

However, when we move from face to face interaction to digitally mediated interaction, things are different: cues that we use to guide our interactions are mostly absent. Often there is no sign of the presence of others – e.g., in posting to a blog or news forum. Even when the presence of others is obvious – as in a chat room or on a conference call – it is difficult to see who is paying attention, or who wishes to speak. Interactive moves that require little effort in face to face settings – interrupting at the right moment, yielding the floor when someone has a question, or ‘going around the table’ to do introductions – require much effort in digital systems, if they are possible at all.

## SOCIAL PROXIES

Over the last several years, I’ve been exploring ways of redressing this type of situation by providing cues about the presence and activities of participants in particular online contexts. The approach I’ve developed has to do with creating a type of visualization called a “social proxy.”

The social proxy is a minimalist graphical representation that portrays socially salient aspects of an online interaction; it is intended to be visible to all users of a

system, and updated dynamically. It typically consists of a geometric figure representing an interaction setting, and one or more colored dots that depict aspects of the presence and activities of participants in that setting.

Figure 1 shows two instances of a social proxy as implemented in a multi-room persistent chat environment called Babble [2]. The circle represents the chat room the user is currently viewing; dots inside the circle represent others who are in the same room, and dots outside the circle represent those in different chat rooms. When people in the current room are active (meaning they click or scroll, as when reading, or type, as when ‘speaking’), their dots move to the circle’s hub; when they cease to be active, their dots gradually drift to the periphery of the circle. Typically, a cluster of dots at the hub of the circle indicates that ‘something is going on’ – the experience, to a Babble user, is somewhat similar to walking down a street and noticing a crowd: it provokes curiosity and (often) a desire to see what’s up. Thus, the leftmost example in Figure shows an active chat with about half a dozen active participants; in the example to the right the interaction has ceased and the participants have gone to other chats or logged off.

### **VISUALIZING NORMS**

Social proxies can support online interactions in a number of ways (see [3, 4] for a number of examples), but in this position paper we focus on the use of social proxies to make the interactive norms of a situation visible. The basic idea is that by making the interactive norms of a situation visible, and showing the behavior of the situations’ participants relative to the norm, we can recreate some of the social pressures that make norms such a powerful mechanism in the face to face world.

Let’s return to the face to face world for a moment to consider an example. Figure 2 shows a picture of a Butchart Gardens in Victoria, British Columbia. The garden has been designed so that visitors may stroll through it, and, in particular, we can see that walkways suggest (i.e. define a norm) of where people are to walk. Clearly this is weak norm, as a few people have wandered off the path, but nevertheless most people are cooperatively adhering to it. (Indeed, one of the nice things about norms as a means of structuring behavior is they are flexible; people can obey or depart from them as seems appropriate.)

### **The Lecture Proxy**

How do we translate this into a social proxy? Let’s take a look at the example shown in Figure 3: the lecture proxy. Imagine a talk or lecture delivered as part of a conference call and accessed by people using phones with screens or phones adjacent to their computers. The lecture proxy, two states of which are shown in Figure 3, assumes that we have some way of identifying that someone on a particular connection has spoken (as is possible with Voice over IP). The background shape represents the lecture ‘room;’ dots represent people; and the farther to the left a dot is, the

more that person has spoken during the last five minutes. Thus, if the lecture is proceeding according to the lecture norm – with the lecturer speaking and the audience being quiet – the dots in the proxy assume a very regular pattern (as in the instance to the left). 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 turn into something longer than a question, that person becomes, quite literally, ‘out of line’ (as shown in middle instance). Were this behavior to be taken up by multiple audience members, their dots would move forward as well, imparting a raggedness or incoherence to the visual image (as in the rightmost instance).

What the lecture proxy is doing is to make the standard norm of lectures – that the lecturer speaks, while the audience remains quiet – visible. The point here is not to prohibit audience members from speaking while the lecturer is talking (indeed, such functionality can and has been implemented in some systems), but rather to eliminate the need for it by reminding participants of the norm. In a face to face lecture, it is only the norm – and the visibility of adherence to or violation of the convention – that keeps people quiet. In just this manner, the lecture proxy highlights how the interaction is going with respect to the norm, and makes it visible when the interaction is shifting from the norm. By making this shift public, the lecture proxy can serve as an aid in either enforcing a return to the norm, or signaling that perhaps it is time to shift to a different mode of interaction.

### **The Meeting Proxy**

Let’s look at a more complex example of a proxy that makes norms visible. Whereas the lecture proxy was simply a visualization (in that its content reflected users’ behavior), the meeting proxy shown in Figure 4 permits users to control their own behavior by manipulating the visualization.

The meeting room application screen would consist of four areas: one for the meeting room proxy, and three activity oriented spaces: one for a shared whiteboard, one for the group chat, and a private area for taking notes or preparing contributions. The meeting room proxy is divided into three areas that correspond to each activity oriented space. That is, the dots of users who are engaged in that activity (or who wish to engage in it, or who have just finished engaging in it) are shown in that portion of the proxy. And in fact, users can drag their dots to particular areas of the proxy, and as a consequence particular sets of activity-related functionality become available to them.

Thus, in Figure 4, a user would move his or her dot to the whiteboard area (at the top), as a way of accessing controls for editing the whiteboard. Since the meeting room proxy is visible to all users, everyone sees the movement of that user’s dot, and can make inferences about what is going on (i.e., someone who has just moved to the whiteboard area probably intends to use it). Because we have norms about

turn-taking in presentations, this visibility enables one person to be working at the whiteboard, with a second waiting just behind, as shown in Figure 4. If others wanted to use the whiteboard, they might queue up behind the second person; the queue, in turn, can serve as a signal that the current user should not take too long (i.e., just as we have norms that suggest that people take turns in meetings, we also have norms that suggest that it is courteous not to take too long if it is clear that others want to speak). Note that whiteboard area of the proxy is relatively small, in keeping with the norm that in most meetings only one or a few people use the whiteboard at once. In a different sort of meeting, where the norm is for many people to be using the whiteboard at once (for brainstorming, perhaps), the proxy should be designed differently.

The other two areas of the proxy function in a similar manner, although each has some differences. Users who wish to work privately drag their dots to the lower (oval area) of the proxy to get access to their private workspaces. This might result in the application window panes being reconfigured to give them a larger private workspace, and to visually indicate that others can not now see what they type. The dots of users who are actively working (i.e. typing) are shown as closest to the edge of the proxy (this is intended to serve as a signal that their attention may be focused elsewhere. When they cease working, their dots will gradually drift towards the middle of the oval area. Similarly, the dots of users who are actively chatting (or clicking and scrolling) would move towards the top of the chat area, whereas those who have done nothing drift towards the back. While there is no guarantee that the chat is related to the purpose of the meeting, users might infer that a ‘crowd’ at the front (top) of the proxy indicates a focused and energetic meeting.

Both of these examples describe providing access to functionality that is localized to a particular area of the proxy; suppose, however, that that is not the case? For example, perhaps it is necessary for someone to take on a managerial role – e.g. to do floor control for a contentious meeting, or to serve as master of ceremony? In the meeting room proxy, this is achieved by dragging one’s dot into the small alcove in the upper left quadrant of Figure 4 (think of the telephone booth that Clark Kent steps into to transform into Superman – although in this case the transformation is intended to be publicly visible). Once the user has selected the manager role, the dot is ejected from the role-changing booth with its shape transformed to represent the additional functionality.<sup>1</sup> Here, the idea is that by publicly taking on a

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<sup>1</sup> A user acting in the manager role is signified by two golden rays projecting from the upper portion of the dot. This, of course, is a visual reference to the ‘horns of light’ that Michelangelo bestowed on his statue of Moses, and represents the Wisdom and Perspicuity of Management. Non-managers sometimes prefer to associate the golden rays with the coiffure of Dilbert’s pointy haired boss.

role, a user also takes on behavioral norms that accompany that role. Note that the norm not only applies to the person taking on the role, but that the norms may also shape the ways that others interact with the user-turned-manager. Indeed, it might be the case that taking on the manager role confers no extra functionality; instead, it is up to the participants in the meeting to accept (or not) the interactive norms that accompany the manager role signaled by the dot’s appearance. (This is reminiscent of the “Helpful Person Badge” used in MOOs as a signal that a person is willing to answer the questions of newcomers [1].)

## CLOSING REMARKS

Obviously, this is not a complete solution to the problem of how to promote socially acceptable behavior among strangers online. At the best, this approach makes it easier for people to behave according to norms, by providing cues about what the norms are, showing how others are behaving with respect to the norms, and making violations of norms visible (and discussable and thus modifiable and/or enforceable). It presumes that people, in fact, want to cooperate. While this is often the case face to face situations, the curtailed identity and lack of physicality that characterizes online environments may make this a less general case in the online world. It is not clear whether – if participants were otherwise totally anonymous – the approach of making norms visible would be a good solution. It may be that some sort of persistent identity or at least physical collocation is necessary to make norms sufficiently powerful to be of general use.

However, it is important to remember that identity doesn’t have to be all or nothing. That is, there is a lot of territory between total anonymity and the ‘true name’ that ties the individual to his or her family, community, and profession, and that enables the social (or religious or legal) enforcement of behavioral norms. One approach is to provide pseudonyms in a context that allows the actions and reputation of the user to be tracked. While this doesn’t work well if it is easy to obtain a new pseudonym (as it now is in most public access online systems), this approach could be made viable through the provision of one-per-person unchangeable pseudonyms, whose irreplaceability would make their users reluctant to ‘spoil’ them through misbehavior [5]. Another approach might be to make an individual’s membership in a group or association with a networks of ‘friends’ visible (even while hiding the individual’s identity) so that misbehavior would reflect on the group as a whole. Yet a third approach is sequestered identity (common in reviewing systems and among ISPs), where a trusted circle of people know (or can determine) the identity of individuals, and that the possibility of exposure again serves as a deterrent to misbehavior. These and other approaches to supporting identity in online systems are likely to interact with norms in varying ways, and offer a rich terrain for further exploration.

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