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Social Visualization

Powering Innovation: A National Summit
Panel on Advanced Visualization: A Boom with a View
Toronto, November 4, 2008

Introduction

My interest

- How do we design online systems that exhibit the combination of power, fluidity and engagement that characterizes face to face interactions?

Introduction

What I'll talk about

- Perspective
- Approach
- Examples
- Wrap up

Perspective

A tale of two doors

- A problem

A door opens from the stairs that come up from the cafeteria into a hallway.

If opened quickly, at the wrong moment, it can cause problems for those on the other side



Perspective

A tale of two doors

- Solution 1:
Put a sign on the door – “Open Door Slowly”



Perspective

A tale of two doors

- Solution 2:

A window



Perspective

A tale of two doors

- Why the window works

Visibility produces awareness

Movement and faces engage our attention in a way that text does not

Awareness triggers social norms

I know that another person is there, and that brings social rules (norms) into play

Mutual visibility triggers accountability

I know that you know that I know, and therefore I am responsible to you



Perspective

A tale of two doors

- Why the window works (continued)

Audience amplification

If others besides the interactors are watching
accountability can be amplified

Reinforcement of norms

Every act of doing the 'dance' at the door
reinforces the norms
for both the interactors and the audience



Perspective

The moral of the story

- This triad of effects
 - Visibility triggers **awareness**
 - Awareness brings **social norms** into play
 - and mutual awareness triggers **accountability**
- is responsible for much of the coherence exhibited by face to face behavior

Perspective

Examples - social norms in action

- Lining up for a parade
 - cue: change in paving
 - cue: position of other spectators

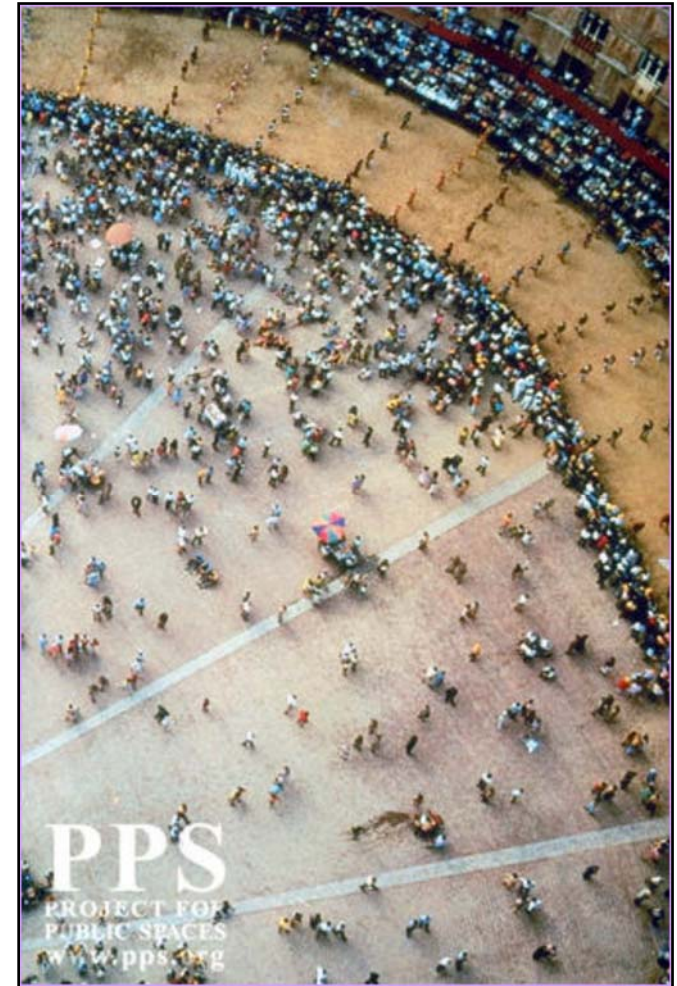


Photo © 2004 Project for Public Spaces, Inc. www.pps.org

Perspective

Examples – social norms in action

- Walking on a path
 - cue: paving
 - cue: other walkers



Photo © 2004 Project for Public Spaces, Inc. www.pps.org

Perspective

Examples – social norms in action

- Walking on a path
 - cue: paving
 - cue: other walkers
- Note that these cues are reinforcing behavior, not forcing it



Photo © 2004 Project for Public Spaces, Inc. www.pps.org

Perspective

Examples – social norms in action

- Standing in a queue
 - cue: ropes
 - cue: others in the queue



Perspective

Examples - social norms in action

- Waiting for the light to change
 - cue: crosswalk and lights
 - cue: crowd of people waiting



Perspective

Examples – social norms in action

- Waiting for the light to change
 - cue: crosswalk and lights
 - cue: crowd of people waiting
- Note that one person crossing against the light can trigger a cascade of norm-breaking



Perspective

Summary

- The coherence of our behavior in face to face interaction is supported by social norms
- Social norms are supported by visible cues, which include
 - cues embedded in the environment
 - and behavioral cues from others
- And social norms are reinforced by the the fact that our behaviors with respect to them are public



Approach

Q: How can we apply these observations to online systems?

A: Social visualization

- Designing systems that make the presence and activities of their users 'public' – this is, by making users and their activities within the system mutually visible

Approach

Approaches to social visualization

- **Realism** (e.g., media spaces)



Xerox PARC media space, circa 1986

<http://en.wikipedia.org/wiki/Image:BobAndRanjitJune1986.jpg>

Approach

Approaches to social visualization

- Realism (e.g., media spaces)
- **Mimesis** (e.g., avatars and virtual worlds)

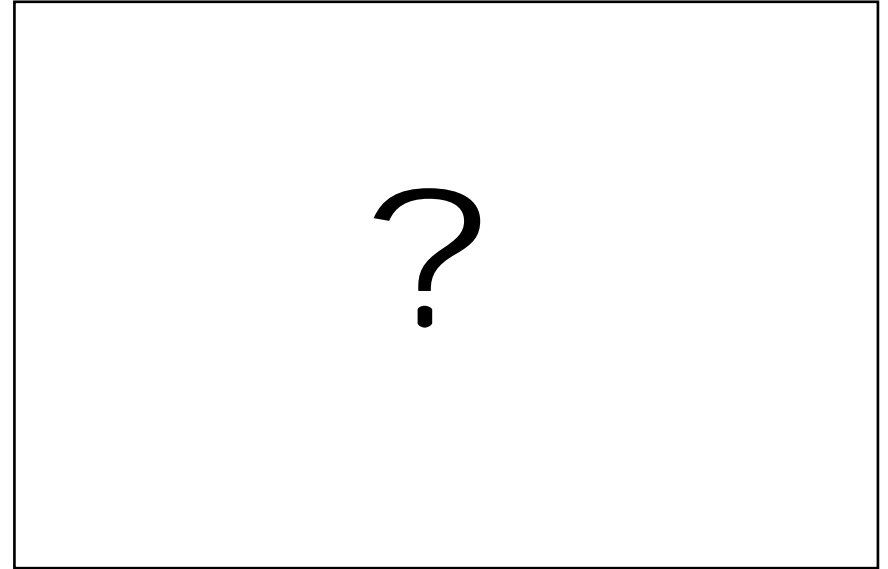


Second Life, IBM Research island, 2008

Approach

Approaches to social visualization

- Realism (e.g., media spaces)
- Mimesis (e.g., avatars and virtual worlds)
- **Abstraction** (e.g., social proxies)



Approach

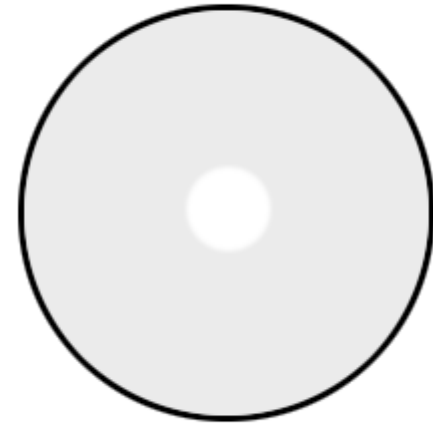
Social proxies

- A social proxy is a shared, minimalist visualization that makes people and their activities mutually visible

Approach

A social proxy for a group chat

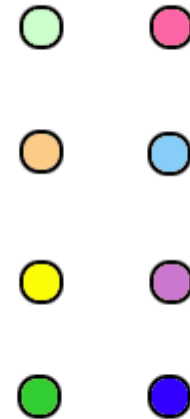
- A chat is represented by a circle



Approach

A social proxy for a group chat

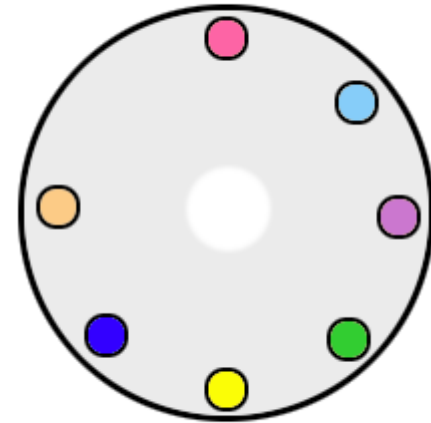
- People are represented by colored dots



Approach

A social proxy for a group chat

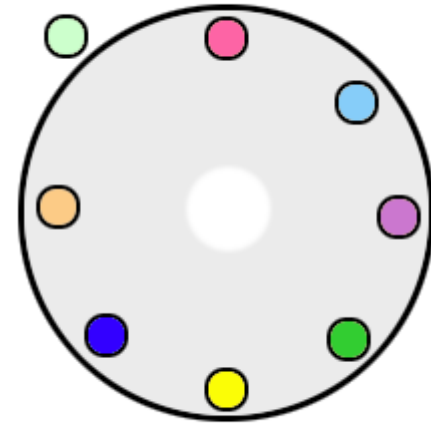
- People **in** the chat room are shown **inside** the circle



Approach

A social proxy for a group chat

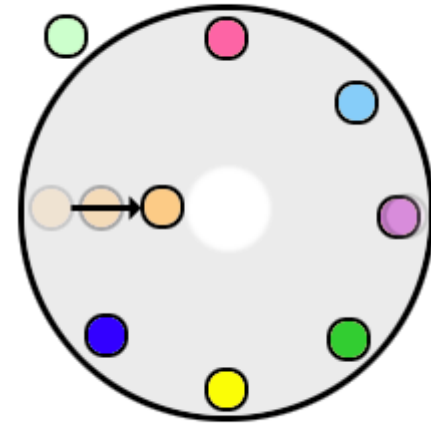
- People in **other** chat rooms are shown **outside** the circle



Approach

A social proxy for a group chat

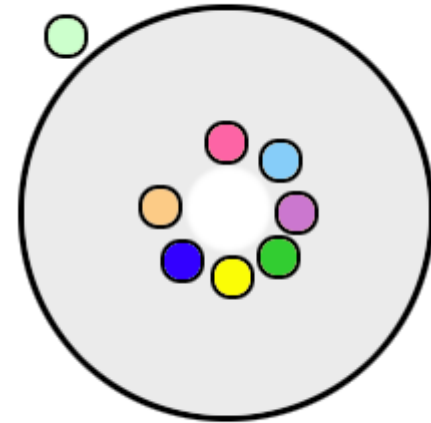
- If a person is engaged in the chat (i.e., typing, clicking, mousing around) their dot moves towards the circle's hub



Approach

A social proxy for a group chat

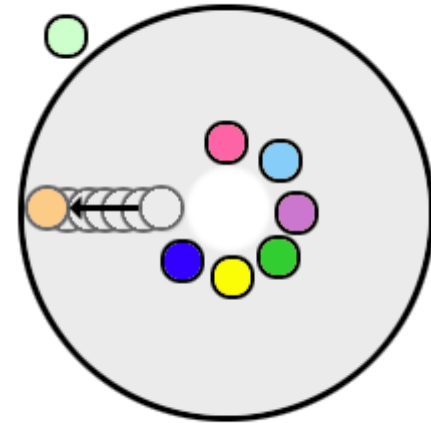
- So an active chat looks something like this



Approach

A social proxy for a group chat

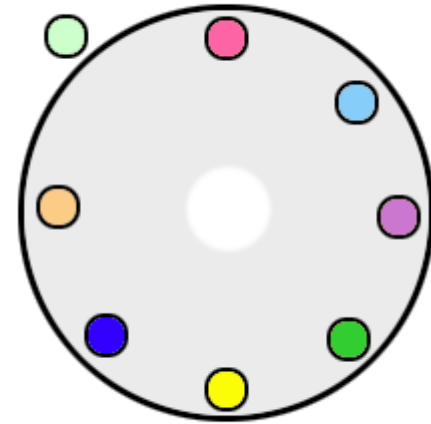
- If a person becomes idle, their dot slowly drifts outward (over the course of about 20 minutes)



Approach

A social proxy for a group chat

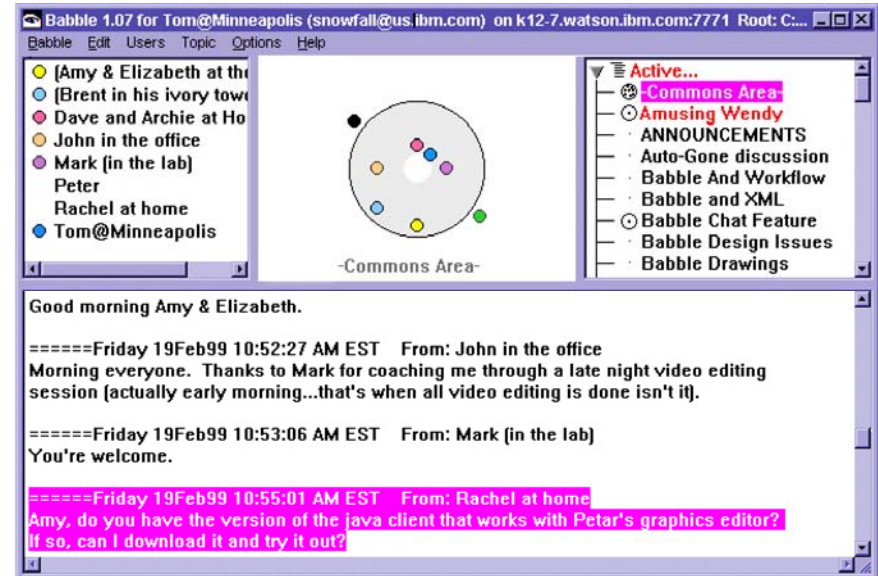
- So an inactive chat (but one in which people are still 'around') looks something like this



Approach

The Babble system

- This social proxy was implemented as part of the Babble system



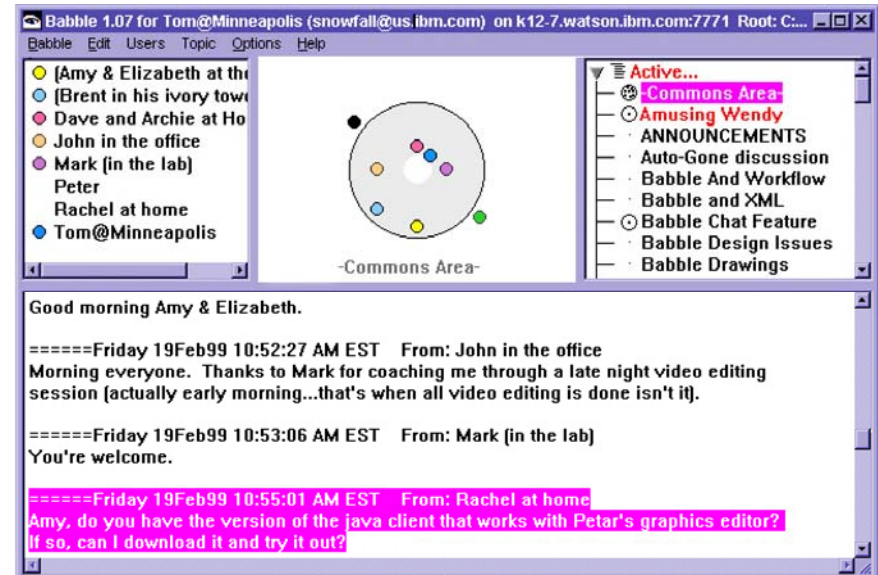
Erickson, et al. Socially Translucent Systems: Social Proxies, Persistent Conversation, and the Design of 'Babble. *Proc. CHI 1999*.

<http://www.visi.com/~snowfall/loops.chi99.paper.html>

Approach

The Babble system

- This social proxy was implemented as part of the Babble system
- Over five years Babble was deployed to about two dozen groups. In general:
 - it was easy to learn
 - users liked it, and talked about it
 - and it supported a number of interesting social phenomena



Erickson, et al. Socially Translucent Systems: Social Proxies, Persistent Conversation, and the Design of 'Babble. *Proc. CHI 1999*.

<http://www.visi.com/~snowfall/loops.chi99.paper.html>

Examples

This approach to social visualization turns out to be quite versatile

- Here's a brief tour of some of the work in this area

Examples

Social proxies for queues

- In the face to face world, people sometimes have to wait for access to a limited resource
- When they do so, they often form up in queues
- And people understand a lot about queues



Examples

Social proxies for queues

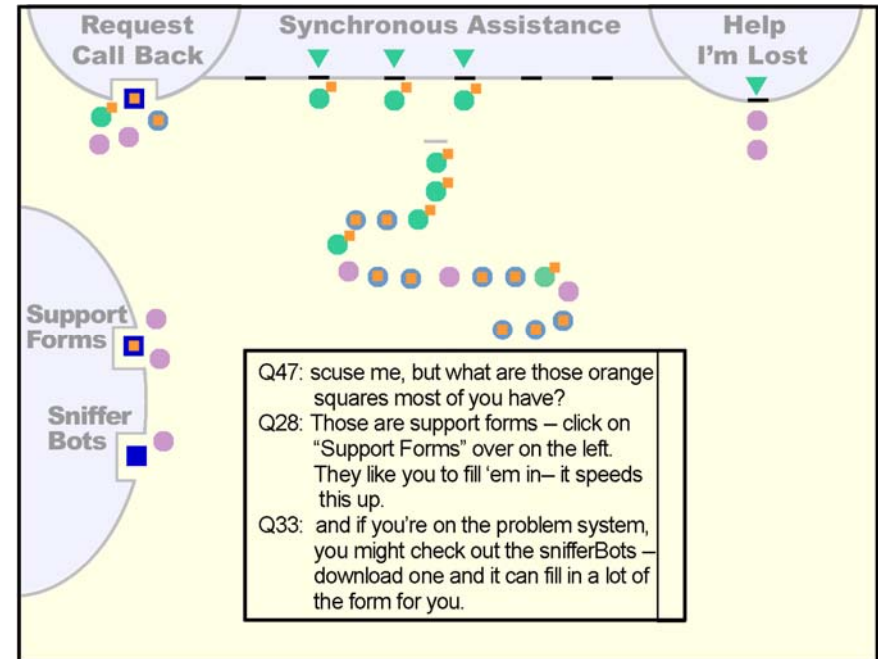
- In the online world people sometimes have to wait for access to a limited resource
- When they do so, there isn't much support...

“Your call is important to us! Please remain on the line and your call will be answered in the order it was received...”

Examples

Social proxies for queues

- Imagine an online interactive help center
 - Helpers are represented by triangles
 - and those needing help by dots
- Not only can they see how long the wait is, but they can chat with others in the queue...



Examples

Social proxies for queues

- An implemented example can be found in Karahalios' Chit Chat Club
 - People sitting together in a room can converse with someone who 'logs into' the physical avatar in the picture
 - However, what to do about people who were waiting to log in next?

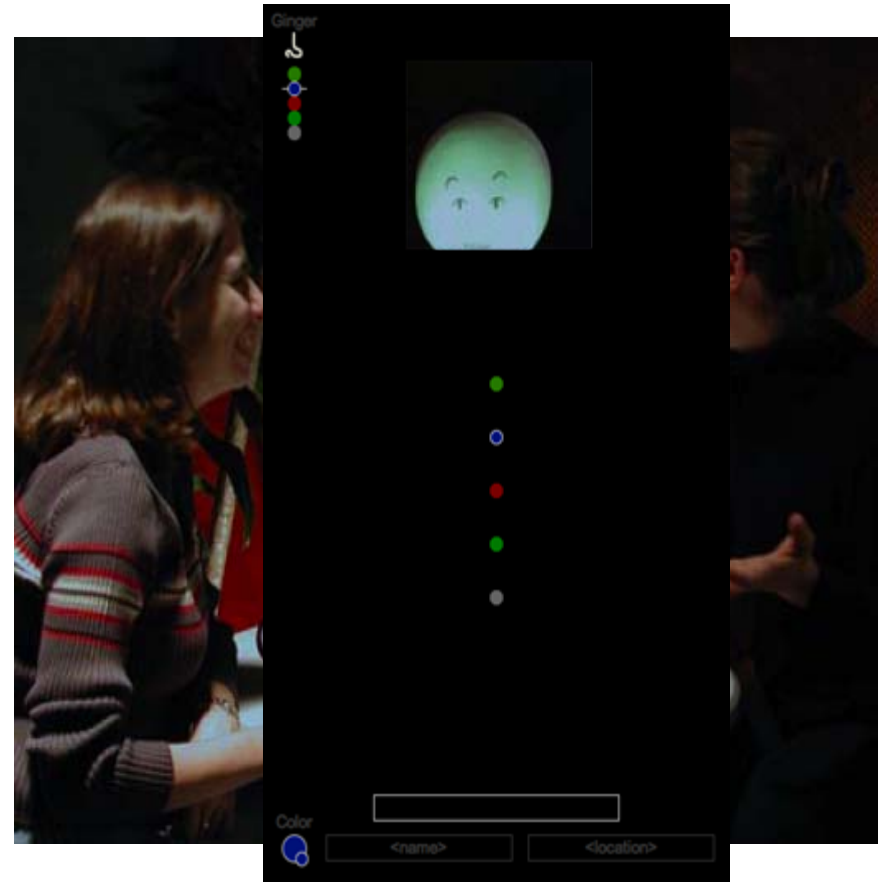


Chit Chat Club
Design by Karrie Karahalios and colleagues,
University of Illinois, Chicago

Examples

Social proxies for queues

- So the interface for the remote users included a queue proxy
- It allowed users to see the length of the queue and judge how long the wait was

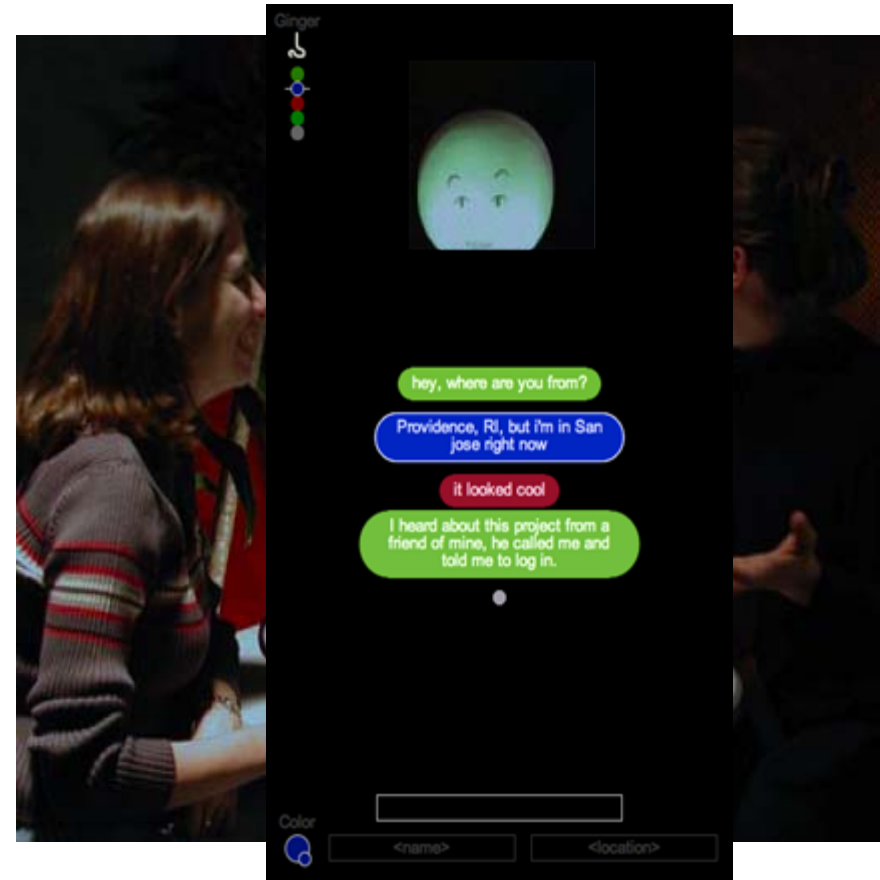


Chit Chat Club
Design by Karrie Karahalios and colleagues,
University of Illinois, Chicago

Examples

Social proxies for queues

- So the interface for the remote users included a queue proxy
- It allowed users to see the length of the queue and judge how long the wait was
- And it let them talk with one another
 - People talked quite a lot, and some got so involved that they didn't want to stop when their turn came



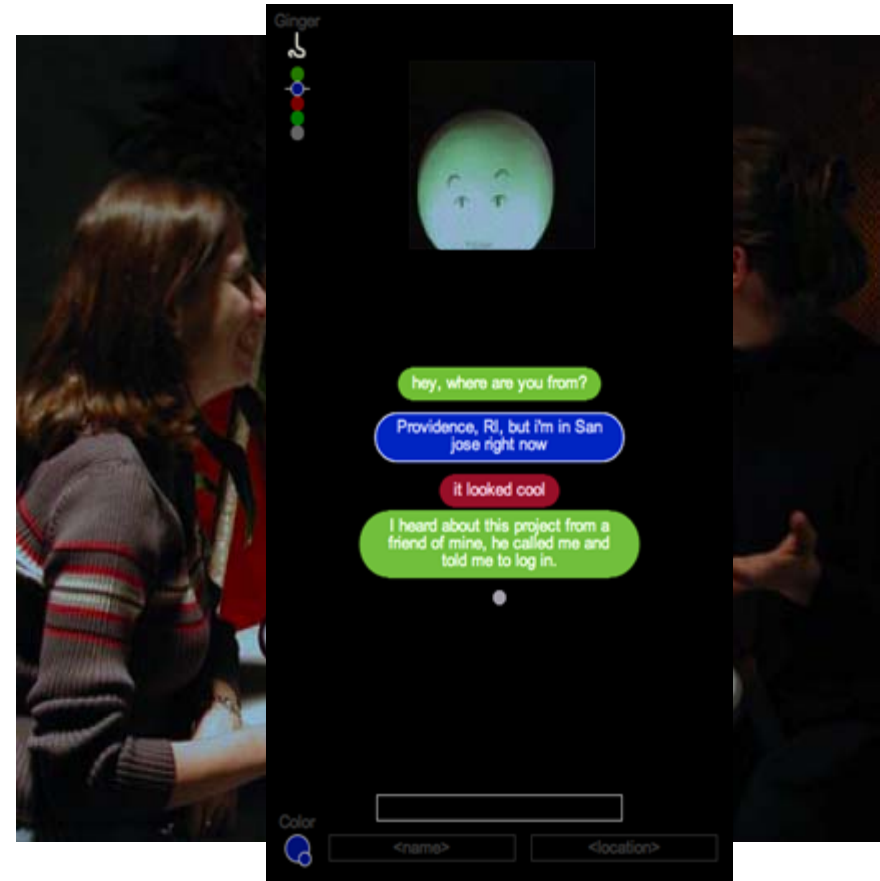
Chit Chat Club

Design by **Karrie Karahalios** and colleagues,
University of Illinois, Chicago

Examples

Social proxies for queues

- So the interface for the remote users included a queue proxy
- It allowed users to see the length of the queue and judge how long the wait was
- And it let them talk with one another
 - People talked quite a lot, and some got so involved that they didn't want to stop when their turn came
- Karahalios et al. are working on another version that allows users to change places, etc.



Chit Chat Club

Design by **Karrie Karahalios** and colleagues,
University of Illinois, Chicago

Examples

Social proxies for physical spaces

- The building I work in at IBM



Examples

Social proxies for physical spaces

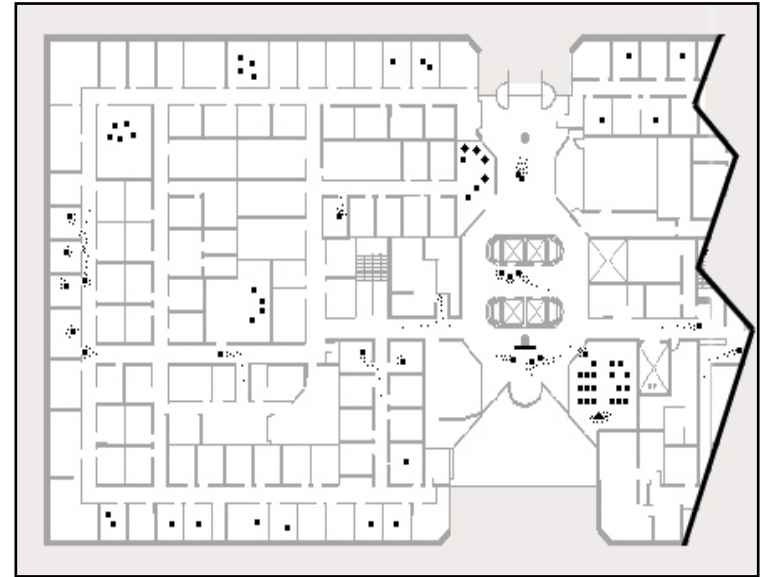
- What it looks like inside the building
 - Where are the people?



Examples

Social proxies for physical spaces

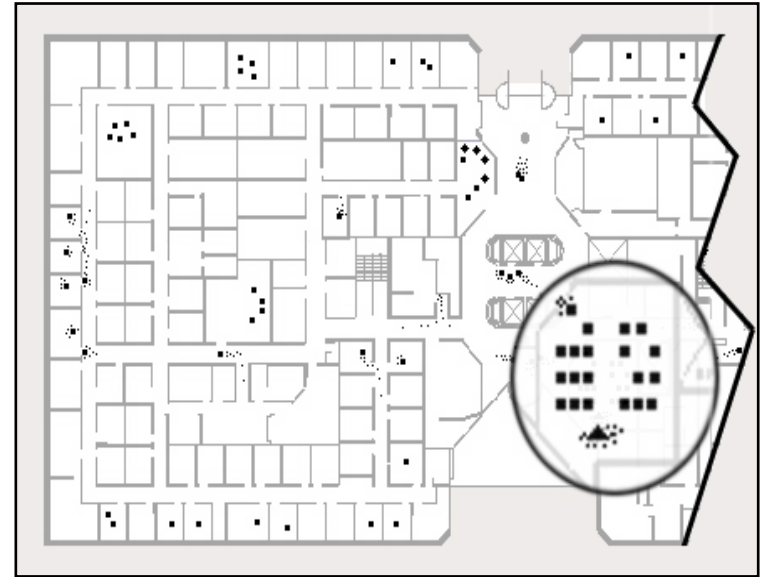
- A design sketch of a 'building proxy'
 - Everyone wears an active badge
 - People shown as squares, and leave a 30 second contrail
 - But they are **not** identified:
 - employees are squares;
 - visitors are triangles



Examples

Social proxies for physical spaces

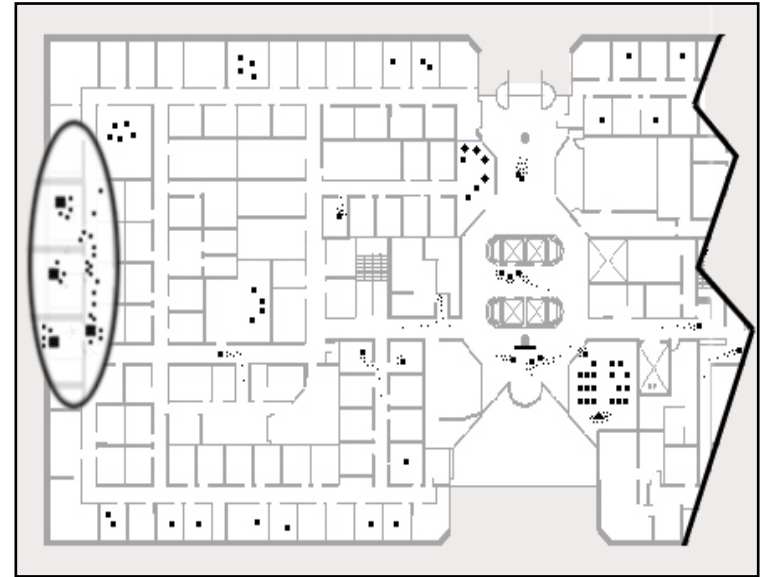
- A design sketch of a 'building proxy'
- Even without IDs we can see patterns
 - meetings



Examples

Social proxies for physical spaces

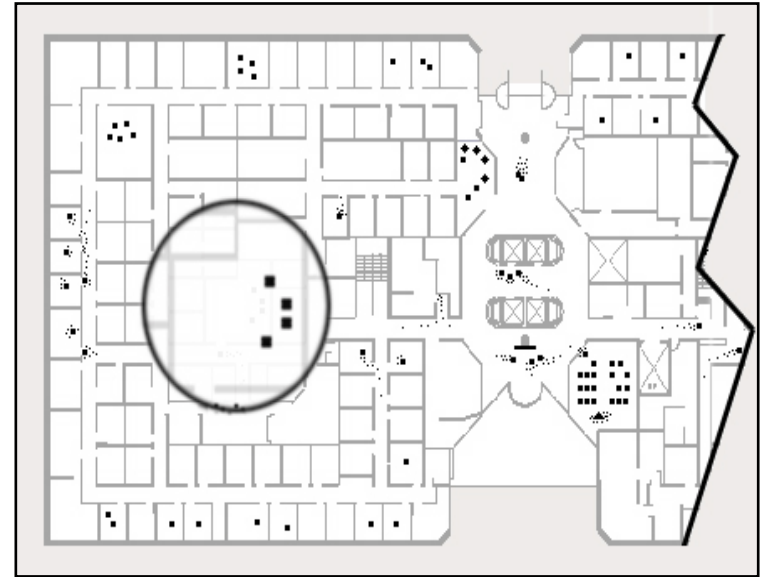
- A design sketch of a 'building proxy'
- Even without IDs we can see patterns
 - meetings
 - mail delivery



Examples

Social proxies for physical spaces

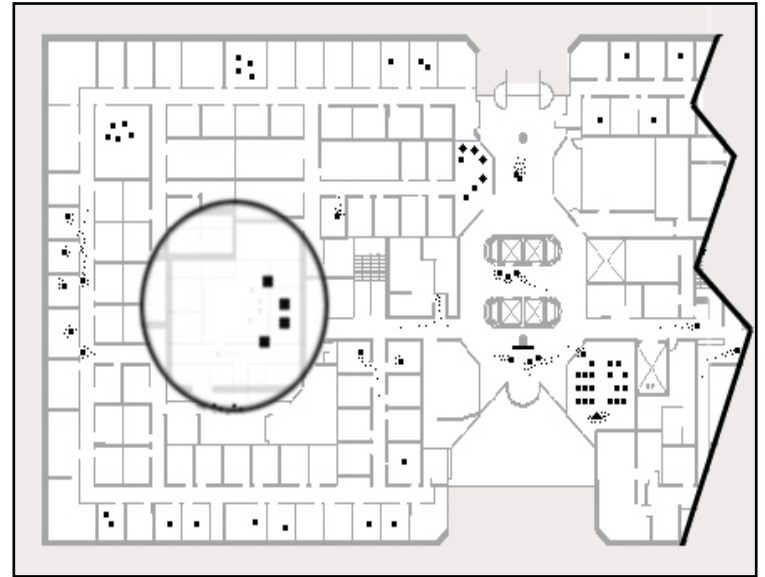
- A design sketch of a 'building proxy'
- Even without IDs we can see patterns
 - meetings
 - mail delivery
 - people in a room



Examples

Social proxies for physical spaces

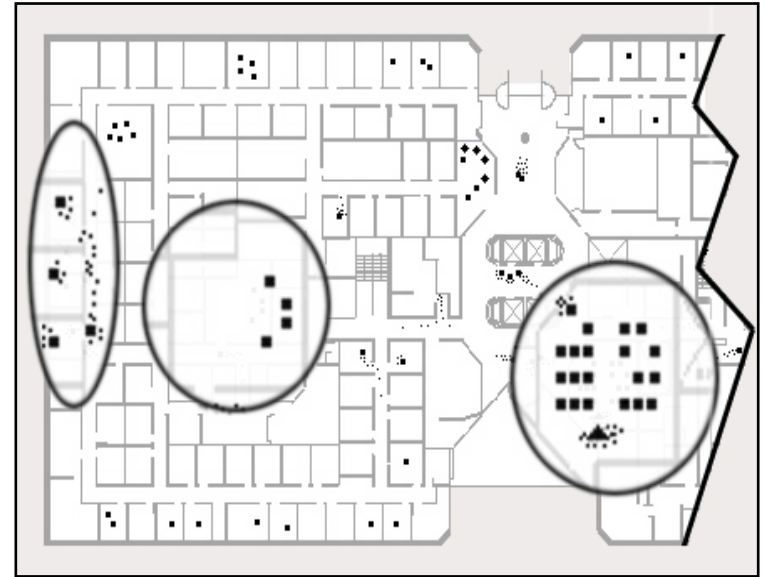
- A design sketch of a 'building proxy'
- Even without IDs we can see patterns
 - meetings
 - mail delivery
 - people in a room
- And more can be inferred by inhabitants who understand the patterns of a place
...this seems like a nice property



Examples

Social proxies for physical spaces

- This proxy is interesting because
 - it shows that proxies are useful for non-digital spaces
 - it illustrates that much can be read even when people are anonymous...
 - ...and that more can be read by those who know the background



Wrap Up

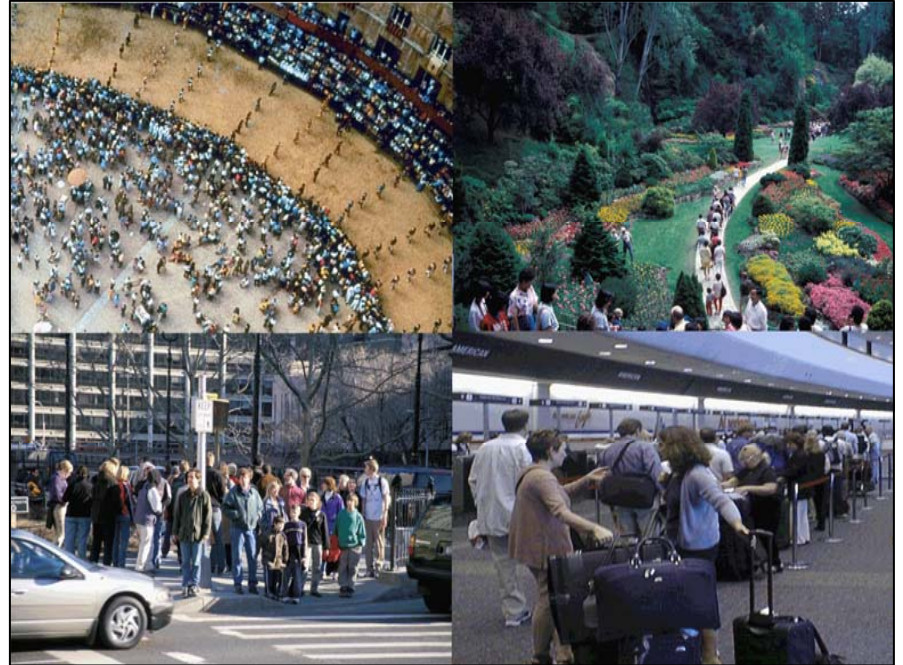
Systems can be designed to support or inhibit social behavior



Wrap Up

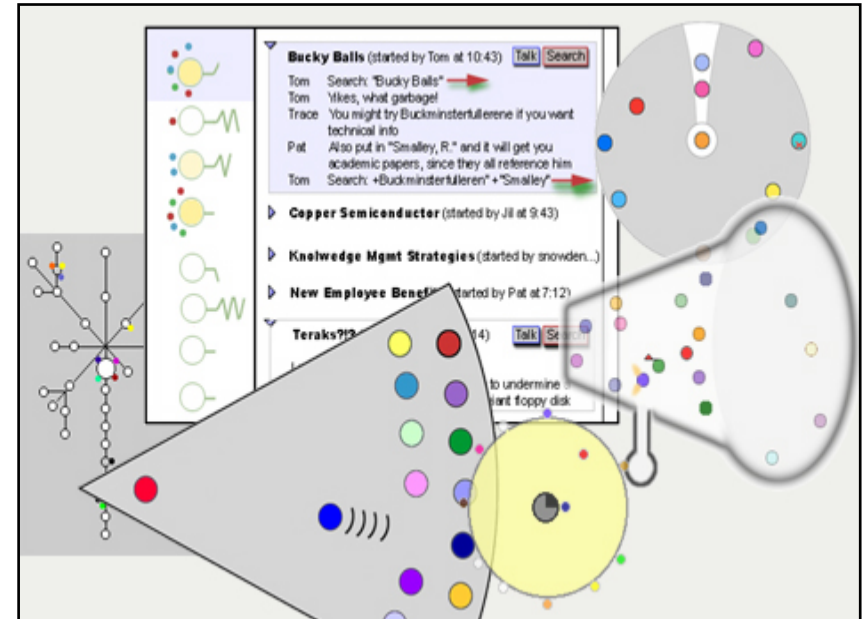
Making people and their behaviors visible permits self organization

- Visibility leads to awareness
- Awareness triggers social norms
- and mutual visibility generates accountability and reinforces norms



Wrap Up

Social visualization provides a way of applying this to online systems



Thank You!

And thanks to

- those involved in the Babble project: Erin Bradner, Jason Ellis, Brent Hailpern, Christine Halverson, Wendy Kellogg, Mark Laff, John Richards, David N. Smith, Cal Swart, Tracee Wolf, and several generations of users
- Karrie Karahalios of University of Illinois at Chicago for images and descriptions of the Chit Chat Club installation
- The Project for Public Spaces (<http://www.pps.org>) for photos (as noted)

For more information

- snowfall@acm.org
- <http://www.visi.com/~snowfall/publications>
- A good overview: Erickson, T. 'Social' Systems: Designing Digital Systems that Support Social Intelligence. *AI and Society*, 23:2, 147-166, 2009. Draft available at http://www.visi.com/~snowfall/AlandSoc_SocialSystems.pdf