Supporting Casual Interaction
between Intimate Collaborators

Saul Greenberg

The Message
Groupware can help intimate collaborators smoothly move from awareness to casual encounters to conversation, work and play

Outline

Why should we support casual interaction?
Behavioral foundations
Supporting casual interaction with technology

Intimate collaborators & groupware
Friends, family, work groups
Real need for close coordination and collaboration

Intimate collaborators & groupware
Friends, family, work groups
Real need for close coordination and collaboration

Shared visual workspaces

Casual Interaction
Shared visual workspaces

A persistent problem
Real time distributed groupware can only work after people make contact with each other

Casual interaction
Lightweight coordination and communication

Casual Interaction

Saul Greenberg 2
Casual interaction

Lightweight coordination and communication

Awareness
- who is around
- are they available now
- can they be interrupted
- how can I initiate contact

Casual interaction

Goal
- support smooth transition from awareness to casual encounters to conversation and work

Hi Mary

Casual interaction: Video

Casual Interaction in a Hallway
Greenberg, S. (1990)
Grouplab Video Report
Department of Computer Science
University of Calgary, Canada
Duration: 2:30

Outline

Why should we support casual interaction?

Behavioral foundations

Supporting casual interaction with technology

Key readings

- Kraut, R., Egido, C. and Galegher, J. Patterns of contact and communication in scientific research collaboration. p149-171, in Intellectual Teamwork, LEA Press. (1990)

- Whittaker, S., Frohlich, D. and Daly-Jones, O. Informal workplace communication: what is it like and how might we support it? Proceedings of the ACM SIGCHI conference on Human factors in computing systems. April 1994

Proximity and Collaboration

Office distances & probability of research collaboration

<table>
<thead>
<tr>
<th>Type of Location</th>
<th>Actual Collaborations</th>
<th>% of Actual</th>
<th>Potential Collaborations</th>
<th>% of Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same Office</td>
<td>25</td>
<td>46</td>
<td>308</td>
<td>10%</td>
</tr>
<tr>
<td>Same Floor</td>
<td>30</td>
<td>24</td>
<td>308</td>
<td>8%</td>
</tr>
<tr>
<td>Different Floor</td>
<td>3</td>
<td>5</td>
<td>125</td>
<td>2%</td>
</tr>
<tr>
<td>Different Building</td>
<td>1</td>
<td>9</td>
<td>125</td>
<td>7%</td>
</tr>
</tbody>
</table>

82% of collaborations occurred among researchers located on the same floor

Kraut et al, Table 6.2 study of research scientists & engineers

Casual Interaction
Saul Greenberg 3
Proximity and Collaboration

But aren’t people located on the same floor because they work together?

Study: 2 office workers

- 31% of total work time
- 50% brief (≤8 min)
- most unscheduled

In one’s office
- somewhat brief
  - ≤2.4m

When people roam...
- 67% other office
  - ≤1.9m
- 15% public areas
  - ≥1.9m
- 17% on the move
  - ≥4.8m
- 1% meeting room
  - ≤1.9m

Phone
- 62% of calls failed

Kraut et al, Table 6.3

Why does Proximity increase collaboration?

Increases communication frequency
- because being close together increases opportunities for communication

Study of collaborators
- logarithmic decline as office distance increases

Why does Proximity increase collaboration?

Proximity & brief unscheduled interactions

Study: 2 office workers

- 31% of total work time
- 50% brief (≤8 min)
- most unscheduled

In one’s office
- somewhat brief
  - ≤2.4m

When people roam...
- 67% other office
  - ≤1.9m
- 15% public areas
  - ≥1.9m
- 17% on the move
  - ≥4.8m
- 1% meeting room
  - ≤1.9m

Phone
- 62% of calls failed

Whittaker, Table 1

Casual interactions – what happens?

Greeting period
- serendipity of encounter
- awareness of F.
- interprets availability
- light-weight initiation
- gaze awareness (context)

Conversation
- brief but rich conversation
- shared visual environment
- rapid information sharing
- rapid information exchange

Casual interactions – what happens?

Greeting period
- R. hears F.’s conversation
- R. monitors outcome
- R. offers unprompted advice / assistance

Conversation
- contains an implicit shared context
- conversation highly efficient because of this
- (later) led to detailed task-oriented discussion

Kraut et al, p.159

Kraut et al, p.159-61

Casual Interaction

Saul Greenberg 4
Casual interactions – what happens?

Initiation: person busy in his own office
– caller often 'looks for' person in his/her office
– caller sees person is engaged
– 1/3rd time - waits for visual/verbal sign of attention
  • body movement
  • gaze redirection
  • distinct head movements...
– 2/3rd time – launches into interaction
  • depends somewhat on prior activity of caller (e.g., talking)
– prefaces of formal greetings somewhat rare (11%)

Whittaker et al p134-5

Casual interactions – purpose

Maintain social bonds
– greetings, social banter, gossip...
Introductions
– have you met...
Seek assistance / clarifications / consultations
– do you know how... / what does this mean...
Offer assistance
– I can help... / I know...
Reminders
– Oh, right...
Background information
– ongoing details about events, joint tasks...

Whittaker et al p113

Casual interactions – purpose

Ongoing coordination / micro-coordination
– how about meeting in 5 minutes to...
– next time we meet, we will figure out when...
Monitoring and updating task status
– ongoing task activities, contributions
– what have you done since we last saw each other?
Exchanging information / artifacts
– oh, you may want this...
– that looks like an interesting paper. Can I get a copy?
Task details
– as long as we are together, why don’t we just do it...

Formal vs. Casual interactions

<table>
<thead>
<tr>
<th></th>
<th>Formal</th>
<th>Informal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule in advance</td>
<td>Unscheduled</td>
<td></td>
</tr>
<tr>
<td>Arranged participants</td>
<td>Random participants</td>
<td></td>
</tr>
<tr>
<td>Preset agenda</td>
<td>Unarranged agenda</td>
<td></td>
</tr>
<tr>
<td>One-way</td>
<td>Interactive</td>
<td></td>
</tr>
<tr>
<td>Impoverished content</td>
<td>Rich content</td>
<td></td>
</tr>
<tr>
<td>Formal language &amp; speech register</td>
<td>Informal language &amp; speech register</td>
<td></td>
</tr>
</tbody>
</table>

Fish, Kraut, Chaffotte The VideoWindow System, Proc ACM '90, Figure 1

Casual Interaction

Saul Greenberg 5
What should technology support?

Make communication cheap, frequent, spontaneous, and of high enough quality that collaborators can be in touch as easily as if their offices were next door to each other:

- many opportunities to meet (anticipates future meetings)
- serendipitous and one-person initiated (easy to find others)
- provides awareness of others’ availability and context
- supports lightweight initiation and closings
- high quality communication channel (recreate context, details…)
- artifact exchange / viewing / referencing
- does not require temporal coordination
- very low overhead for very brief interactions

The Message so far

Proximity lets intimate collaborators smoothly move from awareness to casual encounters to conversation, work & play. Perhaps groupware can help distant collaborators do the same.

Casual Interaction Technologies

Some readings

Media Spaces


Supporting casual interaction

Interaction: (information exchange)

- quick questions / clarifications
- coordination and scheduling
- organizing impromptu social meetings
- keeping in touch

Instant Messengers

Casual Interaction

Saul Greenberg
**Instant Messengers**

Outeraction (communicative process):
- Sender negotiates availability
  - online state (ambush)
  - preamble asking about availability
    - “you there?” “got a sec?” “Suzie?”
    - on other channels: “is this a good time to call / drop by?”
- Receiver controls how they respond
  - screening
  - plausible deniability
  - delayed response
  - intermittent conversational episodes
  - sense of connectedness (between episodes, buddy list)
  - negotiating media switches

---

**Media spaces**

Xerox Portland/Palo Alto link ~1986
- analog
- video switch
- always on
- 4 offices +
- common area

---

**Cruiser facilities**

2 cameras – face and documents
- documents
Cruises:
- brief 3 sec audio/video connection down virtual hallway
- connection only after a ‘visit’ command
Auto cruise
- system decides who to visit at random
Glance
- 1-second video only connection
- Also intentional or random
Privacy
- states (privacy blinds)
- reciprocity
Can also join existing conversations

---

**Supporting casual interaction**
Casual Interaction

Cavecat (U Toronto)

Montage (Sun ~1994)

Privacy concerns (telecommuting)

CoMedia – Clips Image (~1999)

Restricting what people see

Active Hydra
- Adjusts audio/video quality by proximity

Active Hydra: Video
Portholes (Xerox PARC / Nynex)

Snapshot video
- connected US to UK PARC sites, but limited interaction
- general reaction was that it provided good awareness of a community

Nynex Portholes

Reception
- ranged from enthusiastic to ambivalent to reluctant

Some issues upon introduction
- camera shyness
- threat of surveillance
- loss of control over privacy
- lack of feedback and control of video images
- lack of support for awareness of audience

VideoWindows

Opportunities resulting in conversation:
- 41% in f2f
- 17% videowindows

Reciprocity problems
- Not always maintained
  - too close to video window: head out of camera angle
  - Standing out of camera range

Organizational problems
- sampling (people must be present)
- different cultures (do people really want to talk?)

VKitchen

Connected 3 'kitchens’ at MSR:
- two floors, two buildings
- CNN feed used as 'attractor' and common topic

Casual Interaction
Saul Greenberg
**VKitchen**

Strong negative reactions
- people in kitchen did not want to be observed
- needed to add 'Opt Out' capability:
  - big 'Off' button added outside the kitchen
  - but disabled by sensors if link was in use
- CNN audio inhibited colocated talk
  - switched to close caption
- Use was limited
  - glances occurred
  - sustained conversation rare, mostly simple greetings
- social commentaries:
  - spoofs included a vMensRoom
  - sabotage: systems disconnected
  - privacy a topic of considerable outside discussion

---

**Back towards IM: Peepholes**

- last seen…
- motion
- ambush

---

**Peripheral display of a community**

- low awareness information
- high awareness information

---

**Peripheral display: GroupPhoto**

- low awareness information
- high awareness information

---

**Peripheral display: GroupPhoto**

- low awareness information
- high awareness information

---

Casual Interaction  
Saul Greenberg
Physical but digital surrogates

Privacy safeguard?
- limited information capture and abstraction
  
  human activity
  surrogate activity

Surrogates: Video

The Alligator Surrogate

Form factors: other physical devices

Community Bar

peripheral side bar
transient tooltip grande
separate full view

Casual Interaction
The Message

Groupware can help intimate collaborators smoothly move from awareness to casual encounters to conversation, work and play

But we still have a ways to go

Download and use Community Bar:
http://grouplab.cpsc.ucalgary.ca/CB