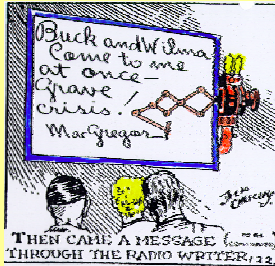


Supporting Casual Interaction

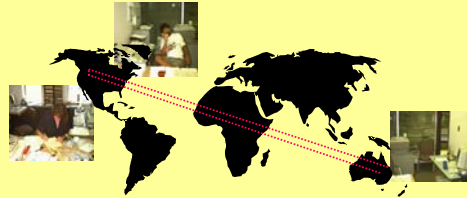
between Intimate Collaborators

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?

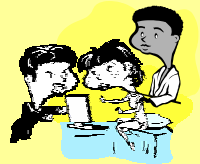
Behavioral foundations

Supporting casual interaction with technology

Intimate collaborators & groupware

Friends, family, work groups

Real need for close coordination and collaboration

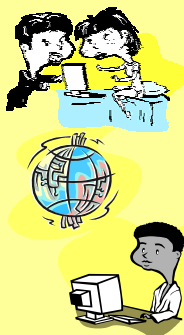


Intimate collaborators & groupware

Friends, family, work groups

Real need for close coordination and collaboration

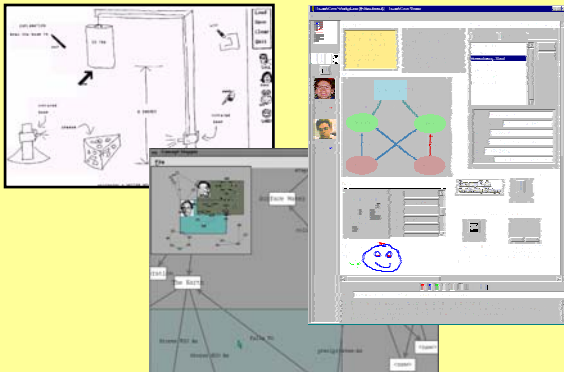
Sometimes co-located,
sometimes distance-separated



Shared visual workspaces

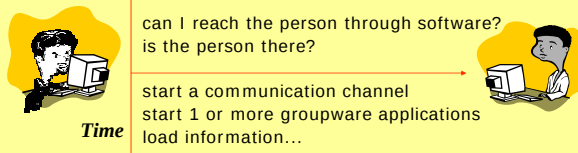
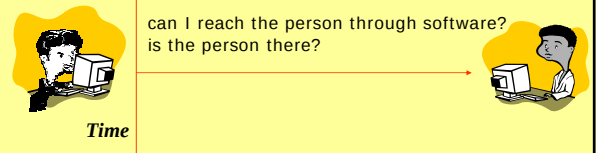
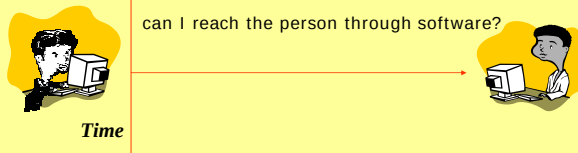
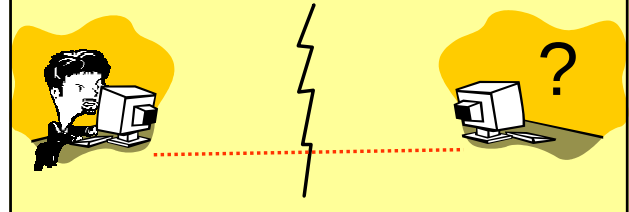


Shared visual workspaces



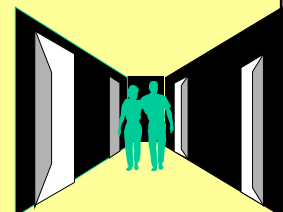
A persistent problem

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



Casual interaction

Lightweight coordination and communication

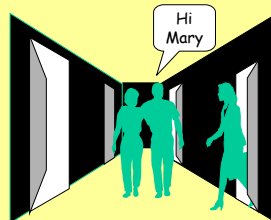


Casual interaction

Lightweight coordination and communication

Awareness

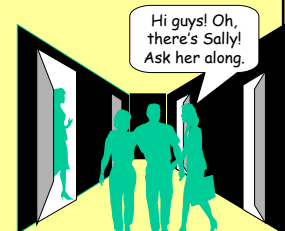
- who is around
- are they available now
- can they be interrupted
- how can I initiate contact



Casual interaction

Goal

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



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

idea from Bellcore

Outline

Why should we support casual interaction?

Behavioral foundations

Supporting casual interaction with technology

Key readings

- Kraut, R., Egidio, 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

Office Location	Actual Collaborations	% of Actual	Potential Collaborations	% of Potential
Same corridor	25	4%	243	10.3%
Same floor	20	3%	1038	1.9%
Different floors	5	9%	1736	.3%
Different buildings	5	9%	1261	.4%

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

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

Proximity and Collaboration

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

Office Location	Same Department		Different Department	
	Pairs	% Collaborating	Pairs	% Collaborating
Same floor	271	10.3	909	1.87
Different floors	23	4.3	1708	.29
Different buildings	8	NA	1261	.49

Researchers on the same vs. different floors:

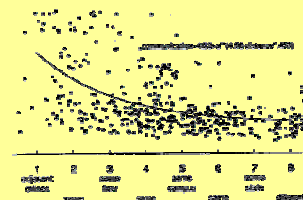
- same department: 2.4x more likely to collaborate
- different departments: 6x more likely to collaborate

Kraut et al, Table 6.3
study of research scientists & engineers

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



Kraut et al p159-61

Why does Proximity increase collaboration?

Proximity & brief unscheduled interactions

Study: 2 office workers

- 31% of total work time
- 50% brief (t<38s)
- most unscheduled

Informal communication characteristics

In one's office

- somewhat brief t=2.4m

When people roam...

- 67% other office t=1.9m
- 15% public areas t=1.1m
- 17% on the move t=0.8m
- 1% meeting room t=13m

Phone

- 62% of calls failed

	Own office (N=152)	Roaming (N=142)	Overall (N=294)
% Total Work	14	17	31
Mean duration (min:sec)	2:37	1:38	1:59
Mean frequency (times)	11.57	12.38	11.98
% Unscheduled	89.47	96.48	92.86
% Dyadic	82.24	84.50	83.92

Whittaker, Table 1
Detailed investigation of 2 office workers

Proximity and Collaboration

Conclusion:

The opportunity for unconstrained, brief, informal and opportunistic interaction provided by proximity is important to collaboration

variation of
Kraut et al, p159

Casual interactions – what happens?

R. IS STOPPED UP READING A DOCUMENT BEHIND HIS DESK WHEN HIS COLLEAGUE F. WALKS INTO VIEW ON ROUTE TO HIS OWN DESK FROM ANOTHER OFFICE.

1. R. (LOOKS AT DOCUMENT)
"F. call you death deed (==) this is report for me?"
(1.5s WALKING TOWARDS EACH OTHER ROOM LOOKING AT THE DOCUMENT)
2. F. (WAITING AND LOOKING AT THE DOCUMENT)
"Re: tech [...] now?"
(1.0)
3. R. (LOOKING AT DOCUMENT)
"...hahaha. 'Say if you've got a minute'"
4. F. (LOOKING AT DOCUMENT)
"Yeah - "

Greeting period

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

Conversation

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

Whittaker et al p133

Casual interactions – what happens?

R. IS LOCATING AT HIS DESK. F. IS ON THE PHONE ACROSS THE OFFICE

1. F. "hello! thank you bye bye!"
(F PUTS DOWN PHONE)
A IS REPLACING HIS DOCUMENTS
(0.7)
2. R. (TO F.)
"Is he alright?"
3. F. "Yeah"
4. R. "which one's that?"
(0.7)
- 4b. R. "There's a restaurant"
5. F. "I said that I'll do this one initially and then further afield"
5. R. "which one's that?"
7. F. "That's a righty two it's the office"
8. R. "Oh the [...] hah [...] Yeah oh we not for the land on that one. I did a work xerox against him on that"

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

Whittaker et al p133

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 p133

Casual interactions – what happens?

Frequent vs. infrequent interactions in one's office

- briefer
- more informal
- fewer greetings and farewells
- more interruptions
- fewer explicit arrangements for future meetings

"one long, intermittent communication comprising multiple brief related fragments"

Whittaker et al p134-5

Casual interactions – what happens?

Documents in one's office

- involved in 53% of all interactions

	Announce	Cue	Answer	Prog
Report	56.3	73.2	83.3	85.7
Memo	43.8	2.4	4.2	0
File	0	14.6	8.3	0
Other	0	9.8	4.2	14.3
% Joint	25	41.5	50	46.4

Whittaker et al p133

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...

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

Formal ← Informal

- | | |
|-------------------------------------|---------------------------------------|
| – Schedule in advance | – Unscheduled |
| – Arranged participants | – Random participants |
| – Preset agenda | – Unarranged agenda |
| – One-way | – Interactive |
| – Impoverished content | – Rich content |
| – Formal language & speech register | – Informal language & speech register |

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

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

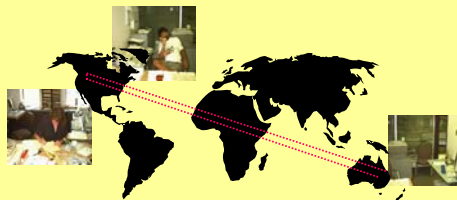
- many opportunities to meet (anticipates future meetings)
- serendipitous and one-person initiated (easy to find others)
- provides awareness of others' availability and context
- supports lightweight initiation and closings
- high quality communication channel (recreate context, details...)
- artifact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

Whittaker et al p133

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



Saul Greenberg

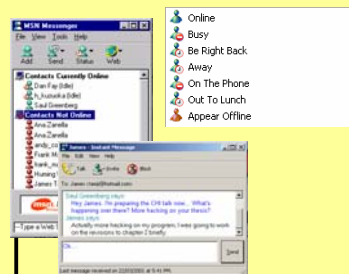


Some readings

Media Spaces

- Bly, S., Harrison, S. and Irwin, S.
Media spaces: bringing people together in a video, audio, and computing environment. Comm ACM, 36-1, January 1993
- Dourish, P. and Bly, S.
Portholes: Supporting Awareness in a Distributed Work Group. Proc. ACM CHI'92, 541-547. 1992.
- Fish, R., Kraut, R., Root, R. and Rice R.
Evaluating Video as a Technology for Informal Communication. Proc. ACM CHI'92, 37-48. 1992.
- Lee, A., Girgensohn, A. and Schlueter, K.
NYNEX Portholes: Initial User Reactions and Redesign Implications. Proc ACM Group'97, p385-394. (1997)
- Root, R. (1988) **Design of a Multi-Media Vehicle for Social Browsing.** Proc. ACM CSCW'88, 25-38. 1988

Supporting casual interaction



low awareness information high

Casual Interaction

Instant Messengers

Interaction: (information exchange)

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

Nardi, Whittaker, Bradner Interaction and Outeraction, CSCW'00

Saul Greenberg 6

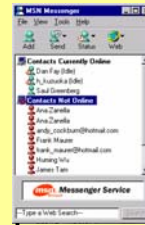
Instant Messengers

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

Nardi, Whittaker, Bradner Interaction and Outeraction, CSCW'00

Supporting casual interaction



low awareness information high

Media spaces

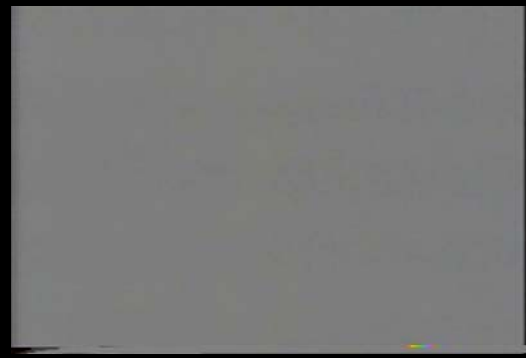
Xerox Portland/Palo Alto link ~1986

- analog
- video switch
- always on
- 4 offices +
- common area



Bly et al 1993, Figure 2

Cruiser



Cruiser (Bellcore) Root, 1988

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

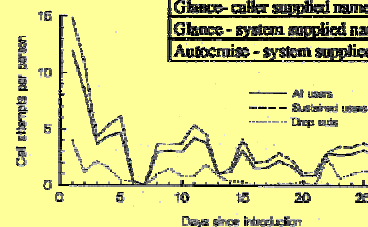
- states (privacy blinds)
- reciprocity

Can also join existing conversations

Root CSCW'88, Fish et al CHI 1992

Media spaces: Cruiser observations

Call type	# of called parties	% calls accepted
	1	> 1
Cruise - caller supplied name	1015	8
Cruise - system supplied name	67	NA
Glance - caller supplied name	174	9
Glance - system supplied name	NA	51
Autocruise - system supplied name	236	NA



From Fish, Kraut Root, CHI'92

Cavecat (U Toronto)

CAVECAT

1989 - 1992

Dynamic Graphics Project
University of Toronto
ACM CSCW'94 Video
Proceedings, SGVR#106

ACM CSCW'94, SGVR 106

Montage (Sun ~1994)

ACM CSCW '94, SGVR #106

ACM CSCW'94, SGVR 106

Privacy concerns (telecommuting)



CoMedia - Clips Image (~1999)

CoMedi: Using Computer Vision to
Support Awareness and Privacy
in Mediaspaces
(7:56)

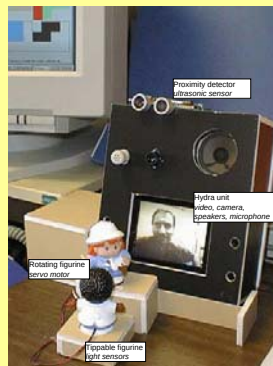
Joëlle Coutaz, CLIPS-IMAG
François Bérard, CLIPS-IMAG
Eric Carraux, CLIPS-IMAG
William Astier, CLIPS-IMAG
James L. Crowley, INRIA Rhône-Alpes
ACM CHI'99 Video Proceedings

ACM CHI'99 Video Proceedings

Restricting what people see

Active Hydra

- Adjusts audio/video quality
by proximity



Active Hydra: Video

Active Hydra

Kuzuoka / Greenberg, ACM CHI'99 Video Proceedings

Portholes (Xerox PARC / Nynex)

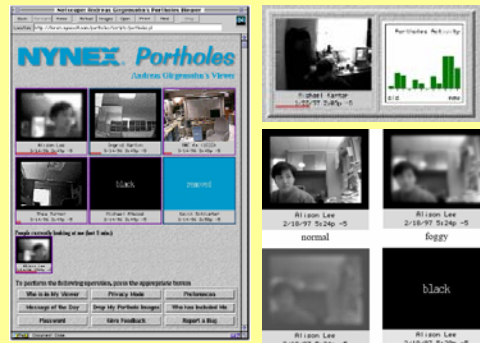
Snapshot video

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



from Dourish & Bly Supporting awareness... CHI'92

Nynex Portholes



from Lee et al, Nynex portholes, Group 97

Nynex Portholes – Initial reactions

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

Lee et al, Nynex portholes, Group 97

VideoWindows

Always on connection between two social settings



Fish, Kraut Chalfonte VideoWindows CSCW'90

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?)

Fish, Kraut Chalfonte VideoWindows CSCW'90

VKitchen

Connected 3 'kitchens' at MSR:

- two floors, two buildings
- CNN feed used as 'attractor' and common topic



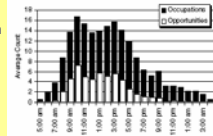
Jancke, Venolia, Grudin, Cadiz, Gupta, Linking public spaces CHI'01

VKitchen



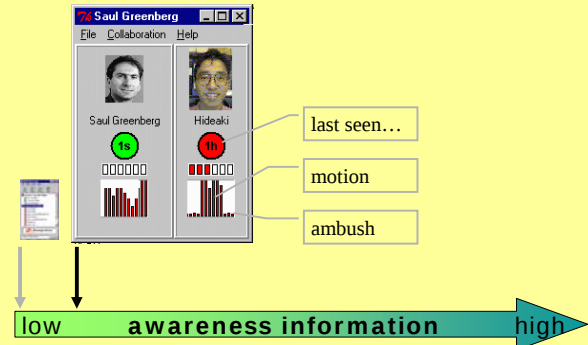
Strong negative reactions

- 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



Jancke, Venolia, Grudin, Cadiz, Gupta, Linking public spaces CHI'01

Back towards IM: Peepholes



Peripheral display of a community



low awareness information high

with Sheelagh Carpendale

Peripheral display: GroupPhoto



low awareness information high

with Sheelagh Carpendale

Peripheral display: GroupPhoto



low awareness information high

with Sheelagh Carpendale

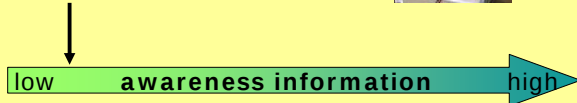
Peripheral display: GroupPhoto



low awareness information high

with Sheelagh Carpendale

Physical but digital surrogates

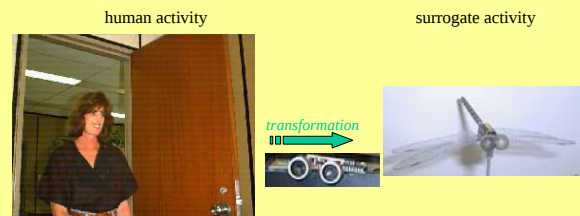


Greenberg and Kuzuoka 2000

Physical but digital surrogates

Privacy safeguard?

- limited information capture and abstraction



Surrogates: Video



Greenberg and Kuzuoka Video Proc CHI 2000

The Alligator Surrogate



By Hideaki Kuzuoka

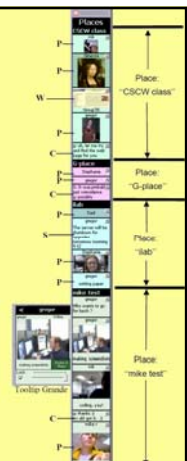
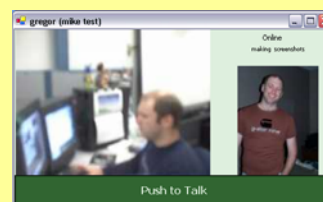
Form factors: other physical devices



Casual Interaction

Community Bar

peripheral side bar
transient tooltip grande
separate full view



Saul Greenberg 11

Community Bar



Video Proc ECSCW'05

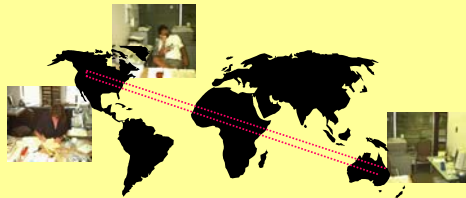


Boyle & Greenberg

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>