

Social Interaction

Designing technologies for
communication and cooperation

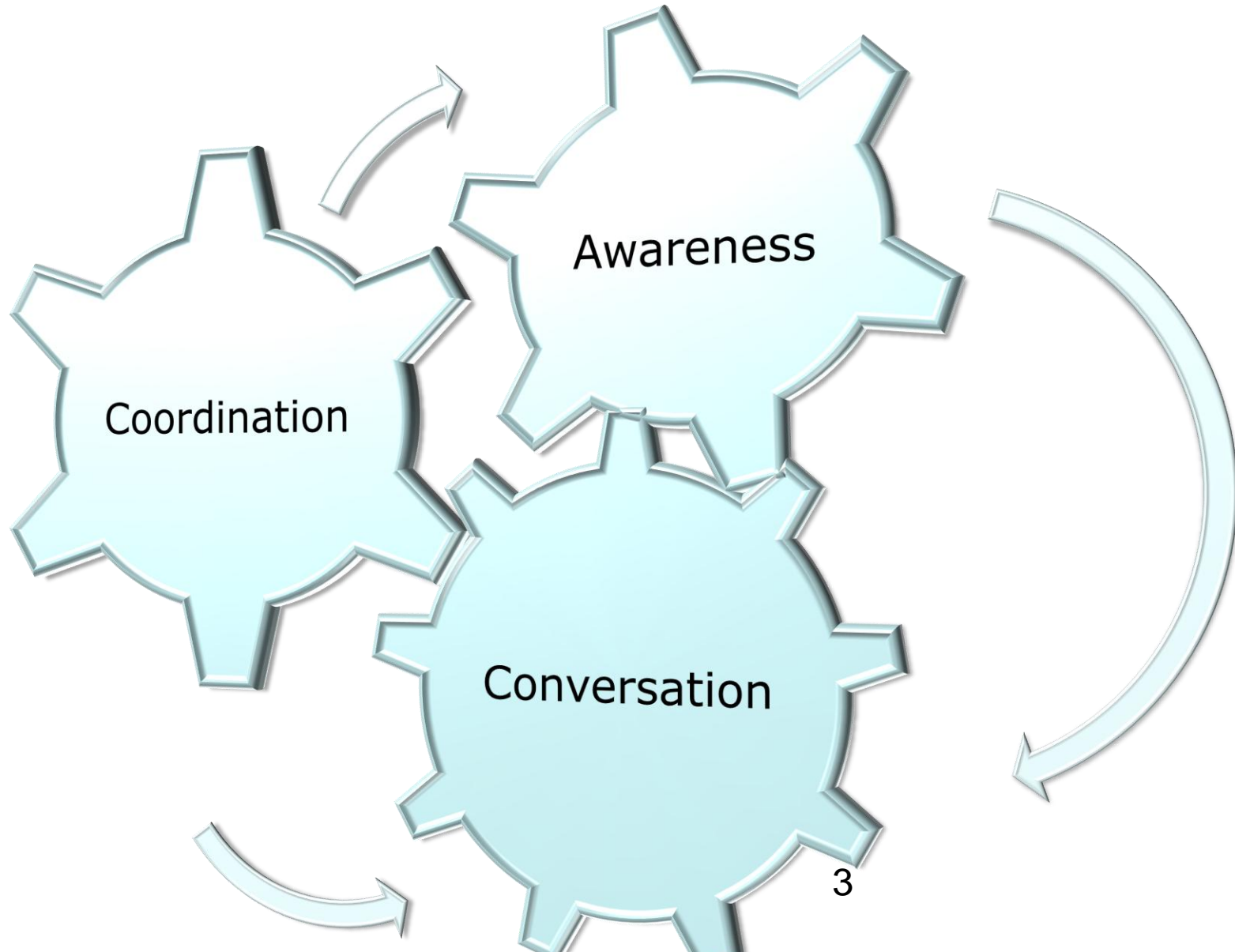
Book slides adapted
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Overview

- Being social
- Face to face conversations
- Remote conversations
- Tele-presence
- Co-presence
- Emergent social phenomena

Communication and cooperation



Conversational mechanisms

- Various mechanisms and 'rules' are followed when holding a conversation, e.g. mutual greetings

A: Hi there

B: Hi!

C: Hi

A: All right?

C: Good, how's it going?

A: Fine, how are you?

C: OK

B: So-so. How's life treating you?



Being social

- Are F2F conversations being superseded by our social media interactions?
- How many friends do you have on Facebook, LinkedIn, vs. real life?
- How much overlap?
- How are the ways we live and interact with one another changing?
- Are the established rules and etiquette still applicable to online and offline?

Conversational rules

- Sacks et al. (1978) work on conversation analysis describe three basic rules:

Rule 1: the current speaker chooses the next speaker by asking an opinion, question, or request

Rule 2: another person decides to start speaking

Rule 3: the current speaker continues talking

Conversational rules

- Turn-taking used to coordinate conversation
 - A: Shall we meet at 8?
 - B: Um, can we meet a bit later?
 - A: Shall we meet at 8?
 - B: Wow, look at him?
 - A: Yes what a funny hairdo!
 - B: Um, can we meet a bit later?
- Back channelling to signal to continue and following
 - Uh-uh, umm, ahh

More conversational rules

- Farewell rituals

- Bye then, see you, yer bye, see you later....

- Implicit and explicit cues

- e.g. looking at watch, fidgeting with coat and bags
 - explicitly saying “Oh dear, must go, look at the time, I’m late...”

Breakdowns in conversation

- When someone says something that is misunderstood:
 - Speaker will repeat with emphasis:
 - A: "this one?"
 - B: "no, I meant that one!"
 - Also use tokens:
 - Eh? Quoi? Huh? What?

What happens in social media conversations?

- Do same conversational rules apply?
- Are there more breakdowns?
- How do people repair them for:
 - Phone?
 - email?
 - Instant messaging?
 - texting?
 - Skyping?

Remote conversations

- Much research on how to support conversations when people are 'at a distance' from each other
- Many applications have been developed
 - e.g., email, videoconferencing, videophones, videoconferencing, instant messaging, chatrooms
- Do they mimic or move beyond existing ways of conversing?

Early videophone and visual phone



VideoWindow system (Bellcore, 1989)

- Shared space that allowed people 50 miles apart to carry on a conversation as if in same room drinking coffee together
- 3 x 8 ft 'picture-window' between two sites with video and audio
- People did interact via the window but strange things happened (Kraut, 1990)

Sketch of VideoWindow



Findings of how VideoWindow System was used

- Talked constantly about the system
- Spoke more to other people in the same room rather than in other room
- When tried to get closer to someone in other place had opposite effect - went out of range of camera and microphone
- No way of monitoring this

Skype success

- Global household name
- Seeing others on screen enables more intimacy than audio phone
- Enables people to get to know each other better
- Less awkward for young children
 - Like “to show, not tell” (Ames et al, 2010)

3D virtual worlds

- Second Life (2007)
 - Over 8 million users
- What kinds of conversation take place in these environments?
- VoIP versus chat room talk?
 - Which is preferred and why?

Second Life – The OU



Facebook and Twitter

- Everyone uses them so what is there to learn?
- Used in emergencies, demos, etc.,
 - e.g., users spread up-to-the minute info and re-tweet about how a wildfire or gas plume is moving
 - but can also start or fuel rumours, by adding news that is old or incorrect
 - more confusing than helpful



TELE-PRESENCE

Telepresence

- New technologies designed to allow a person to feel as if they were present in the other location
 - projecting their body movements, actions, voice and facial expressions to the other location or person
 - e.g. superimpose images of the other person on a workspace

Portholes (Dourish and Bly, 1992)

Regularly updated digitized images of people in their offices appeared on everyone's desktop machines throughout day and night



Clearboard (Ishii et al, 1993)

- Transparent board that shows other person's facial expression on your board as you draw



Hypermirror (Morikawa and Maesako, 1998)

- allows people to feel as if they are in the same virtual place even though in physically different spaces

People in different places are superimposed on the same screen to make them appear as if in same space



(woman in white sweater is in a different room to the other three)

Creating personal space in Hypermirror



2) Two in this room are invading the 'virtual' personal space of the other person by appearing to be physically on top of woman in white sweater



3) Two in the room move apart to allow person in other space more 'virtual' personal space

Everyone happy



BiReality

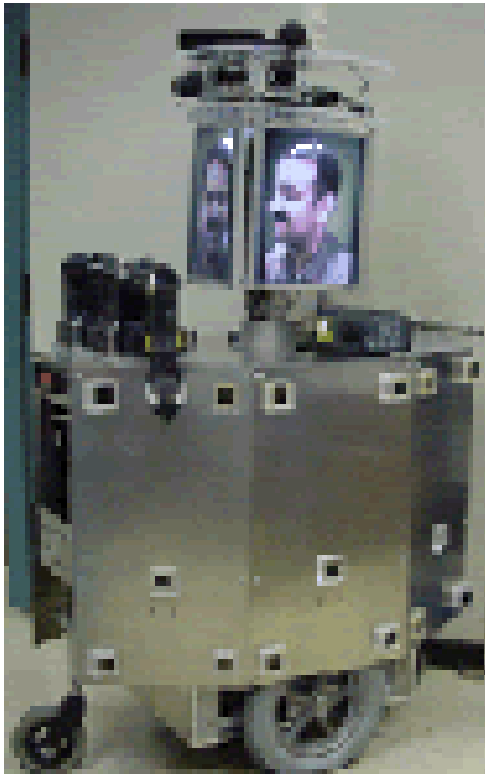


The remote user's view of the meeting while controlling the surrogate



A surrogate robot at the meeting 'sitting' between two physically present people

BiReality



Robot moves when distant participant moves



2nd generation imitates the standing person

How much realism?

- Is needed in telepresence to make it compelling?
- *Telepresence rooms* try make the remote people appear to be life-like by using multiple high def cameras with eye-tracking features and directional microphones
- Is skype just as good?

A telepresence room



Virtual hugging

- To what extent do you think these kinds of novel wearable communication devices actually emulate a real hug?
- Would you rather receive a text on your cell phone from your partner or parent saying 'missing you' or a buzz or a squeeze on your stomach?

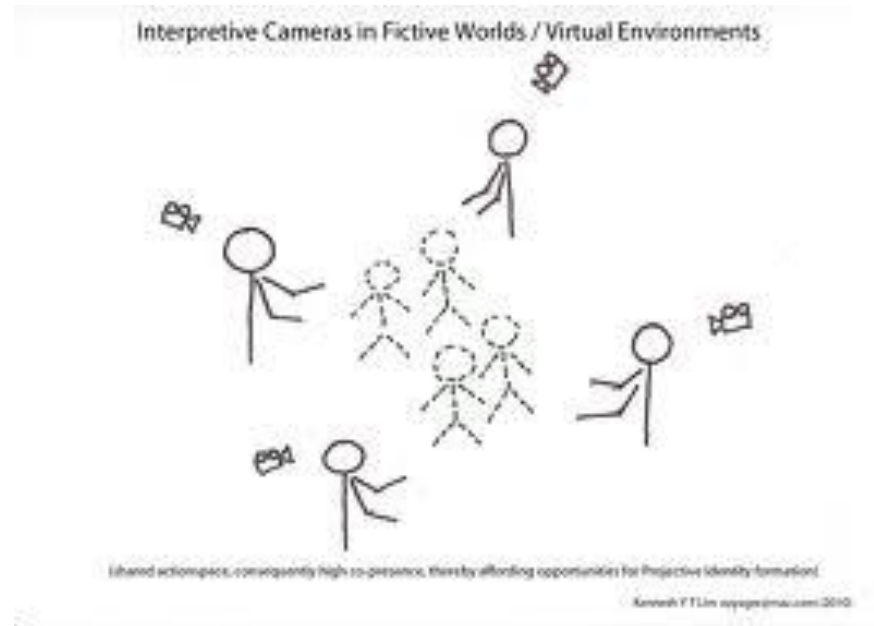
CuteCircuit hug shirt



Huggy pajama: mother squeezing the remote device and child being correspondingly squeezed

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<http://www.youtube.com/watch?v=hQ6usrx-GPM>



Shareable interfaces enable more than one person to use them at the same time

CO-PRESENCE

Coordination mechanisms

- When a group of people act or interact together they need to coordinate themselves
 - e.g., playing football, navigating a ship
- They use:
 - verbal and non-verbal communication
 - schedules, rules, and conventions
 - shared external representations

Co-presence

- Technologies that enable co-located groups to collaborate more effectively
 - when working, learning and socializing
- Examples: Smartboards, Surfaces, Wii and Kinect

F2F coordinating mechanisms

- Talk is central
- Non-verbal also used to emphasize and as substitute
 - e.g. nods, shakes, winks, glances, gestures and hand-raising
- Formal meetings
 - explicit structures such as agendas, memos, and minutes are employed to coordinate the activity

Schedules, rules and conventions

- Schedules used to organize regular activities in large organizations
- Formal rules, like the writing of monthly reports enable organizations to maintain order and keep track
- Conventions, like keeping quiet in a library, are a form of courtesy to others

Shared external representations

- Common method used to coordinate collaborative activities,
 - e.g., checklists, tables, to-do lists
- They can provide external information on:
 - who is working on what
 - When it is being worked on
 - where it is being worked on
 - when a piece of work is supposed to be finished
 - whom it goes to next

Five Key Elements: Anti - Fraud Checklist	
<input type="checkbox"/>	Empowered audit committee
<input type="checkbox"/>	Earnest fraud risk assessment
<input type="checkbox"/>	Effective whistleblower hotline
<input type="checkbox"/>	Established anti-fraud policy and trainings
<input type="checkbox"/>	Executable response to fraud allegations

Collaborative technologies to support coordination

- There are a variety of software tools designed to support scheduling, planning and coordinating
 - e.g., group calendars, electronic schedulers, project management tools, and workflow tools
- Need to get balance between human and system control
 - too much system control and the users will rebel
 - too little control and the system breaks down

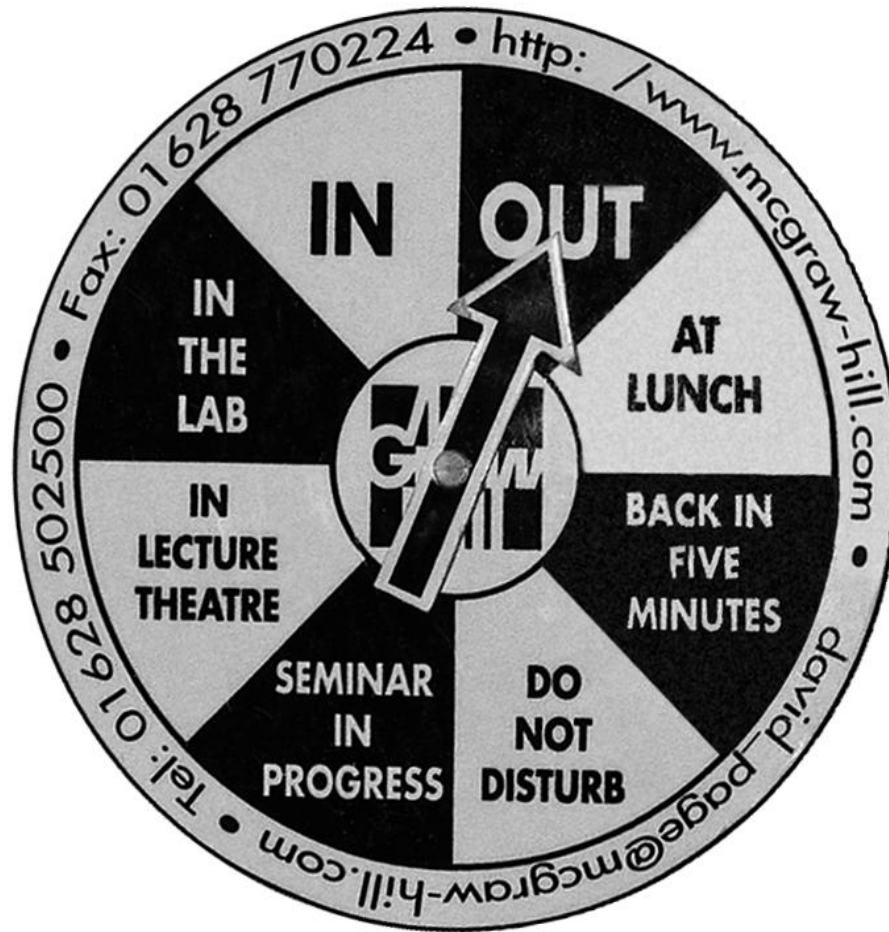
Traditional coordination

Sheet no	Gary copied in	Kate & Gary plot file created	Mark checked by Phil	Kate plot sent	Mark plot file created	Mark plot sent mylar
596S6	✓	✓				
S7	✓	✓				
S8	✓					
S9	✓					
S10	✓					

Awareness mechanisms

- Involves knowing who is around, what is happening, and who is talking with whom
- Peripheral awareness
 - keeping an eye on things happening in the periphery of vision
 - Overhearing and overseeing - allows tracking of what others are doing without explicit cues

Lo tech awareness mechanism



Designing technologies to support awareness

- Provide awareness of others who are in different locations
- Workspace awareness: “the up-to-the-moment understanding of another person’s interaction with the shared workspace” (Gutwin and Greenberg, 2002)
- Examples: ReacTable and Reflect Table

The Reactable experience



The Reflect Table



The Dynamo system



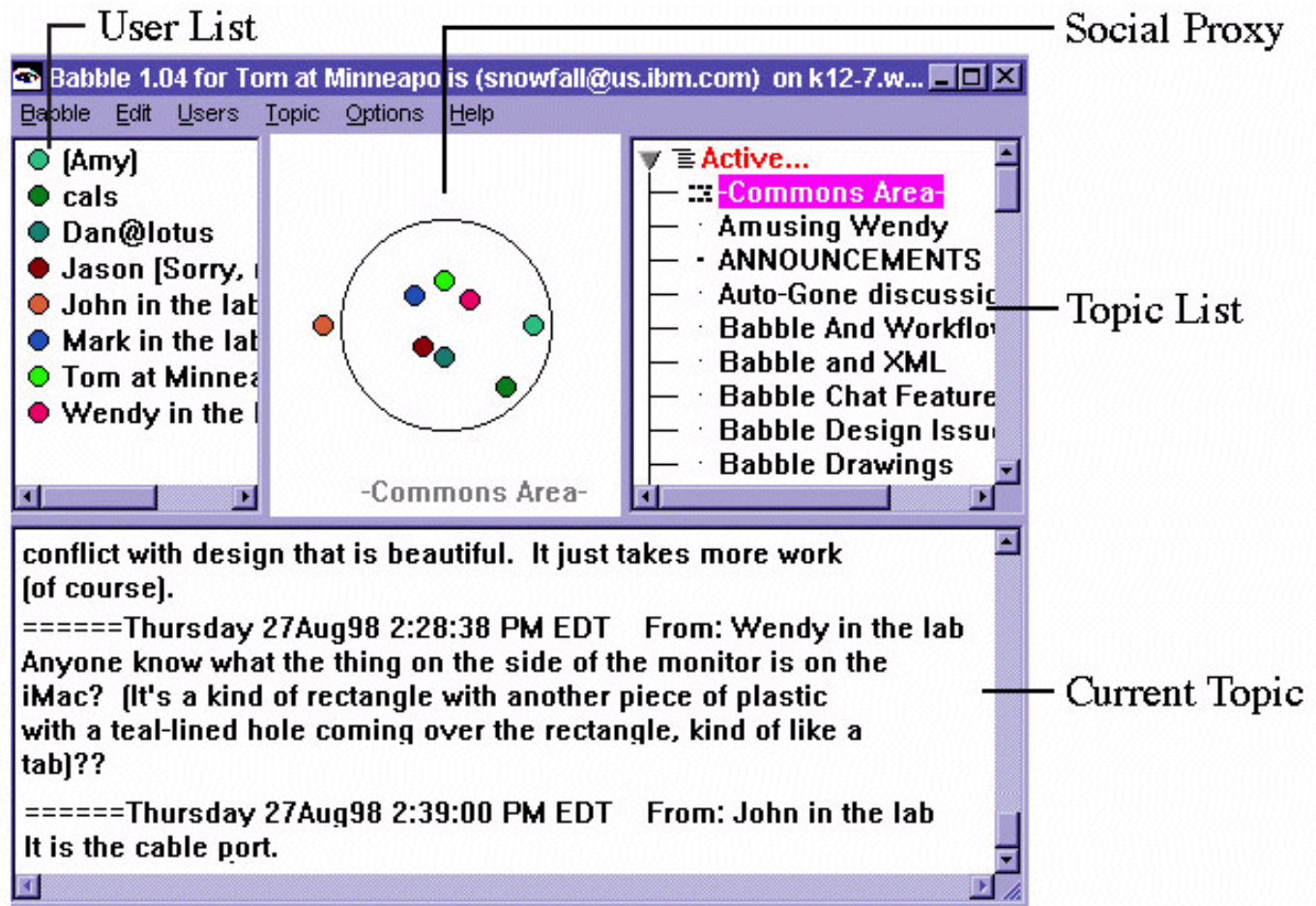
Notification systems

- Users notify others as opposed to being constantly monitored
- Provide information about shared objects and progress of collaborative tasks
 - example: Babble

Babble (IBM, Erickson et al, 1999)

Circle with marbles represents people taking part in conversation in a chatroom

Those in the middle are doing the most chatting
Those towards the outside are less active in the conversation



What next?



- Besides perpetual sharing and broadcasting of information, knowledge, and personal content?
- Lifelogging
 - recording everything in one's life and sharing
- Micro-chatting
 - beyond twittering and chat roulette?

Activity: Privacy settings on Facebook

Basic Directory Information

To help real-world friends find you, some basic information is always open to everyone. We suggest also setting basics like hometown and interests to everyone so friends can use those to connect with you. [View settings](#)

Sharing on Facebook

Everyone	Everyone	Friends of friends	Friends only	Other
Friends of friends	My status, photos, and posts	■		
Friends only	Bio and favorite quotations	■		
	Family and relationships	■		
Recommended	Photos and videos I'm tagged in	■		
	Religious and political views	■		
Custom 	Birthday	■		
	Can comment on posts			■
	Email addresses and IM			■
	Phone numbers and address			■
	Why are these settings recommended?			
	 Customise settings			Apply These Settings

Summary

- Social mechanisms, like turn-taking, conventions, etc., enable us to collaborate and coordinate our activities
- Keeping aware of what others are doing and letting others know what you are doing are important aspects of collaborative working and socialising
- Many technologies systems have been built to support telepresence and co-presence

Resources

- Jennifer Preece, Yvonne Rogers, Helen Sharp (2011).
Interaction design: beyond human – computer interaction. John Wiley & Sons

www.id-book.com

- [BiReality papers](#)