

Conversation: Behavioral Foundations

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CPSC 781:CSCW



Primary sources

- Dix, A., Finlay, J., Abowd, G., and Beale, R. [Chapter 14: CSCW and Social Issues](#). 463-509 in *Human Computer Interaction, 2nd Edition*. Prentice Hall. 1998
- Clark and Brennan [Grounding in Communication](#). Republished in R. Baecker, *Readings in Groupware and Computer Supported Cooperative Work: Assisting Human-Human Collaboration*. San Mateo, CA: Morgan Kaufmann, p222-234, 1992.
- Clark, H. (1996) *Using language*. Cambridge University Press. ISBN 0-521-56745-9.

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Outline

- Introduction
- Face-to-face communication
- Conversation
 - Grounding
- Text-based communication
- Group working

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Introduction

- Effective communication underlies collaborative work
- Face-to-face seen as ideal
- Dealing with loss of cues

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Face-to-face communication

- Transfer effects and personal space
- Eye contact and gaze
- Gestures and body language
- Back channels, confirmation and interruption
- Turn-taking



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Personal space

- Norms and expectations carried over
- Unease when broken
- Personal space distance - context dependent
- Direction, culture important
- Transfer to video, glass wall



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Eye contact

- Sporadic eye contact important for engagement and social presence
- Linked to power and authority
- Using video channels
 - Problem with direct eye contact
 - Sense of social presence
- Eyegaze useful in establishing conversation focus



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Gestures & body language

- Indicating items of interest
- Deictic references
- Groupware attempts



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Back channels

- Nods, grimace, shrugs, small noises, etc.
- Feed info from listener to speaker
- Allows speaker to be vague, adding details until comprehension
- Despite loss in media, people cope with restrictions
- Must be given explicitly in text based conversations

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Turn taking

- Process in which roles of speaker and listener exchanged
- Back channels used for interruption, graceful transition
- Speaker may explicitly offer floor
- Gaps of different seconds

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Conversation

- Basic conversational structure
- Context
- Topics, focus and forms of utterance
- Breakdown and repair
- Speech act theory
- Constructing a shared understanding (grounding)

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Basic structure

- Turn-taking
- Utterance
- Adjacency pair

Brian:	Do you want some gâteau?
Allison:	Is it very fattening?
Brian:	Yes, very.
Allison:	And lots of chocolate?
Brian:	Masses
Allison:	I'll have a big slice then

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Context

- Used to disambiguate an utterance
- 2 types within conversation:
 - Internal: Dependence on earlier utterances
 - External: Dependence on the environment
- Deictic reference
- Indexicals

Brian: Do you want some gâteau?
 Allison: Is it very fattening?
 Brian: Yes, very.
 Allison: And lots of chocolate?
 Brian: Masses
 Allison: I'll have a big slice then

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Topics, focus & forms of utterance

- Shared focus important
- Classifying utterances based on task-related conversation:
 - Substantive
 - Annotative
 - Procedural

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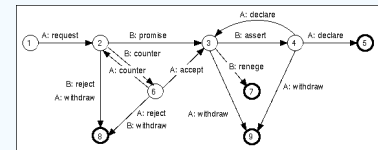
Breakdown and repair

- Breakdown in conversation
- Correction after breakdown → repair
- High level: Failure to maintain topic focus
- Low level: Incorrectly read gestures
- Deeper the breakdown, the longer it lasts, greater difficulty in recovery
- Problems in electronic communications → reduced ability to recover

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Speech act theory

- Concerned with utterances interacting with actions
- Illocutionary points
- Conversation for action



Winograd, T., & Flores, F. (1986)

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Grounding

- All collective actions are built on common ground
- Common ground cannot be updated without grounding process
- Grounding is collective process of mutual contribution and understanding
- Grounding is shaped by 2 factors:
 - Purpose
 - Medium

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Grounding cont'd

- Two phases:
 - Presentation
 - Acceptance
- Need both for completion
- 2 complications:
 - Self-repairs
 - Embedding



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Grounding

Grounding cont'd

- Evidence
 - Negative
 - Positive
 - Acknowledgements
 - Relevant next turn
 - Continued attention
- Least collaborative effort
 - 2 maxims:
 - Quantity
 - Manner
 - Problems:
 - Time Pressure
 - Errors
 - Ignorance

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Grounding

Grounding and purpose

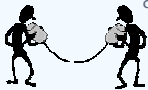
- People tend to establish collective purpose, i.e. gossip, instruct, learn
- Grounding should change with purpose
- 2 types of content:
 - References(establish referential identity):
 - Alternative descriptions
 - Indicative gestures
 - Referential installments
 - Trial references
 - Verbatim (register exact content):
 - Verbatim displays
 - Installments
 - Spelling

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Grounding

Grounding and medium

- Ground with least effortful techniques
- Effort level changes with medium
- 8 constraints that a medium may impose:
 - Copresence
 - Visibility
 - Audability
 - Cotemporality
 - Simultaneity
 - Sequentiality
 - Reviewability
 - Revisability




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Grounding

Media and constraints

Medium	Constraints
Face-to-face	Copresence, visibility, audibility, cotemporality, simultaneity, sequentiality
Telephone	Audibility, cotemporality, simultaneity, sequentiality
Video teleconference	Visibility, audibility, cotemporality, simultaneity, sequentiality
Terminal teleconference (chat)	Cotemporality, simultaneity, reviewability
Answering machines	Audibility, reviewability
Electronic mail	Reviewability, revisability
Letters	Reviewability, revisability



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Grounding

Costs of grounding

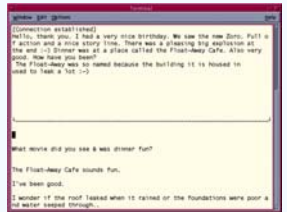
- When a medium lacks characteristic, forces use of alternate techniques
- Why? Costs of various techniques change
 - Formulation
 - Production
 - Reception
 - Understanding
 - Start-up
 - Delay
 - Asynchrony
 - Speaker change
 - Display
 - Fault
 - Repair

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Grounding

Text-based communication

- Back channels and affective state
- Grounding constraints
- Turn-taking
- Context and deixis
- Pace and granularity
- Linear vs. hypertext



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Group working

- Dynamics
 - Changing roles and relationships
- Physical layout
- Power structures



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