COMS W4170
Collaboration

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(with thanks to
Lena Mamykina)

November 13, 2018

“Hold on, I'm going to conference in my wrist.”
THE NEW YORKER

CSCW
Computer-Supported Cooperative Work

- People working/playing/interacting together through or with the use of computers
  - HCI Human–Computer
  - CSCW Human–Computer–Human

- Groupware
  - Software / platforms to support group interaction
What’s in a Name?

“Twenty-five years after its founding, the CSCW community concluded that... [i]ts name no longer reflects the group’s activity. Each word in “Computer Supported Cooperative Work” has lost its relevance.

C: *Computers* are no longer the only digital devices of interest.
S: Digital technology is no longer confined to a *support* role; it is integral to many activities.
C: The focus was initially on small groups for which *cooperation* was the norm, but today’s digital world features hacker attacks, spam, privacy concerns, conflict, and competition.
W: In 1985 systems capable of supporting groups were mainly affordable in corporate *work* settings. It’s different now.”


**Collaboration: Human Interrelationships**

- Focused partnership
- Lecture/demo
- Conference
- Ecommerce
- Online community/game
- Collaboratory
- Telepresence
- …

A computer-supported environment (typically virtual) for interaction among scientists to work together: share data and instruments, perform experiments…
Collaboration: Issues

- Who are the participants?
- What can participants do?
- When do participants interact?
- Where do participants interact?
- How do participants interact?
- How are participants represented?

Collaboration: Issues (cont.)

- How do participants interact?
  - Computer-mediated communication
    - Text
    - Voice
    - Video
    - ...
  - Movement in 3D space
  - Coordination
  - Awareness
  - Privacy

Support for
- “Hand raising” and “calling on” participants in order
- Breakout rooms

Collaboration: Issues (cont.)

- Pros and cons of different interaction modalities
  - Text
  - Voice
  - Video
  - ...

When and Where: Collaboration

Time–Space Matrix

<table>
<thead>
<tr>
<th>Same Space (co-located)</th>
<th>Different Spaces (distributed)</th>
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</thead>
<tbody>
<tr>
<td>Same Time (synchronous)</td>
<td>Different Times (asynchronous)</td>
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<td>Face-to-face</td>
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<td>Class, meeting,</td>
<td>Office projects,</td>
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<td>shared display,…</td>
<td>shared physical repository</td>
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<td>Shared editing,</td>
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<td>chat, conferencing,…</td>
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<td></td>
<td>Email, discussion</td>
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<td></td>
<td>groups, wikis, social</td>
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<tr>
<td></td>
<td>networking sites,…</td>
</tr>
</tbody>
</table>
Different times, different spaces

- Email, discussion groups, blogs, social networking
  - “Ping-pong” interaction
  - Inline incorporation of earlier turns
  - Limits on interaction → flaming, emoticons 😊
- Collective knowledge bases, jointly authored documents
  - Wikis

Different times, different spaces

- “Synced” file sharing and re-use
  - Dropbox
- Source code control systems
  - Subversion
  - Repositories/Social Coding
    - GitHub

http://dropbox.com
http://github.com
Different times, same space

- Shared physical artifacts support communication across time
  - Example:
    - J. Mankoff et al., CyberFridge, *Proc. CVE*, 1998
      - Notes
      - Refrigerator contents (using barcode reader)
  - Samsung Family Hub Refrigerator 2018
    - 21.5” touchscreen
    - Notes, calendar, photos, TV, weather, …
    - Refrigerator contents (using cameras)


Same time, different spaces

- Shared Apps
  - Google Docs, Sheets, Slides in Google Drive
    - Text, spreadsheet, presentation editors
    - Run in web browser
      - AJAX
    - Simultaneously editable by multiple users

http://drive.google.com
Same time, different spaces

- Videoconferencing
  - "Just like being there"

- Or is it?

Same time, different spaces

- Videoconferencing
  - What’s missing?
    - Direct eye contact
      - Buxton calls this the "reciprocal video tunnel"
    - Peripheral vision
      - K. Yamaashi et al., Extra eyes, Proc. CHI ’96
      - Detailed and global views are linked
      - Sensors detect interesting events, outlined in global view

http://www.youtube.com/watch?v=XUOe6uoN48A