EECE 571W

Week 2:
Social Networks and Group Work

History: Grudin

• “Office Automation”
  – Failed experiment
  – Never understood requirements
  – Effect of technology on groups and vice versa was ignored
  – What Engelbart calls “co-evolution”

CSCW & Groupware

• CSCW (post 1984)
  – Learn from other disciplines:
    • Economics
    • Social psychology
    • Anthropology
    • Organizational behaviour
    • Education
  – CSCW = field of research
  – Groupware = technology
### Groupware Typology

<table>
<thead>
<tr>
<th>Place</th>
<th>Time</th>
<th>Different &amp; predictable</th>
<th>Different &amp; unpredictable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same</td>
<td>Same</td>
<td>Meeting facilitation</td>
<td>Work shifts</td>
</tr>
<tr>
<td>Different &amp; predictable</td>
<td>Different &amp; predictable</td>
<td>Video-conferencing</td>
<td>Email</td>
</tr>
<tr>
<td>Different &amp; unpredictable</td>
<td>Different &amp; unpredictable</td>
<td>Interactive multicast</td>
<td>Computer bboards</td>
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### Grudin’s Eight Challenges

1. Disparity in work & benefit
2. Critical mass and Prisoner’s dilemma
3. Disruption of social processes
4. Exception handling
5. Unobtrusive accessibility
6. Difficulty of evaluation
7. Failure of intuition
8. The adoption process

### 1. Disparity in Work & Benefit

- Systems are designed to benefit one group of users and require effort from a different group
  - E.g. management vs. office workers

- Unless those required to do the work to make a system work get direct benefit from so doing, the system will fail.
2. Critical mass and Prisoner’s Dilemma problems

- Systems designed to be useful only if “everyone” uses them
  - Little incentive for early adopters
  - One or two defectors can derail effort

- Design systems so that both individuals and groups benefit

3. Disruption of Social Processes

- Groupware systems can violate taboos, disrupt chains of command, or demotivate critical users
  - Social structures vary greatly from group to group
- Need to understand deployment environments and develop systems with very flexible configuration and patterns of use

4. Exception Handling

- Most actual work is in handling exceptional situations but groupware systems tend to make handling these difficult or impossible

- Avoid over-automation of processes in favour of flexibility and creativity. Understand how work is actually done.
5. Unobtrusive Accessibility

• Often group-oriented tasks are used infrequently, so difficult for users to remember how to access and exploit them
• Need to be based on transparent and “explorable” interfaces where groupware features don’t interfere with individual work

6. Difficulty of Evaluation

• Hard to learn from experience because benefits of groupware are hard to quantify and decompose
• Need better, more qualitative, ways of understanding impact and effects of groupware systems

7. Failure of Intuition

• Typical developers unable to predict effects of multi-user capabilities. Intuitions built around single-user applications
• Need to understand sociology and psychology of group work in design process and have better understanding of relationship between group and individual work
8. The Adoption Process

- Means of introducing new technologies is critical to their success but often ignored
  - Especially critical for groupware because of Challenge #2: Critical Mass
- Take “tool” and “organizational” inertia as given factors and develop deployment strategies that respect them

Social Network

Group of people with common interest who regularly communicate and share information

Share:
- Common knowledge
- Communication paths
- History and plans
Vary by above factors +
- Physical distribution
- Scale

Community Types

Communities of Place
- Common location
Communities of Purpose
- Common goals
Communities of Interest
- Common topic of attention
Communities of Practice
- Common skills and problems

Cultural communities
- Common cultural and social background
Communities of Status
- Common standing in larger communities
Communities of Method
- Common methodology
Learning communities
- Common learning objectives
Community of Place

Shared:
- Location
- Political structures
- Needs (services etc.)

• Traditional definition of community
• Sociology and anthropology

Community of Purpose

Shared:
- Goals

• Exist at many scales (e.g. organizations)
• Often called “teams”
• Focus of groupware technology
• Organizational behaviour & MIS

Cultural Community

Share:
- History
- Social structures and relationships

• Religion, language and ethnicity
• Sense of common destiny
• Tend to be exclusionary and xenophobic
Community of Interest

Share:
– Topic of interest

• Hobbyists, clubs etc.
• Membership by choice
• Typically passionate and motivated

Community of Practice

Shared:
– Problem domain
– Set of skills

• E.g. Professional organization, standards body, or experts within organizations
• Etienne Wenger coined term
• Focus on sharing skills and experiences

Community of Status

Share:
– Standing within other communities

• Unions, student and faculty associations
• May exist within or across enclosing communities
• Membership is very fluid
Community of Method

- Share:
  - Means of accomplishing tasks
- E.g. Functional vs. Structural Anthropologists, qualitative vs. quantitative researchers
- Kind of Community of Practice
- Often divisive force within other communities

Learning Community

Share:
- Topic of interest
- Learning objectives

- E.g. class, university department, ...
- Kind of comm. of purpose, interest and status
- Tension between collective and competitive goals

Cooperation vs. Collaboration

- Relationships between people with common interests and goals

**Cooperation:**
- Active non-interference with others goals

**Collaboration:**
- Common work toward common goals
Community vs. Technology

- If a community is supported by computer-mediated communication then what must the CMC look like?
- How do the needs of the different kinds of communities match with particular CMC technologies?
- What is the effect of CMC on the communities?

CSSNs

Computer-Supported Social Networks
- Computer technology to support social networks
- “Wellman, Salaff etc. (1996)”
- Only three aspects
  - Virtual community
  - CSCW
  - Telework

Kinds of Support Provided

- Exchange of information
  - Sharing common knowledge
  - Planning and decision making
  - Events and schedules
- Social and personal
  - Sense of community membership
  - Emotional support
Relationships

• Specialized ties
  – Limited, special purpose relationships
• Strong ties
  – Long-term friendships and common destiny
• Weak ties
  – Identity and stability less important
• Stressful ties
  – Defined by potential or actual conflict

CSCW Observations

“Ackerman (2000)”
  • Incentives are critical
  • Social activity is fluid and nuanced
  • Goals vary within communities
  • Presence is important
  • Visibility enhances communication
  • Social norms are actively negotiated
  • Co-evolution is a fact

“Grudin (1994)”
  • Work vs. benefit
  • Disruption of social processes
  • Critical mass
  • Exception handling
  • Unobtrusive accessibility
  • Difficulty of evaluation
  • Failure of intuition
  • The adoption process

Social/Technological Gap:
P3P Example

• Users want to control sharing with a combination of recipient and data to be shared
  – “Wicked Problem” – ill-defined and intractable
  – User interface problems come from fluidity of relationships and users’ lack of explicitness of the implications of those relationships
Approaches

1. Treat CSCW as a “science of the artificial”
   • Adopt co-evolution strategy
2. Adopt palliative approaches
   • Ideological, Political and Educational
3. Find tractable approximations
   • Simplify “wicked” problems and manage complexity
4. Agree on guiding questions

Guiding questions

• When can computation system ignore need for nuance and context?
• How and when can computer systems make up for loss of nuance and context?
• Can we systematize understanding of benefits and losses of the approximate solutions?
• What types of future research will narrow gaps between technical possibility and peoples expectations?

Co-Evolution

• Technology affects community
• Community should affect technology
• Both must be treated as dynamic and responsive
• Change in both should be studied and managed