Human Behaviour in Groups and Organizations

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Outline

- Why should we care about this?
- All About Groups
  - Personnel, Tasks, Processes
  - Key issues for CSCW
- Break?
- Organizations
  - What do they look like? How do they work?
  - Key issues for CSCW
- Communities/networks/??? (very briefly!)
- Takeaways for design, development and adoption

Part i

Why should we care? Design issues to consider

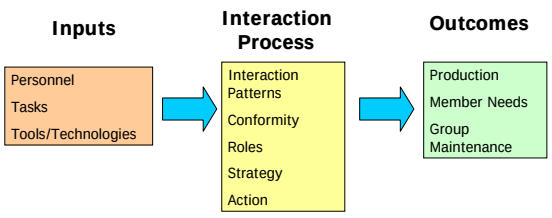
- Bandwidth and fidelity
  - When do we need audio? video? Text?
- Anticipating and responding to abuse
  - Preventing spam, flaming, etc.
- Enforcement vs. facilitation of process
- Coordination and grounding
  - Awareness, shared objects
  - Control and views, shared spaces
- Use and adoption in organizational settings

All About Groups: What is a Group

- Multiple individuals (> 2)
- Organized around the production of some output
- Mutual awareness and potential interaction

All About Groups: Thinking systematically

Input-Process-Output Model



Adapted from Kraut (2004)

All About Groups: Personnel Inputs

- People bring
  - Knowledge
  - Experience
  - Skills
- People need
  - Satisfaction
  - Income
  - Feeling of belonging

All About Groups: Personnel Composition

- Group size
  - Large groups can be more vulnerable to abuse, factions
- Group history and composition
  - Relationships impact process
    - Trust (Olson & Olson, 2001)
    - Common ground (Clark & Brennan, 1991)
  - Homogeneity vs. diversity

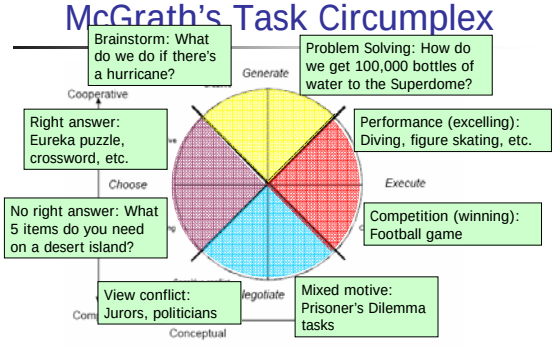
All About Groups: Task Inputs

- What is the group goal?
  - Production goals
    - Build a car
    - Jigsaw puzzle, Eureka Puzzle
  - Performance goals
    - Win the game
    - Desert Survival Task

All About Groups: How to categorize tasks?

- Task typology (McGrath, 1984)
  - Drive design choices
  - Validation and comparison of experimental results

All About Groups: McGrath's Task Circumplex



Adapted from Kraut, 2004; McGrath, 1984

All About Groups: Key Task Dimensions

- Competitive vs. cooperative
  - Incentive scheme & motives
    - Group vs. individual
  - Nature of task
    - Football game vs. Brainstorming
- Generative vs. Intellective
  - Is there a right answer?
    - Eureka Puzzle vs. Desert Island
- Choice vs. execution
  - Do we have to *do* anything?
    - Desert Island vs. Building a Car

All About Groups: Tool/Technology Inputs

- What is available to the group?
  - Consider everything!
- What do they actually use?
- How well does it match with:
  - Personnel: skills, desires, motives
  - Task: uncertainty, repeated?
  - Group: size, relationships, history
- Can we intervene?

All About Groups: Communication and Interaction

- Can you communicate too much?
  - More information helps, particularly in uncertain tasks
  - BUT, too much communication can
    - take individuals' time (Dabbish & Kraut)
    - Bias or distort group outcomes
      - Groupthink (Janis; Reason)
      - Example: Brainstorming (Olson et al., 1992)

All About Groups: Awareness and Coordination

- Awareness
  - Task Awareness: What are other people doing? (Belotti and Dourish, 1992)
  - Environment Awareness: What's going on in the world?
    - Example: London Underground (Heath and Luff, 1992)
- Where are dependencies and handoffs?
  - Loose vs. Tight Coupling
    - Examples: (Olson & Teasley, 1996; Pinelle & Gutwin, 2005)
  - Handoff Frequency

All about Groups: Role and task breakdown

- Role adoption & task breakdown
  - Clear differentiation: e.g. film crews (Bechky, 2003)
  - Unclear: some open source software (Gutwin et al., 2004)
  - Very different awareness requirements
  - Startup costs vs. task duration
- Routine vs. uncertain work (Van de Ven et al., 1976)
  - Routine work requires less interaction
  - Tight vs. loose coupling revisited

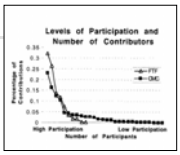
All About Groups: Outputs

- Production
  - Did we complete our task satisfactorily?
- Member Needs
  - Did everybody get what they needed?
- Group maintenance
  - Can we work together again?

Example: Rubbia, H2 and the 1984 Nobel Prize in Physics (Taubes, 1986)

All About Groups: Issues to Consider

- Social loafing/free riding
  - Application: Chat/discussion; Music sharing, etc.
  - Tragedy of the Commons
- Process loss
  - Coordination troubles
  - Common ground
  - Communication
  - Production blocking



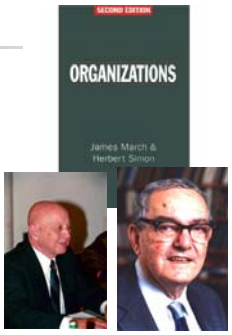
(Olson, McDaniel & Magee, 1996)

(Cumings & Kiesler, 2003)

Part ii

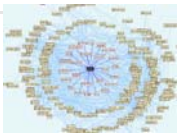
Organizations: Moving up a level

- What is an organization?
  - Larger than a group
  - Smaller than a society
- What do organizations do?
  - Coordinate activities and resource flows (March & Simon, 1955)
  - Unite people around shared goals and facilitate accomplishment of large tasks
  - Convert "perpetual novelty into actionable similarity" (Weick, 1995)
    - Routinization and adaptation



Organizations: What do they look like

- Size
  - Wide range of variation
  - Corner Grocery Store → General Motors
- Structure
  - Rigid Hierarchy (Weber)
  - More free-form structures (Castells, 1996; Malone, 2004)



Organizations: What do they look like? (2)

- Layout can take many forms
  - Geographic (e.g. North America, Europe)
  - Product line (e.g. Buick, Oldsmobile)
  - This has an impact on process!
    - Location of individuals
    - What differences are important? How are things differentiated?
- Frequently consist of sub-units
  - Competition for resources (Cyert & March, 1963)
  - Multiple levels of interest (individuals, sub-units, organizations) don't always align
    - Example: University

Organizations: Key Attributes for CSCW

- Culture
- Process and Workflow
- Rewards and Resource Allocation

Organizations: Culture

- Tolerance of change
  - Adaptability & Flexibility
  - Eagerness to learn
  - Violations of social protocols (e.g. Sproull & Kiesler, 1991)
- Competition vs. Cooperation (Orlikowski, 1992)
  - Do people share resources?
  - How does this relate to incentive scheme?
- Forgiveness vs. Permission: Rigid structures?
  - Can relate to structure
  - Can relate to workarounds
  - How to encourage adoption?

Organizations: Process and Workflow

- Routine behavior (Nelson & Winter, 1984)
  - Workarounds and tacit knowledge
  - What people say vs. what people do
- Patterns and dependencies (Malone, 1994)
  - Uncertainty
  - Coupling (Pinelle & Gutwin, 2005; Simon, 1996; Weick, 1995)
- Communications
  - Structure & Protocols
- Multiple perspectives
  - Example: "What is an experiment?, What is an order?"
  - What direction do things move in?
- Actual information sources (Weick, 1985)
  - Where do people look? What do they really do

Organizations: Reward and Resource Allocation

- How are decisions made?
  - Hierarchy vs. consensus
    - HEP as extreme case
  - Adoption issues: If we build it...
    - Can we tell them to come? (e.g. military)
    - Can we hope they'll come?
- How are resources allocated?
  - Will units cooperate?
- Organizational Slack (Cyert & March, 1963)
  - R & D
  - Time and deadline pressure
- At what level do rewards accrue?
  - Individual vs. unit vs. org
    - Social loafing/free rider issues

Organizations: Issues in System Adoption

- Work and benefit disparities
  - E.g. early shared calendar systems
  - E.g. Data sharing in scientific research
- Critical Mass and Prisoner's Dilemma
  - Externalities (e.g. fax machine)
  - Is usage to anyone's benefit? (file sharing)
- Exception handling
  - e.g. paper forms
- Evaluation difficulties
  - E.g. how to usability test?

(From Grudin, 1994)

Part iii

Communities: Moving up again...

- What are communities/networks
  - Often Geographically distributed (i.e. not in same room)
  - Common interest, less structure
- Examples
  - Citizens of a city or neighborhood
  - AOL chat groups
  - Virtual world citizens
  - Auction participants?
  - Slashdot.org?

Communities: What do they do?

- Unite people with similar interests
- Allow discussion, debate, interaction, learning, play
  - Online communities
  - Research communities
  - Communities of Interest/Practice
  - Multiplayer games

Communities: Issues to consider

- Moderation and management
  - Self-organizing? (e.g. Lampe, 2004)
  - Hierarchical structure?
- Reputation and recommendation
- Abuse:
  - Blog spam issues
  - Bots on chat systems (photos?)
- Balance of norms, rules and architecture (Lessig, 1999)

part iv

Applying this to CSCW: What we can look at?

- Nature of the personnel
- Context of the work
- Interaction Patterns
- Dependencies and Work Flow

Applying this to CSCW: The nature of the personnel

- Existing relationships
  - Trust, common ground
- Group parameters
  - Size, configuration, diversity (e.g. language)
- Skills and abilities
  - Technology readiness
  - Complementarities and overlaps

Applying this to CSCW: The nature of the task

- Generative vs. intellective
  - Is there a right answer?
- Production vs. performance
  - Do we have to make something or do something?
  - Can everyone see what we're doing?
- Competition vs. cooperation
  - Incentive alignment
  - Individual wants and needs

Applying this to CSCW: Nature & Context of the Work

- Routine vs. nonroutine
  - Ambiguity of task
  - Structure of environment
- What do people actually do?
  - How often do they follow the routine?
  - What happens when they don't?
- How are decisions made?
- How can we support sensemaking?
  - What are the information sources in use?

Applying this to CSCW: Interaction Patterns

- Who talks to whom?
- How do they communicate?
- How often do they talk?
- What do they say?
- Is this effective?

Applying this to CSCW: Dependencies and workflow

- How much coordination is necessary?
  - Coupling
- Where are the handoffs? How do these work?
- Terminology alignment issues

That's all...

- Questions & Discussion?