Crowdsourcing

Foundations: phenomena and theories

- HO design requires understanding both computers and humans.
- Student presentations will help explain the basic component theories in HO.
- This week and Week 10 will bring these theories together so we'll better understand computers.

Human Factors

Phenomena
- How do people react?
- What observations can we make about people?
- Let's use:
  - Guidelines, frameworks and heuristics for usability

Theories
- Our explanations for the phenomena
- Surprising, less agreement than we might expect
- Into the psychology, cognitive sciences, ergonomics
Collective Effort Model
Social Loafing
Conversational Analysis

Social Interaction

Human communication

Group Dynamics

Challenges in Computer Supported Collaborative Work
Important structures of CA

Conversational Analysis

- Turn-taking
- Adjacency pairs
- Intersubjective understanding
- Repair
Human Communication

Discourse and Conversational Analysis

Attend to not only content but also prosody (pauses, intonation, rhythm).

Also includes non-verbal communication (NVC):

- Facial expressions
- Gesture
- Body language, posture
Group Formation and Norms

How do groups form? a) Forming, b) Storming, c) Norming, d) Performing and e) Decay

Group norms and cultural differences (cf Hofstede):
- Individualism/Collectivism "Conformity": Asch
- Power distance (Hofstede)
- Uncertainty avoidance
- Long/Short Term Orientation
- Masculinity/Femininity
<table>
<thead>
<tr>
<th>Distortion</th>
<th>Aware of conflict?</th>
<th>Believe group to be:</th>
<th>Brain areas:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perception</td>
<td>No</td>
<td>Right</td>
<td>Parietal/Occipital</td>
</tr>
<tr>
<td>Judgement</td>
<td>Yes</td>
<td>Right</td>
<td>Orbitofrontal Cortex</td>
</tr>
<tr>
<td>Action</td>
<td>Yes</td>
<td>Wrong</td>
<td>Anterior Cingulate Cortex</td>
</tr>
</tbody>
</table>

![Images of different shapes]
Group Formation and Norms

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Individuals are already quite different in their workflow and values, this is compounded in group environments. Grudin's (1994) challenges, informed by Ackerman:

1. Disparity between work and benefit
2. Critical mass (under- and over-use)
3. Social and motivational factors (cf social loafing)
4. Exception as normal (cf availability)
5. Independent use
6. Evaluation (i.e., longitudinal evaluation)
## Spatial and Temporal Matrix

<table>
<thead>
<tr>
<th>Space</th>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>Same</td>
<td>F2F meetings</td>
</tr>
<tr>
<td></td>
<td>Meeting support tools</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Different</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tele-conference</td>
</tr>
<tr>
<td></td>
<td>Collaborative editors</td>
</tr>
<tr>
<td></td>
<td>Instant messaging</td>
</tr>
</tbody>
</table>
Tradeoffs between awareness and privacy

3 principles of social translucence:


2. Awareness: Situational awareness of the system and actors’ context (situated action)

3. Accountability: Knowledge connecting actions to identity (social loafing)
Understanding social phenomena is still very much work in progress. We are informed by studies of culture, but global Web 2.0 sites are still covering new ground.

Social bookmarking, information trails, profile management, likes, +1 are also examples.

To think about: We're certainly not at the logical endpoint towards "likes" and other "+1" like systems. In terms of awareness and privacy, what more can be done?
Information Scent BerryPicking

Navigation

Understanding how people make sense of their physical and virtual environments
Navigation

**Exploration**
(Map / Browse / "Hot")
Context, and relation of objects to other objects, holistic understanding

**Wayfinding**
(Path / Search / "Cold")
Goal-driven use for a particular purpose or destination

Object Identification
Landmarks
Information Foraging and Berrypicking

- For tasks that are not completely well-formed.
- Rely on multiple sources, use strategies that work in other contexts.
- Connections to distributed cognition and CSCW.

![Change of source after taking some information](http://pages.psyc.uci.edu/faculty/ibarte/berrypicking.html)

- Six strategies widely used
  - Footnote chasing
  - Citation searching
  - Journal run
  - Area scanning
  - Subject searches in bibliographies and abstracting and indexing (A & I) services
  - Author searching
Six strategies widely used

- Footnote chasing
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- Author searching

What are the related methodologies in (web) information seeking tasks?

Diet Selection
Patch Leaving
Information Scent
Application to HCI
View of the World from 9th Avenue

The New Yorker, Saul Steinberg
Designing for navigation

Account for the different activities that people undertake in a space. A focus of other disciplines that we can piggyback from: urban planning, interior design.

Paths - "Pave the cowpath"
Signage - Show landmarks, and paths by use
Landmarks - In guiding others, people overwhelmingly use these in their directions, whether in a map or path context.

Quick Question 1: There are also big differences between web and physical navigation. What’s one of the largest differences?
Quick Question 2: What’s the connection between landmarks and social networking systems?
Summary

- Useful analogies from physical wayfinding
- Different models of behavior from searching / browsing
- Not only past use but ease of use and information scent

- Teleportation via search causes disorientation
  - Search engines always available
- Better support for web orienteering important, also a province of information retrieval.

- Things to Take Away
  - Information Foraging
    - People prefer the easiest and most beneficial source
    - Must create a good scent, clearly suggesting to users a source has what they need
    - Retain users loyalty by encouraging user to stay
Crowdsourcing

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Human Factors

Phenomena
- How do people...?
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Tools
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- We use psychology, cognitive sciences, ergonomics

Outline
- Human Information Processing
  - Memory and Attention
  - Human Abilities
- Cognitive Models
  - Social, Emotional, and Affective Factors
  - Navigation and Wayfinding