Modeling Users 2

Predicting thoughts and actions in context
Agenda

- Other cognitive theories
  - Situated action
  - Activity theory
  - Distributed cognition
- User profiles/models -> implications
- Project Part 2 - Design Alternatives
Remember the Idea:

... If we can build a model of how a user works, then we can predict how s/he will interact with the interface (before it is even built)
Last Time

- MHP, GOMS, CCT, KLM technique
- All model human as an information processing “machine”

- What’s missing?
(Social) Context

- Human information processor models all involve unaided individual
- In reality, people work with other people and other artifacts
- Other models of human cognition
  - Situation action
  - Activity theory
  - Distributed cognition
Situated Action

- Studies situated activity or practice
  - Activity grows out of the particulars of a situation
  - Improvisation is important

- Basic unit of analysis is “the activity of persons acting in a setting”
Example

- Need 3/4 of a cup of cottage cheese
  - Just has a 1-cup measuring cup available
- Person solves problem by
  - Measuring 1 cup
  - Pouring out into a circle
  - Divide into quadrants
  - Take away one quarter
- One time solution to one time problem
Situated Action Principles

- Structuring of an activity grows out of immediacy of the situation
- People engage in opportunistic, flexible ways to solve problems

- NOT Formulaic plans
- NOT Rational problem solving
Activity Theory

- Unit of analysis is an activity
- Components:

- Subject, object, actions, operations
  - Noun: Held by subject, motivates activity “object of game”
  - Goal-directed processes “tasks”
  - How action is carried out
Activity Theory Principles

- Key idea: Notion of *mediation* by artifacts (objects)

- Our work is a computer-mediated activity
  - Starring role goes to activity
  - In “regular” HCI, stars are person and machine

- Context is not “out there”. It is generated by people in activities
Distributed Cognition

- Unit of analysis is cognitive system composed of individuals and the artifacts they use.

- Studies the coordination and cooperation between people and artifacts in a distributed process.
Distributed Cog. Principles

- NOT Individual agents

- Distributed collection of interacting people and artifacts

- Functional system is what matters, not individual thoughts in people’s heads
Simpler User Modeling

- How do attributes of users (in their context) influence the design of user interfaces?

- Are there some design guidelines that we can derive from different attributes?
User Profiles

Attributes:

- attitude, motivation, reading level, typing skill, education, system experience, task experience, computer literacy, frequency of use, training, color-blindness, handedness, gender,...

- Novice, intermediate, expert
Motivation

User
- Low motivation, discretionary use
- Low motivation, mandatory
- High motivation, due to fear
- High motivation, due to interest

Design goal
- Ease of learning
- Control, power
- Ease of learning, robustness, control
- Power, ease of use
Knowledge & Experience

Experience

- **task**  system
  - low low
  - high high
  - low high
  - high low

Design goals

- Many syntactic and semantic prompts
- Efficient commands, concise syntax
- Semantic help facilities
- Lots of syntactic prompting
Job & Task Implications

- **Frequency of use**
  - High - Ease of use
  - Low - Ease of learning & remembering

- **Task implications**
  - High - Ease of use
  - Low - Ease of learning

- **System use**
  - Mandatory - Ease of using
  - Discretionary - Ease of learning
Project Part 2

- Explore the DESIGN SPACE
- Three vastly different designs
- “Informed Brainstorming”