USER CENTERED DESIGN VOCABULARY

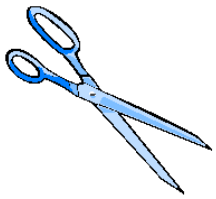
This material is partially based on the slides developed by Gregory Abowd, Jim Foley, Diane Gromala, Elizabeth Mynatt, Jeff Pierce, Colin Potts, Chris Shaw, John Stasko, and Bruce Walker and on Don Norman's class.

Last class Questions

- What do affordance and signifier mean?
- How can I use these theoretical definition in practice?
- How are these concepts related with user/human center design?
- What are conceptual models and system images?
- Are these concepts related one with the other?
- Can they influence the quality of your design? If yes, how?

Constraints

- Constraints limit the ways in which something can be used
- Constraints can be
  - Physical
  - Semantic
  - Cultural
  - Logical

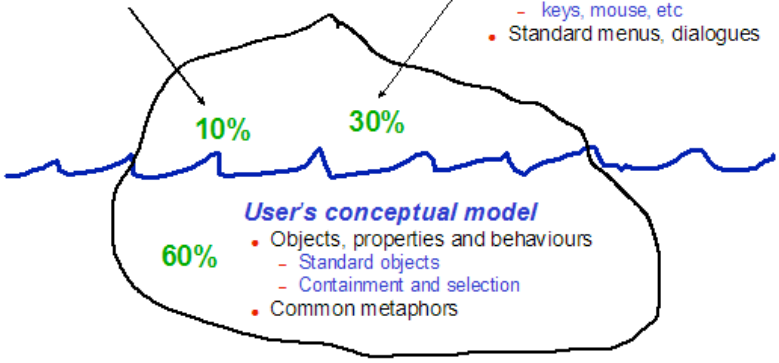


Paper scissors

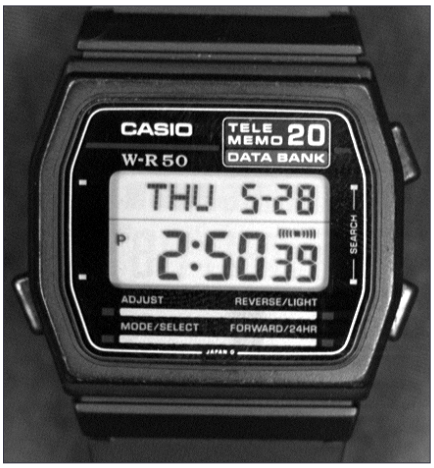
Barber scisssors

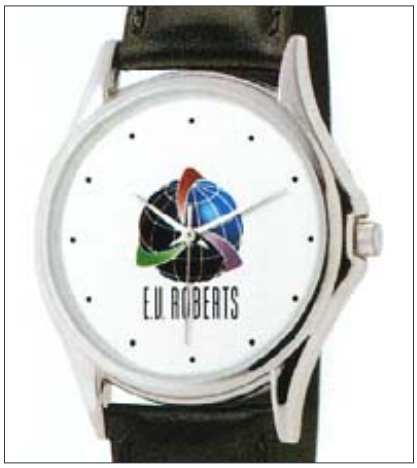
User's Conceptual Model

- How things appear
- Operational feedback
- Aesthetics
  - colour, 3D
- How users make requests
- Ways of interacting
  - editing, scrolling, dragging
- Device mappings
  - keys, mouse, etc
- Standard menus, dialogues



Which Has a Clearer Conceptual Model?





A 'Good' System Image

- Familiar to users
  - Matches way they think about domain
  - Preferably based on a concrete metaphor
  - Coherent
- Supports learning by exploration
- Hides system model
- Reflects current status - changes are notified
- Supports retention
- Reduces need for training

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Norman's Principles in Software

- Visibility
  - Visibility of the tasks the interface supports
  - Communication of system state / mode
- Affordance
  - If it looks like a button it can be pressed, if it is a underlined it can be clicked (web)
- Mapping
  - Clicking on a particular interface element produces expected effect (under F)ile should be O)pen)

Norman's Principles in Software

- Constraints
  - Constraining search criteria, graying out menu items that don't apply in a particular context
- Feedback
  - Providing clear and immediate feedback for each user action

Some take-away messages

- Affordances are important
- Minimize the gulf of interpretation and gulf of execution
- Use natural mappings
- Make state visible
- Use a conceptual model that makes sense
- Provide feedback

Homework #1

Step 1: Take photo(s) of an object for which, in your opinion, it is not simple to create the conceptual model (e.g., because its signifier is unclear or hidden, it use a confusing mapping, …, a combination of multiple-elements).

Step 2: Sketching the photo/adding comments/ Using whatever tools/materials you'd like, propose your solution "to fix" the object

Step 3: Prepare a report with the following information:

- The photo(s) you have taken
- Your analysis of the problem with the object in the photo
- Your solution to fix it

Step 4: Submit your report in the Homework #1 Dropbox in D2L

- • The report has to be in pdf format

HOW DO YOU PHASE A NEW OBJECT?

Participation Assignment
On a sheet of paper

- Part 1: One side: write down the name of one technology or a feature of a technology that you have found cumbersome to use
  - Why is it cumbersome?
- Part 2: Other side think about someone older (e.g., parent) or younger (child) and an occasion when they complained to you that a technology DIFFICULT for them
  - Did you agree? Did you find this same technology/feature EASY- why?
- Part 3: Switch sheets with one group member
  - Look at their answer for Part 1

  Do you find it cumbersome too?

  A. If yes, Is it for the same reason?
  B. If no, why?– write it it down on their sheet
  - Look at their answer for Part 2– repeat "A"
- Repeat part 3 until the professor calls "times up!"

Norman Truism

"Good design is an act of communication between the designer and the user, except that all of the communication has to come about by the appearance of the device itself."

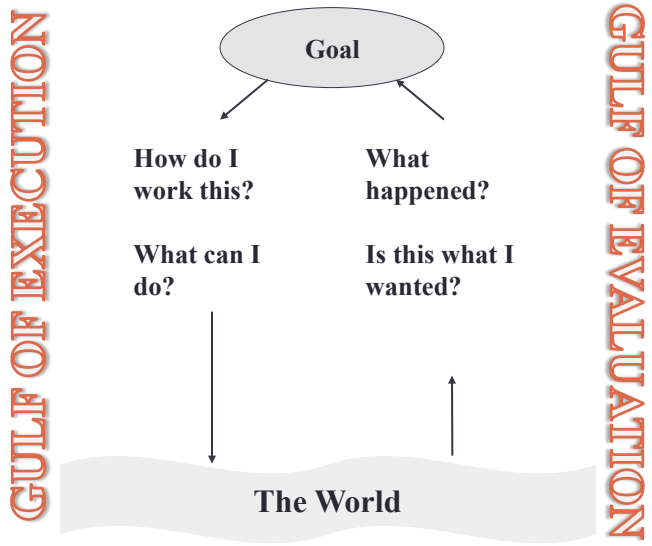
THE PHYCOLOGY OF EVERYDAY ACTIONS

This material is partially based on Elke Duncker's slide, D. M. Jacobsen's slidws, Ch 2 and Ch 3 of "The design of everyday things".

Today's questions

- How people do things?
- How does human thought work?
- How do people process information?
- How should all the above influence the designer?

What happen when you face a device?



Seven Stages of Action

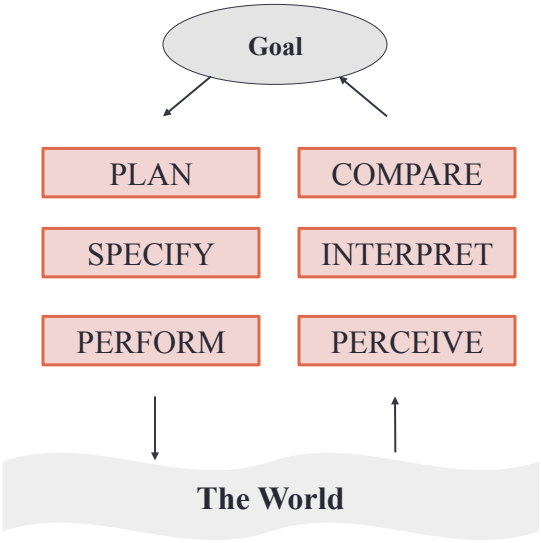
- Form the goal
- Form the intention
- Specify an action
- Execute the action
- Perceiving the state of the world
- Interpreting the state of the world
- Evaluating the outcome

What are gulfs?

- The gulf is the distance between the mental representations of the person and the physical components and states of the environment

- **Discussion:** Which are the difficulties in deriving relationships between mental intentions and interpretations and the physical actions and states?

Execution and evaluation



Example

- Forming a goal
  - I want more light so I can see better
- Forming the intention
  - I will turn on some lights
- Specifying an action
  - I will walk to the wall, and move the light switch up.
- Executing the action
  - Attempting to do the action
- Perceiving the state of the world
  - I look around
- Interpreting the state of the world
  - Can I see better?
- Evaluating the outcome
  - If I can see better, I have succeeded!

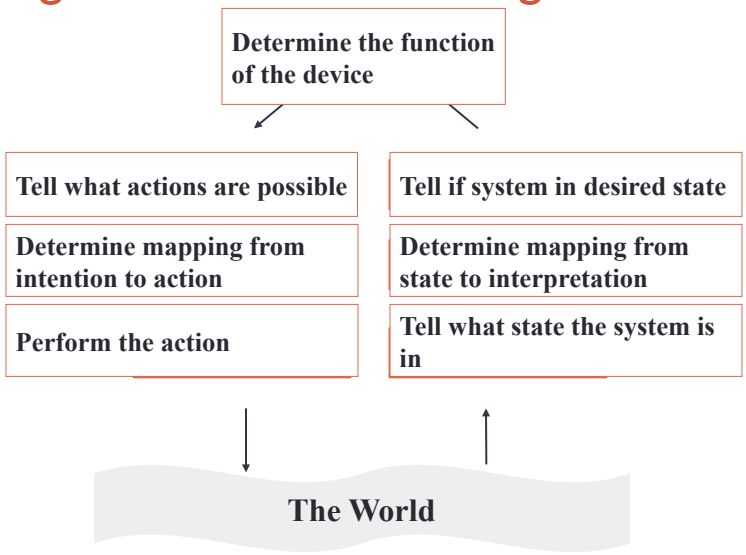
The steps

- Forming a goal: What do I want?
- Forming the intention: What would satisfy this goal?
- Specifying an action: What do I have to do to achieve the intention?
- Executing the action: Do the steps I have specified
- Perceiving the state of the world: Use my senses to gather information about the world and/or system I am working with
- Interpreting the state of the world: Figure out what, if anything, has changed
- Evaluating the outcome: Did I achieve my goal?

5 minutes exercise

- Form groups of 4
- Try to decompose something you usually do using the 7 stages
- Write those down in a sheet of paper containing also the names of the members of your group

Using the model as a design aid



Human thought

- Exercise for the class:
  - Which is the capital of the USA?
  - Of Italy?
  - Of Estonia?
- Exercise for a volunteer
- All this knowledge comes from long term memory
  - Declarative memory
  - Procedural memory
- Human thought is mainly subconscious

Subconscious vs Conscious

Fast	Slow
Automatic	Controlled
Multiple resources	Limited resources
Controls skilled behaviors	Invoked for novel situations: learning, in danger, things go wrong

Cognition and emotion

- They cannot be separated!!
  - Cognitive thoughts lead to emotions
  - Emotions drive cognitive thoughts
- Why?
  - The brain is structured to act upon the world
  - The actions carry expectations
- What are they about?
  - Cognition tries to make sense of the world
  - Emotion assigns value
- Which comes first?