

Turn on your video
if possible.

Get Paper and Drawing
Implements ready – you will
use them in class today.

CS1320
***Creating Modern Web and
Mobile Applications***

Lecture 26

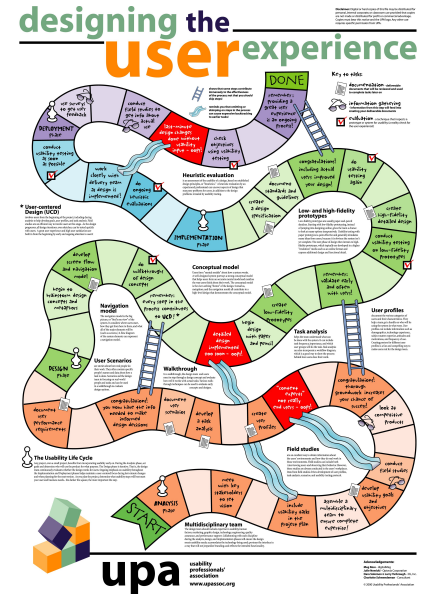
Human-Computer Interaction II

Redesign

- Go to <http://bdognom-v2.cs.brown.edu:5002>
 - Start lesson 3 (Redesign)
 - Click on Show Feedback to bring up all the feedback on your design
- Now do a (complete?) redesign
 - Based on the feedback
 - Based on looking at other peoples designs
 - Based on a weekend of thought
 - You have 10 minutes
 - Submit image or pdf of the design through the lesson
 - Raise hand (virtual) or thumbs up when done

Evaluating a Design

- Do you think your second design is better?
- Why?
 - How would you evaluate the design?
 - What basis would you use for saying its better?
- Lets look at some criteria
 - Culled from 38 years of workstation experience
 - Culled from a variety of books and other expert sources
 - Culled from talking to and working with designers
 - Feedback (from designers and others) would be helpful



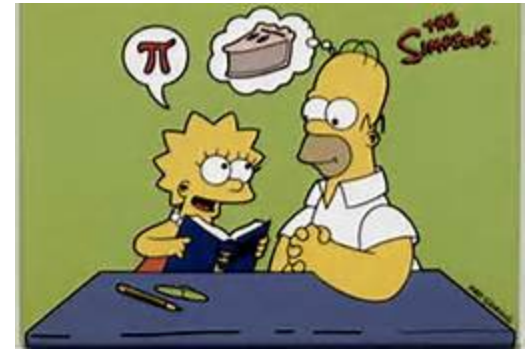
Steve's Golden Rules of Design

- Common Sense
- Simplicity
- Consistency
- Feedback
- Handle Errors
- Accommodate all levels of users
- Make it look good (aesthetics)



Common Sense

- Principle of LEAST ASTONISHMENT
 - Surprise the user as little as possible
 - The system should do what the user expects
- Users have different models of how the system works
 - What they expect can be different (scrolling)
 - Their model is often very different from the programmer's model
 - The UI should guide the user to the right system model
 - Many UI issues come from mismatched models



User's Mental Model



UX Knowledge Base Sketch #25

MENTAL MODEL



"IF AN ORGANISM CARRIES A "SMALL-SCALE MODEL" OF EXTERNAL REALITY AND OF ITS POSSIBLE ACTIONS WITHIN ITS HEAD, IT IS ABLE TO TRY OUT VARIOUS ALTERNATIVES, CONCLUDE WHICH IS THE BEST OF THEM, REACT TO FUTURE SITUATIONS BEFORE THEY ARISE, UTILIZE THE KNOWLEDGE OF PAST EVENTS IN DEALING WITH THE PRESENT AND THE FUTURE."



INTERNAL REPRESENTATION OF



EXTERNAL REALITY BASED ON



PAST EXPERIENCES, LEARNING & INTUITION

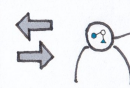
⇒ "A MENTAL MODEL REPRESENTS A THOUGHT PROCESS FOR HOW SOMETHING WORKS." (SUSAN CAREY)

UX

HOW DOES THIS APPLY TO UX DESIGN?

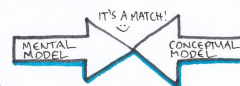


SOFTWARE/ APPLICATION



BASED ON → EXPERIENCE WITH DIGITAL PRODUCTS IN GENERAL
EXPERIENCE WITH SIMILAR APPS
INTUITION
WHAT THE USER HEARD/READ ABOUT IT
+ EXPERIENCE WITH THIS GIVEN APP (OBVIOUSLY, THIS ONLY APPLIES TO RETURNING USERS)

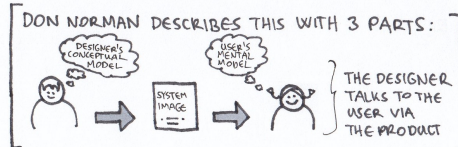
USER'S MENTAL MODEL ABOUT HOW THIS WORKS (WHICH IS IN CONSTANT CHANGE!)



THE CONCEPTUAL MODEL SHOULD MATCH WITH THE USERS' MENTAL MODELS

CONCEPTUAL MODEL:

"THE ACTUAL MODEL THAT IS GIVEN TO THE PERSON THROUGH THE DESIGN AND INTERFACE OF THE ACTUAL PRODUCT" (SUSAN M. WEINSCHENK)



THERE CAN BE DIFFERENT USER GROUPS WITH DIFFERENT MENTAL MODELS
AS A RESULT, A FAMILIAR MODEL IMPROVES THE OVERALL UX (E.G.: LEARNABILITY, EFFICIENCY, MEMORABILITY, USER SATISFACTION)

HOW?

TO GAIN INFORMATION ABOUT THE USERS' MENTAL MODELS?

- CONDUCT UX RESEARCH, LISTEN & OBSERVE (E.G. WHAT ARE THE USER'S EXPECTATIONS? PRIOR KNOWLEDGE/ EXPERIENCE? HOW IT SHOULD WORK?)



CONTEXTUAL INQUIRY



USER INTERVIEW

- IDENTIFY METAPHORS: FAMILIAR CONCEPTS HELP THE USERS SETTING THEIR EXPECTATIONS - E.G.: DESKTOP METAPHOR; FOLDER
- PAY ATTENTION TO THE TERMINOLOGY THE USERS APPLY.
- IDENTIFY THE OBJECTS, CONCEPTS RELATED TO A TASK / ACTIVITY, E.G. PHOTOGRAPHY:

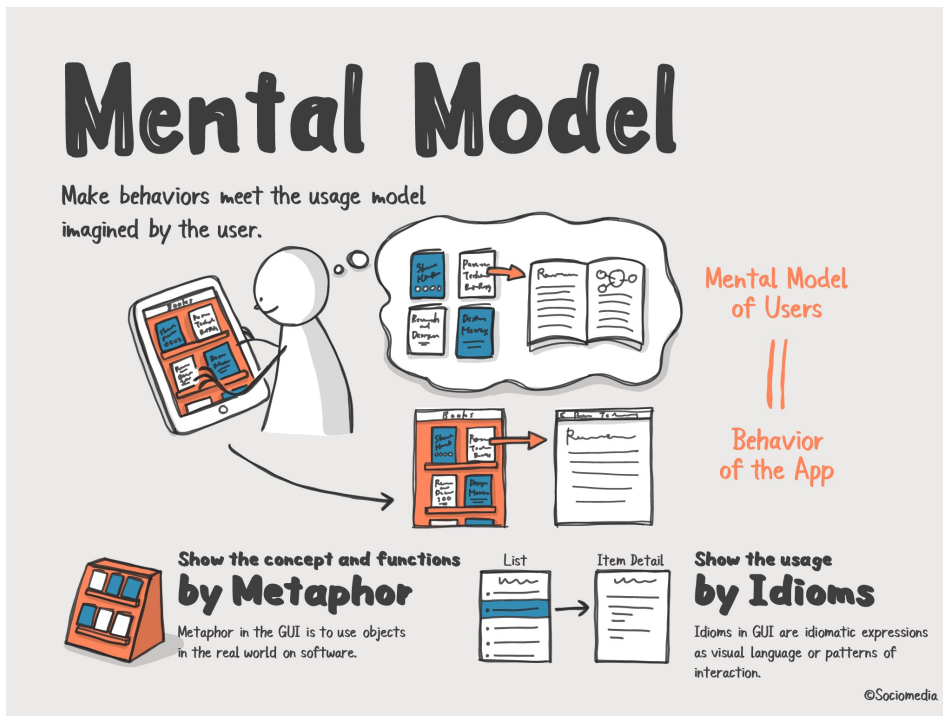


THESE ARE THE COMPONENTS:

PHOTOS CAMERA ALBUM

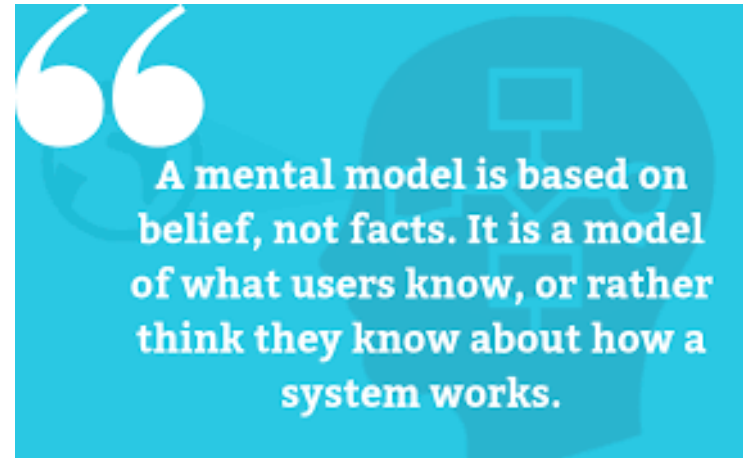
⇒ THE CONCEPTUAL MODEL SHOULD REFLECT THESE

Controlling the User's Model



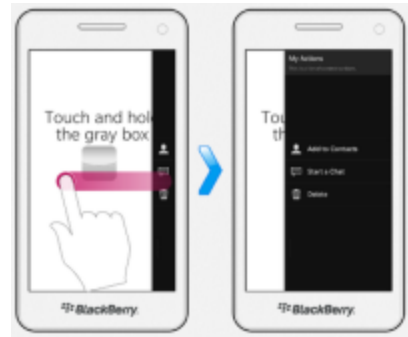
Models in UI Design

- **System Model**
 - How the system actual works
 - Implementation model
- **Interface Model**
 - The model the system presents to the users
 - Conceptual model
- **User Model**
 - How the user **THINKS** the system works
- **Ideally there should be simple mappings between these**
 - Lack of mapping yields poor user experience
 - Lack of mapping is more common than you think



Common Sense

- **Commands should do the logical thing**
 - Command names should fit the user model
 - Command names should be meaningful to the USER
 - Direct manipulation should be available and meaningful
 - Gestures should have a logical meaning
- **Spoken conversation is a good model**
 - The user is telling the computer what to do
 - But the computer is pretty stupid
- **Appeal to your intuition**
 - Easier when looking at someone else's design
 - Use the user's knowledge of the world and the application
 - Have the application give the user the proper cues

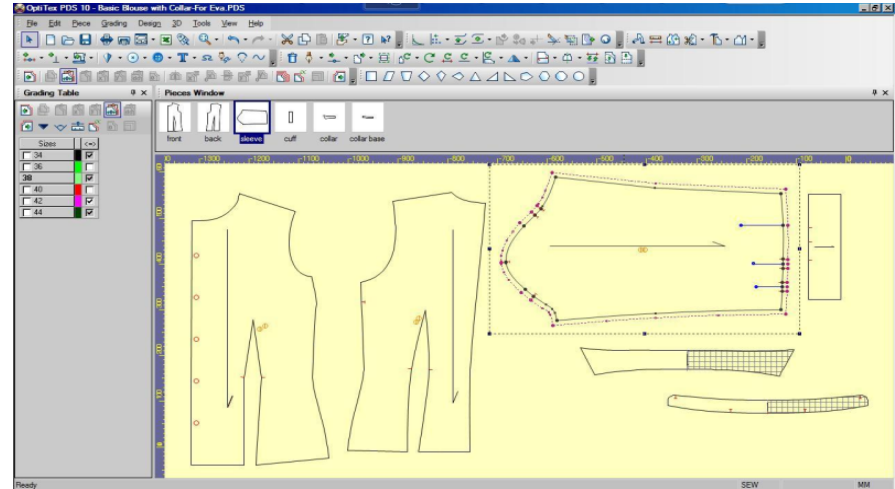
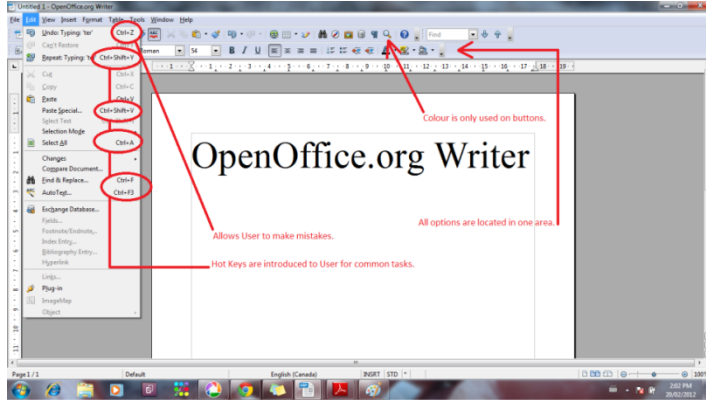


Common Sense

- Make the system do what the user means
- Examples: DWIM, Clippie, automatic spelling correction
 - Good in principle, difficult to achieve in practice
 - Will AI come to the rescue?

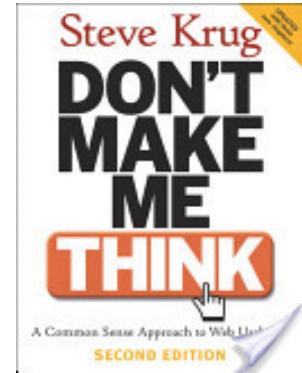


Simplicity

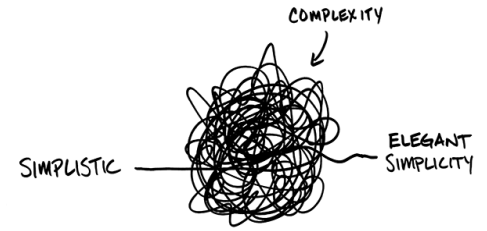


Simplicity

- **Simpler interfaces are generally better**
 - Google search, Early Mac versus PC
- **Minimize the amount of interaction required**
 - Search: providing the user with likely search strings
 - No more than 3 clicks for any action
- **Simpler makes it easier for users to find what they need**
 - Users aren't going to read a manual, help file, or FAQ
- **Simpler makes the conceptual model more obvious**
- **DON'T MAKE ME THINK**
- **DON'T MAKE ME WORK**



Problems With Simplicity



BEHAVIORGAP.COM

- You can get too simple
 - Make it more difficult to do common operations
 - Early mac: no keyboard shortcuts, only menu items for editing
- Some interfaces are inherently complex
 - 3D design has lots of options and a 2D interface is non-intuitive
- Simplicity is difficult to achieve
 - Different users have different needs
 - Hiding system complexity can provide wrong system model to user
 - Adaptive simplicity can be confusing (adaptive menus)

Consistency



Consistency



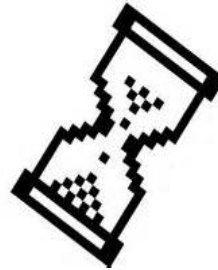
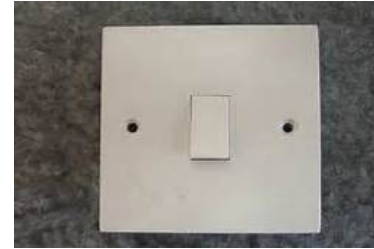
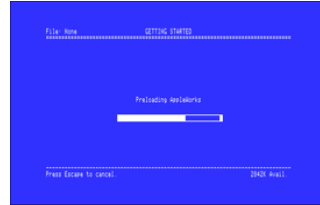
- **Consistency make the interface easier to use**
 - User can build on what they already know
 - Only have to learn things once
- **Application should be consistent throughout the interface**
 - Consistent use of colors
 - Consistent look and feel
 - Consistent navigation and menus
 - Consistent screen layout
 - Consistent gestures and interactions
 - Clicking on most things should be meaningful & consistent

Consistency

- Consistent with other applications
 - What do users expect in this type of application
 - For example: web apps, phone apps, ...
 - What do similar applications do
 - For example: shopping carts
- Consistent conceptual model
- Use Common Sense
 - Don't go overboard - you can be too consistent
 - What does moving an icon from one folder to another do?



Feedback



Feedback

- **Keep the user informed**
 - The user needs to know if actions are accepted
 - Especially for actions that may take a long time
 - The user wants to know what is happening
 - This is part of their mental model of the system
 - This is why I want video rather than audio only
 - Conversational model
- **Showing feedback**
 - Generally this should be non-obtrusive
 - Sometimes, its needs to be more blatant
 - Should be easy to view

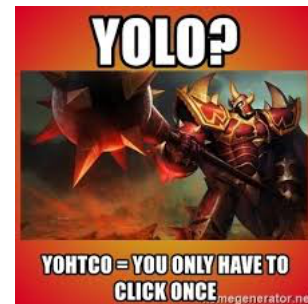


"You can't just punch in 'let there be light' without writing the code underlying the user interface functions."

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Feedback

- Prevent the user from harming themselves
 - Don't let the user click twice on a one-click item
 - Such as Buy or Send
 - If the system doesn't respond immediately
 - Did the user click or not
 - The user will click again
 - This has to be done before sending request to the server
- Settings
 - Do they need to be accepted or do they take effect immediately



Problems with Feedback

- Making it too overt or not overt enough
 - Difficult to achieve the proper balance
- Providing meaningful information
 - % of work done, how much longer is needed
- Avoiding user frustration
 - Matching mental and system models of what is being done



Next Time

- More Human-Computer Interaction
 - More crits and your chance to do another redesign

If you are off-line, do the design exercise

Before the next class

Office hours today 1-3

795-241-247