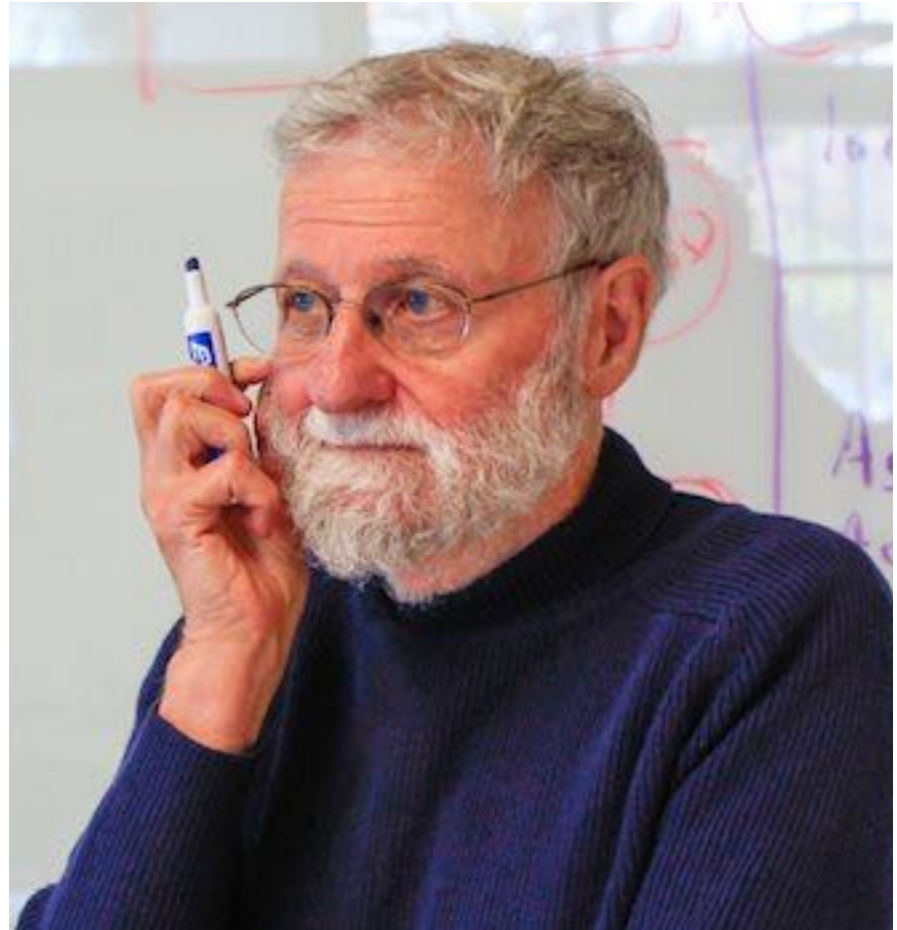
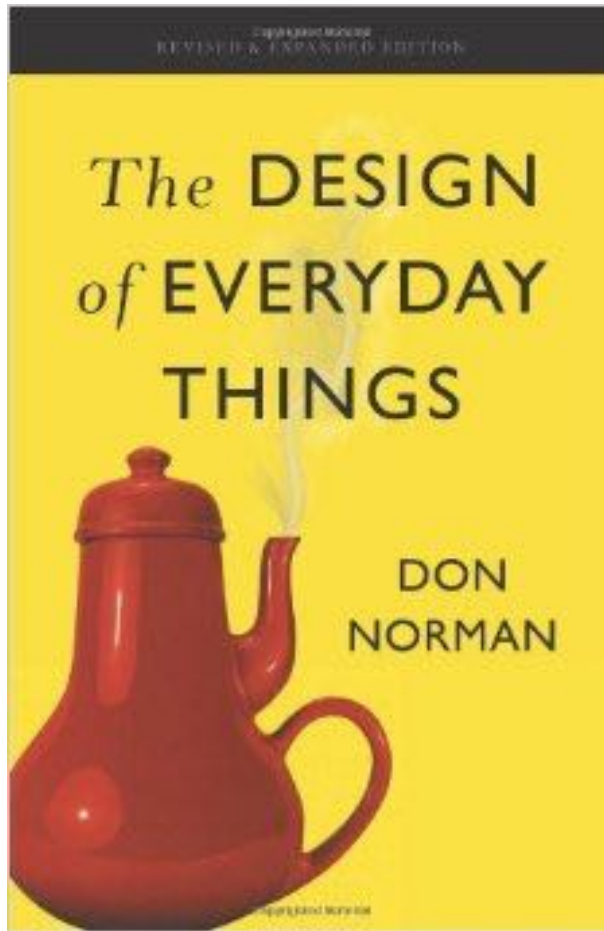


HCI and Design

Today's Reading



What I learned from Assignment 0

This is the first HCI course for most of you. 😊

You need practice with core HCI and Design concepts.

Today: Understanding Users

Why do we need to understand users?

What do we need to know?

Why do people find it difficult to understand and use so many everyday objects?

What are Don Norman's principles and how do they apply to the design of everyday things?

How can we apply Norman's principles to the design of computer interfaces?

We need to understand users

Product success depends on designing systems/
tools that can be used

Safely

Effectively

Efficiently

Enjoyably



We need to understand users

Bad design results in

anger and frustration

decreased productivity in the workplace

higher error rates

physical and emotional injury

equipment damage

loss of customer loyalty

costs money



Why does good design matter?

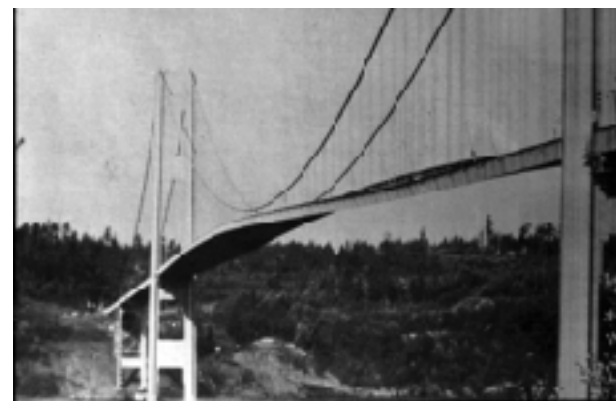
Bad artifact
design



Bad product
design



Bad
communication



Dangerous
design

Psychopathology of Everyday Things

We are surrounded by many everyday things that have poor usability

Door knobs, stoves, showers, taps, ...
hardware, software

Many of these things can be difficult to interpret and frustrating to use if they provide no clues or false clues as to how they operate

What do we need to know about users?

Physical & cognitive abilities (& special needs)

Personality & culture

Knowledge & skills

Motivation

Fatal Mistakes:

Assume all users are alike

Assume all users are like the designer

You Are Not the Customer!



Seems obvious, but...

- You have different experiences

- You have different terminology

- You have different ways of looking at the world

Easy to think of yourself as typical customer

Easy to make wrong assumptions

Norman's Principles of Design

Make things visible

Provide a good conceptual model

Affordances and Signifiers

Mapping

Constraints

Feedback

Visibility

The correct parts must be visible and they must convey the correct message

Natural signals are naturally interpreted

Visibility problems occur when clues are lacking or exist in excess

Just by looking the user should know

- State of the system

- Possible actions

Bad Visibility:
How do you use this plug?



Please Push Slowly!

Wonder why doors are made out of glass?

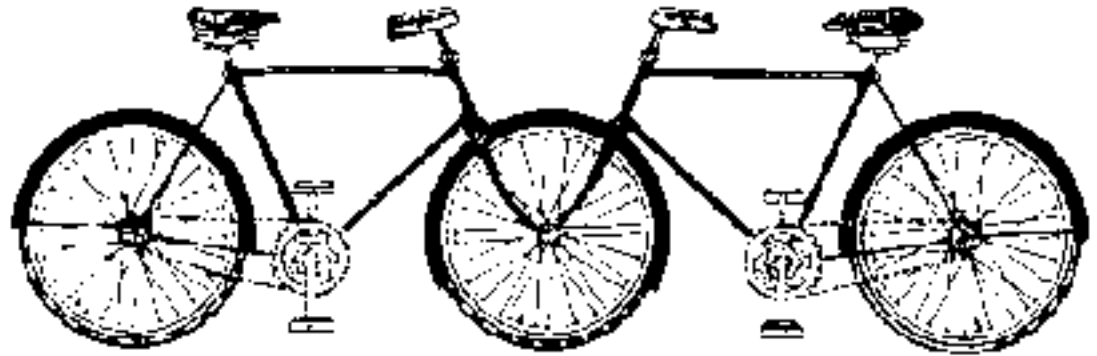


Evidently someone was smacked...



Good Conceptual Model

A good conceptual model allows us to predict the effects of our actions



Without a good model we operate blindly
No understanding of cause or effect
No recourse when something breaks

Bad Conceptual Model: The Case of the Mistaken Urinal



THIS IS A MOP SINK

Affordances and Signifiers

Affordances define what actions are possible

Button affords pushing

Handle affords grasping

Knob affords turning

Signifiers specify how people discover these possibilities

Signifiers are signs, perceptible signals of what can be done

Affordances and Signifiers

Example



Bad Signifier:

How do you open this drawer?



Mapping

Controls and displays should exploit natural mapping

Natural mapping takes advantage of physical analogies and cultural standards

- Physical: Steering wheel

- Cultural: red means stop, green means go

Transfer Effects: People transfer their expectations from familiar objects to similar new ones

- Positive transfer: previous experience applies to new situation

- Negative transfer: previous experience conflicts with new situation

What Knob Goes Where?



Exploit Natural Mapping



Constraints

Constraints limit the ways in which something can be used

Constraints can be

Physical

Semantic

Cultural

Logical



Feedback

Feedback is sending back to the user information about what action has actually been done

Visibility of the effects of the operation tell you if something worked correctly

Systems should be designed to provide adequate feedback to the users to ensure they know what to do next in their tasks

Feedback Examples

Phone button press tones

Rice cooker goes “bing!”

Clicker on your turn signal

Animated icon while waiting for a web page to load



Norman's Principles of Design

Make things visible

Provide a good conceptual model

Affordances

Mapping

Constraints

Feedback

What about software??

What about 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 underlined it can be clicked (web)

Mapping

Clicking on a particular interface element produces expected effect (e.g., Open should be under File)

What about 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 action
Animated icons for any waiting

Many more examples of these that we will see during the semester...

Larson's dog effect



Same with Software

Thank you for registering! We appreciate your business. To activate your software, you will be sent an email key. After you have received the key by email you will be able to [click here](#) and proceed with the activation.

Blah blah blah blah blah blah blah blah blah blah
blah blah blah blah blah blah blah blah blah [click here](#) blah blah blah blah blah blah blah blah
blah blah blah blah blah blah blah blah

How do we learn about users?

If there are usability problems in everyday “simple” things, the challenge is much greater for complex software

Problems can be overcome through HCI methods that collect and analyze data to better understand your users

There are many methods, we will learn and practice a few....

- Contextual enquiry

- Surveys

- Interviews

- Usage Analysis

Activity: Hall of Fame and Shame

Goal: Find and critique well and badly designed objects, products, or interfaces.

1. Find a partner.
2. Go explore the building/campus and find examples of 2-3 well-designed and 2-3 badly designed objects/products/interfaces. **Be creative.**
3. Create a document that, for each example, provides:
 - A. A screenshot or photo
 - B. A short description of the object or interface and where it comes from.
 - C. A short justification (i.e., three bullet points) for why it belongs in the “Hall of Shame” or “Hall of Fame”.

Post your document (pdf) to the “Fame and Shame” channel on the class Slack.
MAKE SURE TO INCLUDE THE NAMES AND NETIDS OF BOTH PARTNERS!