Design of Everyday Things
--Don Norman

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Agenda

• Discuss Norman’s views on HCI & design
Summary

Don Norman

- Currently with Nielsen Norman group & professor at Northwestern
- Previously Professor at UCSD, at Apple, HP, etc.
Discussion

• What did you take away from DOET book?

Daily Challenges

• How many of you can use all the functionality in your
  – VCR
  – Digital watch
  – Copy machine
  – Stereo system
  – Plumbing fixtures
Fun Examples

• Leitz slide projector
  – To move forward, short press
  – To move backward, long press

• What happens when you get frustrated?

Fun Examples

Doors

One in this room!
Fun Examples

Phones

How do you
- transfer a call
- change volume
- store a number
- ...
Changing Ringer Volume

- Press “Program”
- Press “6”
- Set volume
  - Low - Press “1”
  - Medium - Press “2”
  - High - Press “3”
- Press “Program”

Important Concepts

- Affordances
- Visibility
- Conceptual models
- Mapping
- Feedback
- Constraints
Affordance

• What is it?

Visual Affordances

• Perceived and actual fundamental properties of an object that determine how it could be used
  – Chair is for sitting
  – Ball is for throwing
  – Button is for pushing
Mantra

- Complex things may need explanation, but simple things should not
  - If a simple thing requires instructions and pictures, it is likely a failed design
Designing for People

- Norman’s 2 main principles
  - Provide a good conceptual model
  - Make things visible

Conceptual Model

- What does Norman mean by that?
Conceptual Models

- People build their own systems of how things work
  - Example - car

- Designer can help user foster an appropriate conceptual model
  - Appearance, instructions, behavior...

Visibility

- When functionality is hidden, problems in use occur
  - Occurs when number of functions is greater than number of controls

- When capabilities are visible, it does not require memory of how to use
  - Remind person how to use something
Simple Example

Electric plugs

What if both sides were “big” and you had to remember which side the “small” one went into?

Simple Example

- Bathroom faucets
  - Two functions
    - Hot/cold
    - Pressure
Bathroom Faucets 1

Can you figure out how to use it?
Are two functions clear and independent?

Bathroom Faucets 2

Can you figure out how to use it?
Are two functions clear and independent?
Can you figure out how to use it?
Are two functions clear and independent?

Two Important Principles

- Mapping
- Feedback
Mapping

• What does this mean?

• Relationship between two objects, here, between control and action/result
  – Good:
    • Car, various driving controls
    • Mercedes Benz seat adjustment example
  – Bad
    • Car stereo - Knob for front/back speakers
Stove

Which controls which?

Yikes!
Why Not Design Better

- Stove
  - Physical, monetary, convenience, etc., constraints dictate otherwise

- Speakers

Feedback

- Let someone know what just occurred
  - Can be sound that’s made
  - Can be change in physical state
Constraints

- Limitations on what can be done
  - Physical - keys
  - Semantic - menu graying
  - Cultural - Colors
  - Logical - When all above don’t apply

Individual Differences

- Whom do you design for?
  - Everyone? Impossible
  - Average? Excluding half audience
  - 95%? Still may miss a lot

- Can’t accommodate everyone
Individual Differences

- Designers are not representative of the user population for whom they are designing
- Don’t expect users to think or act like you
- People vary in both physical attributes and mental/cognitive attributes

Example

Affordances - Insert something into holes

Constraints - Bigger hole for several fingers, small for thumb

Mapping - How to insert fingers into holes suggested by visible appearance

Conceptual model - Suggested by how parts fit together and move
Why Design is Hard

- Number of things to control has increased dramatically
- Displays are more virtual/artificial
- Marketplace pressure
  - Adding operations cheaper (computers)
  - Adding controls expensive (real estate, cost)
- Errors are becoming increasingly serious

Try and Try Again

- Norman thinks that it often takes 5 or 6 tries to get something “right”
- Simply may not have that luxury in a competitive business environment
Upcoming

- Design (general)
- Prototyping