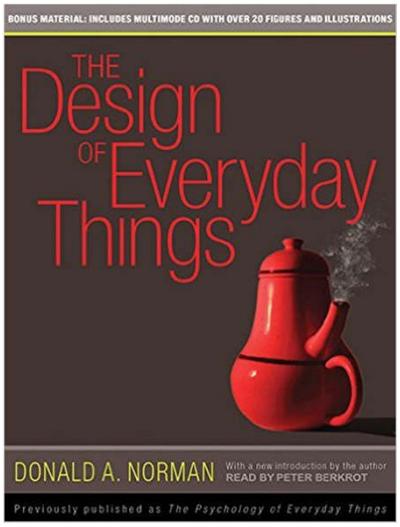
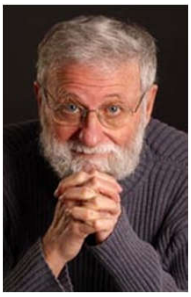
BIRZEIT UNIVERSITY



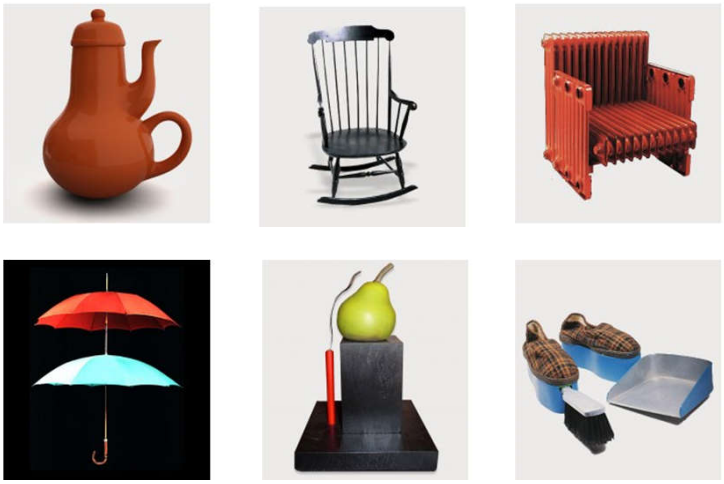


By: Mamoun Nawahdah (Ph.D.)
2018

https://www.udacity.com/

Highly Recommended

http://impossibleobjects.com/



Doors?

- Have trouble opening doors?

Doors?

- There are psychological principles that can be followed to make these things understandable and usable.
- Suppose you come to a door:
  - In which direction does it open?
  - Should you **pull** or **push**, on the **left** or the **right**?
  - Maybe the door slides. If so, in which **direction**?

Visibility (Signifiers)

- The correct parts must be **visible**, and they must convey the correct message.
- With doors that push, the designer must provide signals that naturally indicate where to push.
- We call the use of natural signals **natural design**.

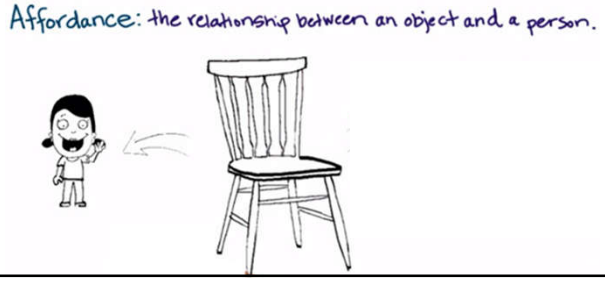
Visibility Problems

- The **mappings** between what you want to do and what appears to be possible.
- Example: sliding windows:
  - One button to do two things?
  - What is the mapping?
  - How can you figure out how to control the slides?

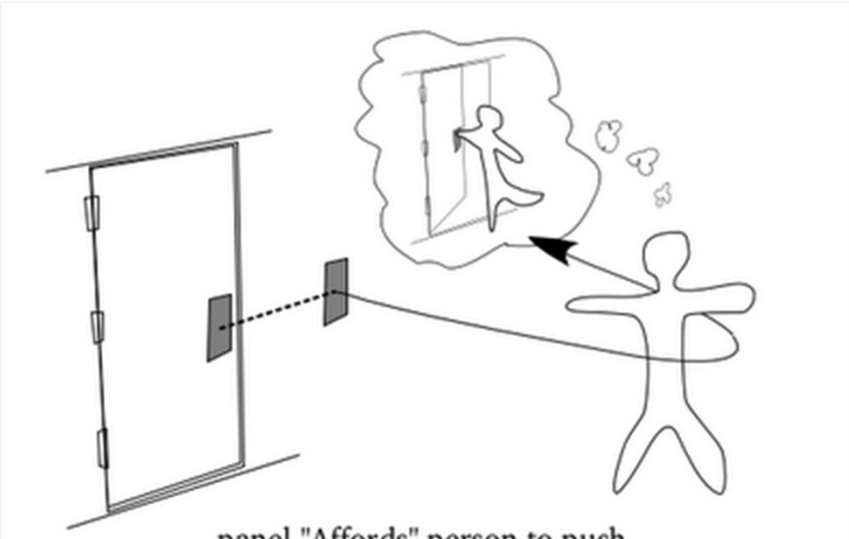
You can't.

Affordance

- Affordance refers to the perceived and actual properties of the thing, primarily those fundamental properties that determine just how the thing could possibly be used.
- Example: A chair affords ("**is for**") support and, therefore, affords sitting.



Affordance



panel "Affords" person to push

Convergent Bicycle!!!

1.7 Carelman's Tandem "Convergent Bicycle (Model for Fiances)." Jacques Carelman: "Convergent Bicycle" Copyright © 1960-76-80 by Jacques Carelman and A. D. A. G. P. Paris. From Jacques Carelman, *Catalog of Unfindable Objects,* Balland, editeur, Paris-France. Used by permission of the artist.

Conceptual Models

- Convergent Bicycle: You know it won't work because you form a conceptual model of the device and mentally simulate its operation.
- You can do the simulation because the parts are visible and the implications clear.
- Other clues to how things work come from their visible structure -in particular from **affordances**, **constraints**, and **mappings**.

Good Design?

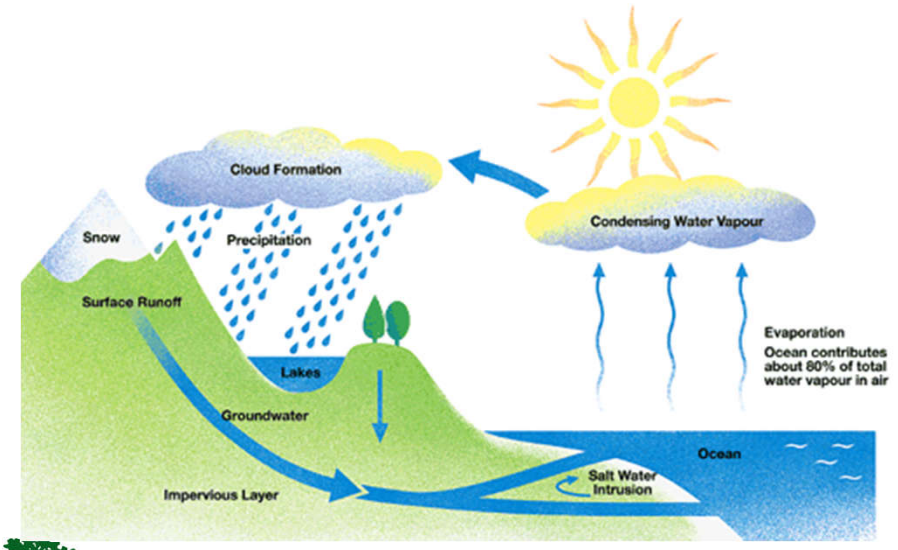
- The fundamental principles of designing for people:

1. Provide a **good conceptual model** and
2. Make things **visible**.

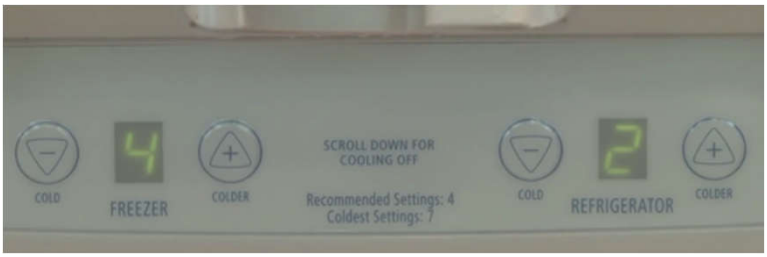
Good Conceptual Model

- Conceptual model is an explanation usually highly simplified of how something work.
- A good conceptual model allows us to **predict** the effects of our actions.
- Without a good model we operate blindly.
- A good model for every day things, conceptual models need **not** be very **complex**.

Example of a Conceptual Model



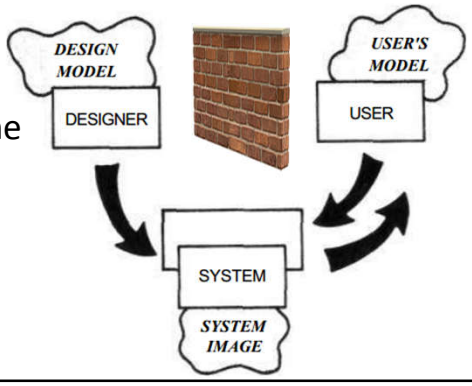
Control of the Refrigerator!



Wrong Conceptual Model?

- Given the correct model, life would be much easier.
- Why did the manufacturer present the wrong conceptual model?

The design model is the designer's conceptual model.



The user's model is the mental model developed through interaction with the system.

System Image

- The system image results from the physical structure that has been built (including ***documentation***, ***instructions***, and ***labels***).
- If the system image does not make the design model clear and consistent, then the user will end up with the wrong mental model.

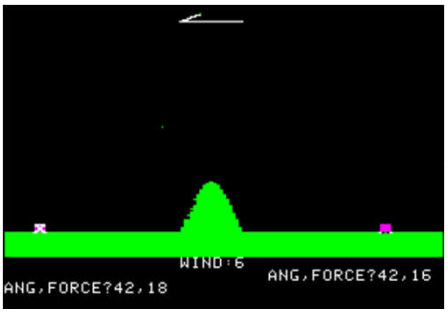
Mapping

- Mapping is a technical term meaning the relationship between two things.
- Consider the mapping relationships involved in steering a car.

Natural Mapping

- Taking advantage of physical analogies and cultural standards, leads to immediate understanding.
- For example, a designer can use **spatial analogy**:
  - To move an object up, move the control up.
  - To control an array of lights, arrange the controls in the same pattern as the lights.

Artillery vs. Angry Birds!!!!



Feedback

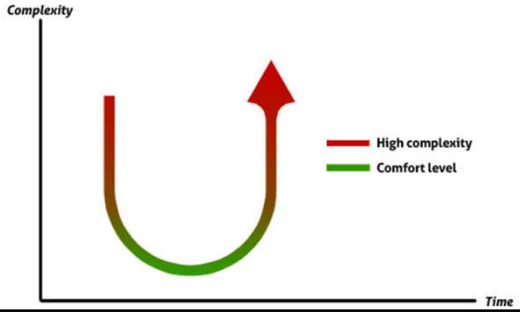
- Sending back to the user information about what action has actually been done, what result has been accomplished.

Designing Well is Not Easy!!!

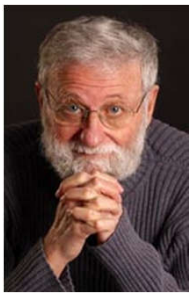
- The **manufacturer** wants something that can be produced **economically**.
- The **store** wants something that will be **attractive** to its customers.
- The **customer** has several demands:
  - In the store, he/she focuses on **price** and **appearance**, and perhaps on **price**.
  - At home, the same person will pay more attention to **functionality** and **usability**.
- The **repair service** cares about **maintainability**: how easy is the device to take apart, diagnose, and service?
- The needs of those concerned are different and often conflict.
- Nonetheless, the designer maybe able to satisfy everyone.

Curve of Complexity

- The development of a technology tends to follow a **U-shaped** curve of complexity:
  - Starting high.
  - Dropping to a low, comfortable level.
  - Then climbing again.



Norman's Principles



1. Forming a **goal**
2. Forming an **intention**
3. Specifying an **action**
4. Executing the **action**
5. **Perceiving** the state of the system
6. **Interpreting** the state of the system
7. **Evaluating** the outcome

The Gulfs

Gulf of Execution
Discoverability

Gulf of Evaluation
Feedback

User has a goal

Intention

Action specification

Execution

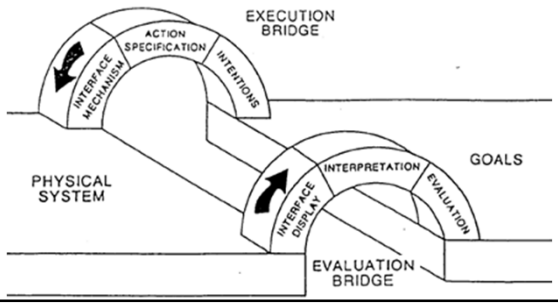
Evaluation

Interpretation

Perception

Bridging the Gulfs

- The goals for a designer are:
  - **Bridging the gulf of execution**: Design system to **ease process** of getting from the intention to the execution.
  - **Bridging the gulf of evaluation:** Design system so that response after the user has performed an action can be easily interpreted and then evaluated.



Seven Design Questions

1. What do I want to accomplish? ← Goal
2. What are my alternatives?
3. What I can do now? ← Execution
4. How do I do it?
5. What happened?
6. What does it mean? ← Evaluation
7. Is it OK? Have I accomplished my goals?

1st Assignment

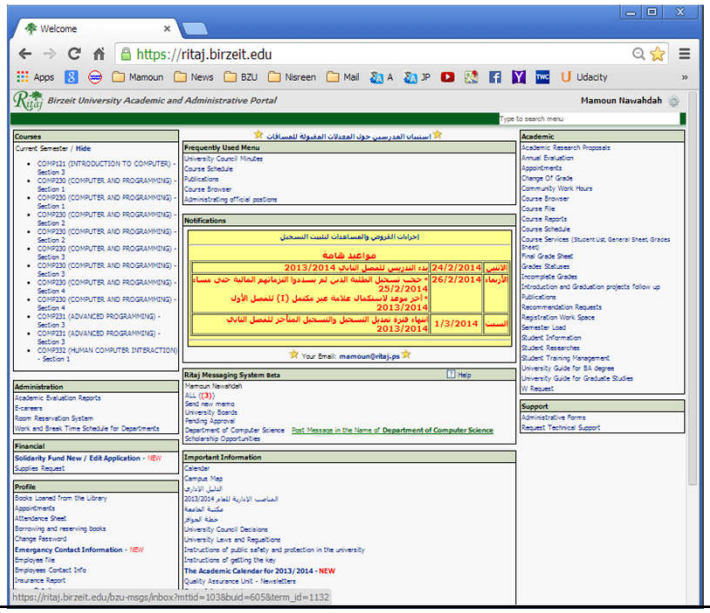
- Understandable and Confusing Design:
  - Take a photo of a design you think is understandable and another one that you think is confusing.
  - Report:
    - What do you think makes the designs understandable and/or confusing?
    - For each, determine the following: **affordance**, **signifier**, **mapping -if any-**, and **feedback –if any-**

Confusing Design!!!

Good Design

Confusing Design

Very Good UI Design

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