

Design of Everyday Things

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Mapping

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Design of Everyday Things

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Overview

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Reminders

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- **Team forming** due today
- **Project** - starts reading CHI 2019-2020 papers! And make sure to check all the deadlines.

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- Good design is not vague. It has only one **clear meaning**.
- Simple things *should* be simple.
Instructions/explanations for simple things are a sign of failure
- Any better door?

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In a popular flanker test, the mean accuracy score 0.76 for incongruent trials and 0.98 for congruent trials

Compatible	Incompatible
Congruent	Congruent
>>>>	>>>>>
Response Right	Response Left
Compatible	Incompatible
Incongruent	Incongruent
>><>>	>><>>
Response Left	Response Right

Projector

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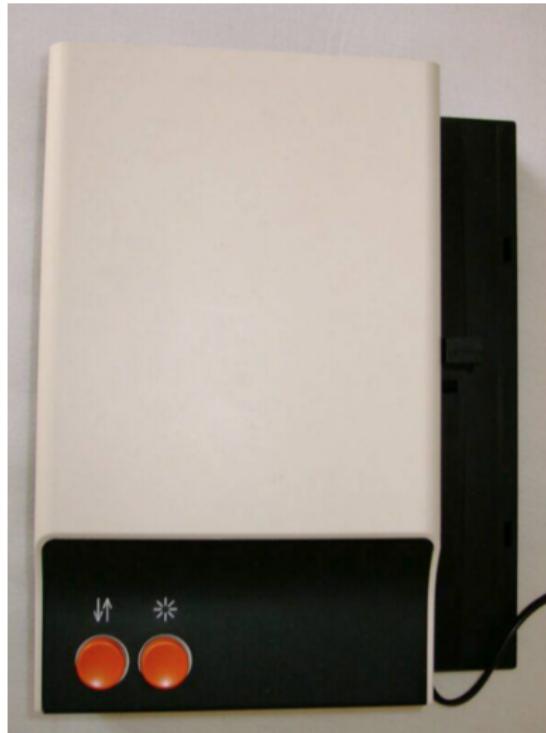
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Toilet sign

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Mcdonald

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Remote control

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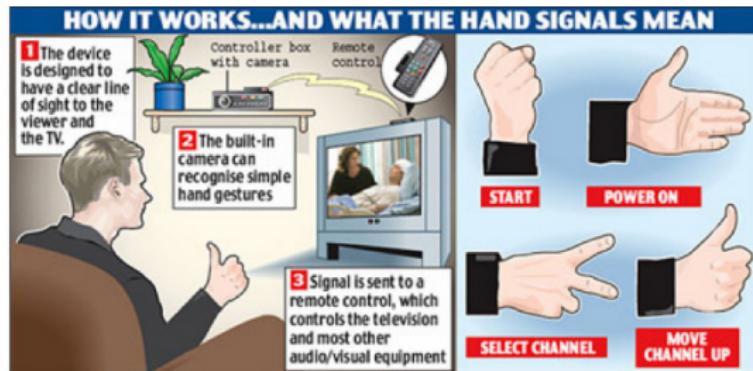
- Some of the buttons on a VCR remote control are easy to understand, but others are unfathomable without the instruction manual
- Remove buttons are not the solution either! (this is in fact 90% of what people will suggest which is wrong! Why?)
- Better question is to ask how we can better support novice and expert users at the same time.

TV gestures

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Never a commercial success.....why?



List goes on....

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- Do you remember **Miss Universe 2015** incident?
- How many times you or your acquaintances forgot to **withdraw your card from ATM**?
- How many times we forgot to **turn off the front lights of the car**?
- Have your mom/grandma go to a hotel and wonder **how to use the shower**?

Stupid design is easy to avoid though

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- Of course, this class won't discuss these silly mistakes though

Hmm...so why design goes wrong?

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- Most engineers will often make the excuse of “*if the user read the instructions or manual*”, or “*if the user click this before this*”. Preach **NEVER the fault of users, but of designers**
- Many design mistakes can be avoided by learning **design principles**
- Engineering people usually **lack understanding of people**. True?
- We are people ourselves, so we think **we understand people, but in fact, we don't**. True?

Why design is hard?

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- Design is hard because of **tradeoffs**
 - Top designers know what makes design good, but the problem is that you cannot always take all the good things
 - Common **tradeoffs** - e.g., security vs convenience? familiarity vs. cool new experience? speed vs accuracy? customizability vs. learnability?
- Design is hard because of **context**
 - Context of use - which tasks the tools/systems are being used
 - Expertise - novice vs. experts
 - Cultural differences
 - User groups (e.g., old vs. young, blind, female)
 - Personal preferences!
 - Difficult to have **one-fits-all** solution

Why design is hard?

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- Design is hard because of **human nature**
 - Human **perception** is flawed
 - Human **attention span** is limited
 - Users does not like to **memorize**, nor **read**, nor **think**
 - Users are **impatient**
 - Humans are **NOT rational**
- Design is hard because of **engineer nature**
 - Engineer usually assumes users are same as him/her
 - Engineer usually interested in solving technical challenge
 - Engineers make stuff that only make sense to technical people
 - Engineers make stuffs that usually are very logical and rational, which most users (could be engineers) are not

What are some ways out?

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- Understand people **expectations** and **knowledge**; they are not necessarily like you
- **Don't assume** people will read, learn, think, or care about your system
- Remember **diversity** - aged, blind, left-handed, experienced, does not know English etc.
- **Rapid prototyping and failure**
- **Interview** but NOT follow
- NOT making it **simpler** nor **minimal** nor **looking/feeling good**, they are secondary. Primary is about **reaching the goal effectively and efficiently**
- Do **quantitative** user evaluation; don't argue
- Use good **design principles**

Activities

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Classwork

Attempt to redesign the elevator buttons



Put these design considerations in your design:

1. People "loves" familiar design
2. Not all people know English. Reading also takes time!
3. What color should be the button of Open and Close? Does color even matters?

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- When we see a glass, we know we need to hold it. When we see a knob, we know we need to turn it. The key principle here is **affordances**
- Affordance refers to the **relationship** between a physical object and a person. A chair *affords* support and, therefore, *affords* sitting.
- The notion of affordance comes with J. J. Gibson, an eminent psychologist who studied human perception. He argued that the world contained **clues** what to do, and he called them **direct perception**. In addition, he claimed that physical objects conveyed what actions are possible, which he named “affordance”

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Submit

Submit

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Lack of affordance

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Figure: Not sure how to open?

Lack of affordance

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Keyboards

Bluetooth or Wireless Keyboards Corded Keyboards TV Keyboards Tablet Keyboards Gaming Keyboards Numberpads Keyboard and Mice Combos



K580 Slim Multi-Device Wireless Keyboard
Ultra-slim, compact, and quiet keyboard for computers, phones or tablets



K580 Slim Multi-Device Wireless Keyboard Chrome OS Edition
Ultra-slim, compact, and quiet keyboard for computers, phones or tablets with a special



MX Keys Wireless Illuminated Keyboard
M/N: Y-R0073



Wireless All-in-One Keyboard TK820
M/N: Y-R0039

Figure: Clickable?

Bad affordance

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Bad affordance also exists! How many times did your family members put something on top of this similar machine?



Affordance but lack of signifiers

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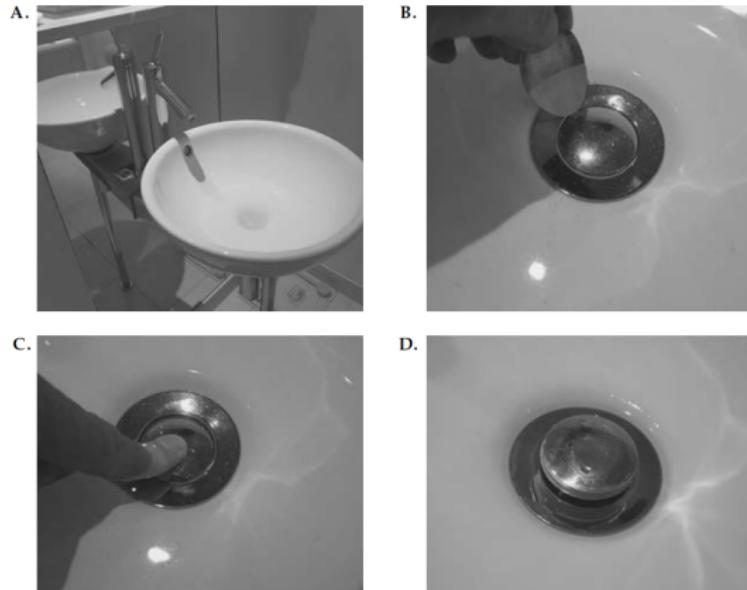


Figure: Source: Fg 1.4 (Norman) - Not sure how to take out!

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- Constraints is about **limiting what user can do**. Why it is good?
- By **limiting users' options**, user has a better idea what to do
- **Lower** the chance for errors
- Humans also feel good when they see **limited** choices

Physical, Cultural, Semantic, and Logical

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- **Physical:** constrain possible operations. Lego, for example.
- **Cultural:** set of **acceptable actions** in society. Red light is danger in US, death in Egypt, life in India, and happiness in China. Down is off for US, but opposite for Britain. Anti-clockwise is water on for US, but opposite for Britain
- **Semantic:** constraints by **meaning**. Rider sits only facing front, for example
- **Logical:** constraints by logical or spatial relationships - similar to natural mappings

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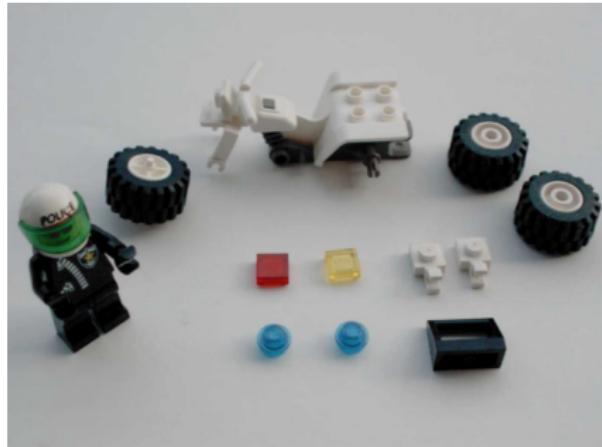
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- Motorbike toy with 12 parts. Constraints make its construction simple, even for adults!
 - *Physical*: Front wheel only fits in one place
 - *Semantic*: The rider sits on the seat facing forward
 - *Cultural*: Red is a rear light, yellow a front light
 - *Logical*: Two blue lights, two white pieces, go together

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The assembled lego motorbike



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FIGURE 4.7. A Lockout Forcing Function for Fire Exit.
The gate, placed at the ground floor of stairways, prevents people who might be rushing down the stairs to escape a fire from continuing into the basement areas, where they might get trapped.

Figure: Source: Fg 4.7 (Norman)

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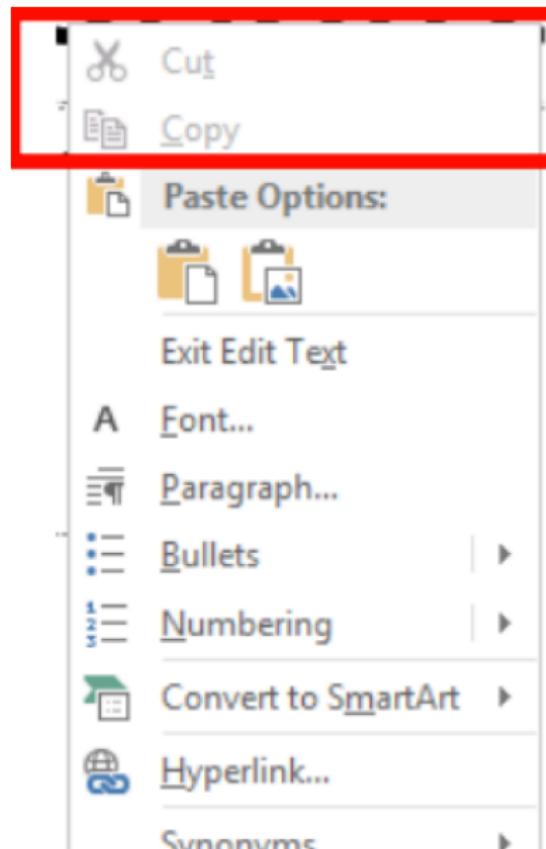
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The screenshot shows the Amazon product page for the **Huawei Nexus 6P - 32 GB Graphite**. The phone is displayed prominently in the center, showing its front-facing camera and the "Nexus" branding on the back. To the left of the main image, there is a vertical grid of smaller thumbnail images showing different angles and features of the phone. On the right side of the product details, there is a large red rectangular box highlighting the "Add a SIM card and activate" section of the sidebar. This section includes options for AT&T Micro SIM Adapter, T-Mobile SIM Card, H2O SIM Card, Ting Wireless, and others. It also shows a dropdown menu for selecting a SIM card, with "1" currently selected. Below this, there are buttons for "Turn on 4G" and "Ship to". At the bottom of the sidebar, there is a "Add to List" button.

BEAUTIFUL THINGS ON AMAZON UPDATED DAILY EXPLORE

amazon Prime Cell Phones & Accessories + nexus 6p ENDS SATURDAY

Hello, Loren Your Account Prime Lists Cart

Departments Browsing History Loren's Amazon.com Today's Deals

Cell Phones & Accessories Camera Phones Unlocked Phones Accessories Cases Wearable Technology Best Sellers Deals Trade-in All Electronics

ELECTRONICS Gift Guide Top tech for Dad

Back to search results for "nexus 6p"

Huawei Nexus 6P - 32 GB Graphite
(U.S. Version: Nin-A1) - Unlocked 5.7-inch Android 6.0 smartphone w/ 4G LTE (U.S. Warranty)

by **Huawei** ★★★★★ 749 customer reviews | 159 answered questions

List Price: \$499.00 Price: \$419.00 w/Prime You Save: \$80.00 (16%)

In Stock. Want it Friday, June 17? Order within 6 hrs 21 mins and choose Two-Day Shipping at checkout. Details Ships from and sold by Amazon.com.

Color: Graphite

Size: 32GB

32GB 64 GB 128GB

Roll over image to zoom in

Add a SIM card and activate

- AT&T Micro SIM Adapter
- T-Mobile SIM Card
- H2O SIM Card
- Ting Wireless
- \$9.00

Turn on 4G

Ship to: Loren Veen

Add to List

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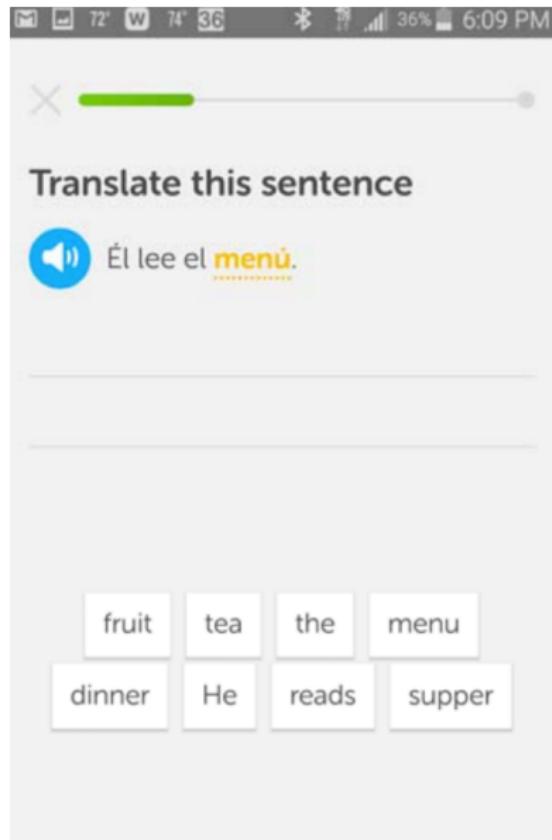
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Undo	Ctrl+Z
Cut	Ctrl+X
Copy	Ctrl+C
Paste	Ctrl+V
Delete	Del
Find...	Ctrl+F
Find Next	F3
Replace...	Ctrl+H
Go To...	Ctrl+G
Select All	Ctrl+A
Time/Date	F5



Undo	Ctrl+Z
Cut	Ctrl+X
Copy	Ctrl+C
Paste	Ctrl+V
Delete	Del
Find...	Ctrl+F
Find Next	F3
Replace...	Ctrl+H
Go To...	Ctrl+G
Select All	Ctrl+A
Time/Date	F5

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- How to better design this McDonald tray using the constraint concept?

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Conventions are cultural constraints. They are initially arbitrary, but evolve and become accepted over time. They can vary enormously between cultures.

- Light switches:

America	down is off
Britain	down is on
- Water taps:

America	anti-clockwise is on
Britain	anti-clockwise is off

- The colour red:

America	danger
Egypt	death
India	life
China	happiness

Conventions

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- Avoid breaking conventions as it will add **confusion**
- For **website**, there are many conventions - where do you usually place logos in website? Usually what is color of a link in website? Where is the contact menu?
- Never introduce your own psychology!
- Designers have temptation to **reinvent** the wheel, because they **feel** they are hired to do something **new** and **different**
- It IS OK to introduce something new, but it should be with "really really good" reason, and always expect some complaints initially....

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- **Consistency** in design is virtuous. When things are consistent, it becomes easy for users to catch the pattern, and thus learn.
- Example: Ctrl-S, Cltr-C, Cltr-V (This function is same across all applications)

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(a) phones, remote controls

1	2	3
4	5	6
7	8	9
0		

(b) calculators, computer keypads

7	8	9
4	5	6
1	2	3
0		

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Drag a file icon to:

Result:

Folder on same
physical disk



File is moved

Folder on another
physical disk



File is copied

Trash can



File is discarded

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Important to allow users to observe any permanent states



External consistency

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External consistency concerns the consistency with other elements in the same environment (e.g., Mac OS)

Chrome File Edit View History Bookmarks People Window Help

PowerPoint File Edit View Insert Format Arrange Tools Slide Show Window Help

Mail File Edit View Mailbox Message Format Window Help

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- **Project** - First paper reading summary due soon. Hard copies on my shelf at the secretary room. Soft copy on the Google classroom.

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- **Mapping** is the spatial relationship between objects
- When the mapping uses **spatial correspondence**, it is easy to determine how to use them.
- Mappings vary with **culture** - Arabic (right to left), Chinese (top to bottom), Roman (left to right). So how to design an elevator buttons layout depends on **culture**

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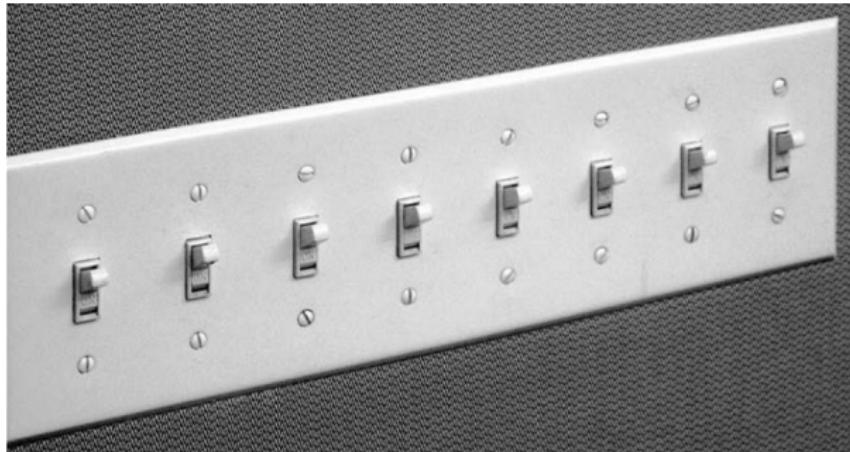


Figure: Source: Fg 4.4 (Norman) - Incomprehensible Light Switches

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FIGURE 4.5. A Natural Mapping of Light Switches to Lights. This is how I mapped five switches to the lights in my living room. I placed small toggle switches that fit onto a plan of the home's living room, balcony, and hall, with each switch placed where the light was located. The X by the center switch indicates where this panel was located. The surface was tilted to make it easier to relate it to the horizontal arrangement of the lights, and the slope provided a natural anti-affordance, preventing people from putting coffee cups and drink containers on the controls.

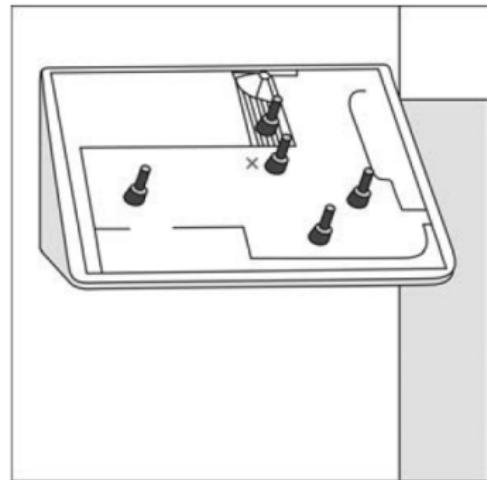


Figure: Source: Fg 4.5 (Norman)

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Figure: Source: Fg 1.7 (Norman)

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- Oh my....there is a fire on my furnace....I got to turn it off...
-Oh no! which one is off?

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- When there is **no feedback**, we get **confused**. Why?
- Feedback must be **immediate**
- Feedback must be **informative** - one flash and two flashes error message isn't very helpful
- **Too much feedback** can be annoying. Why?

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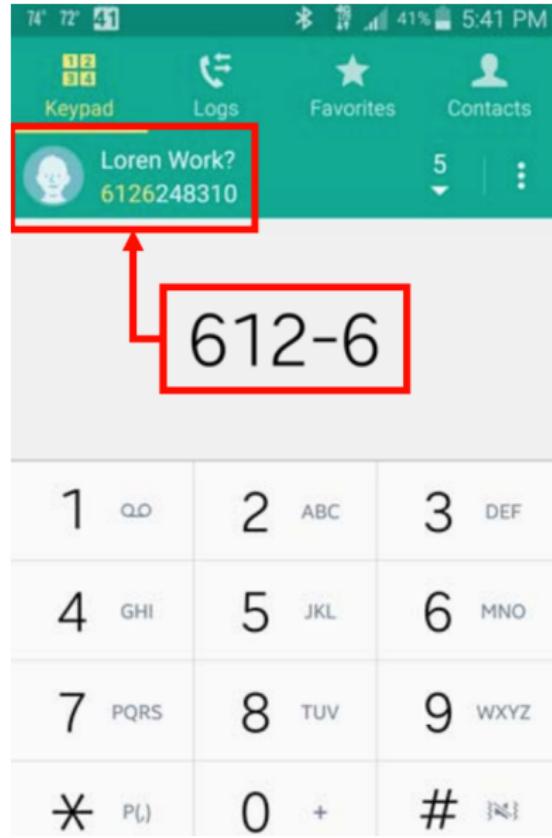
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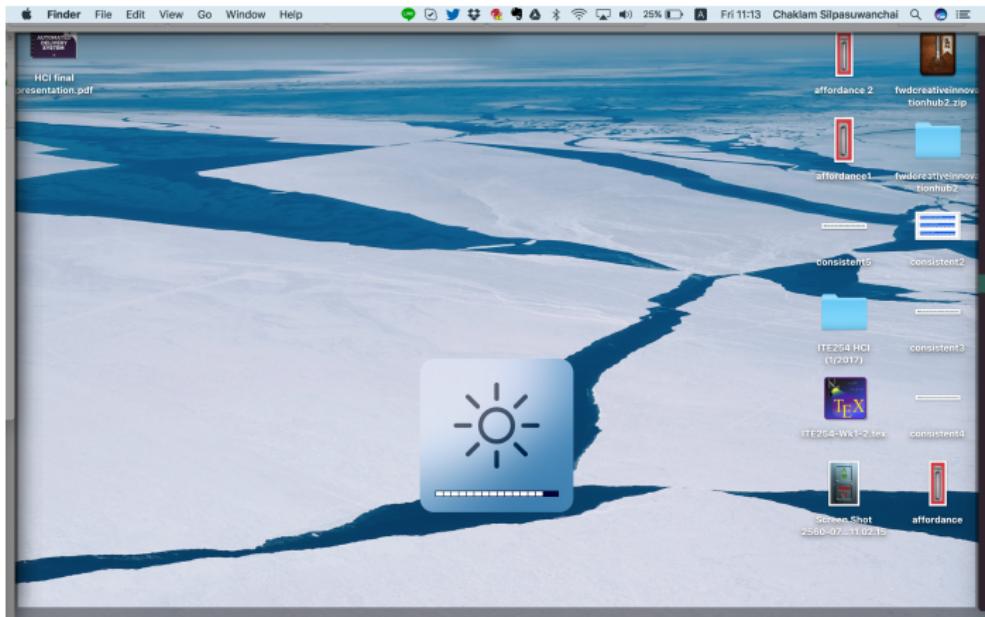
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Every week you will need to complete readings, watch videos, complete projects, or do other things that will take about the same time as a class meeting. Make sure that everything is completed before the next class so you are ready to learn.

- Take a look at the [Week 1-1- Introduction.pdf](#) to be prepared for the next class :)
- Check out the [Course Wiki](#) for resources; if you post a comment adding some useful resources for HCI, you will get one bonus point for each resource! (maximum 3pts). These points can be used to add up if you get a poor score on your homework or quizzes.



LOOKING AHEAD

This is where everything you need to know before the next face to face class will be posted.

Reminders:

1. Complete P0 (0pts) - Due Apr 10

- Blackboard -> Homework -> P0 -> Create Blog Entry (each group posts one)

Path: p » img

Words:305

ATTACHMENTS

You can drag files from your computer to the Attach Files area or use the browse functions. Files are saved in the top-level folder in your course's file repository. If you select a file you do not want, click **Do Not Attach** to remove the attachment from the content item. The file itself is not deleted.

Attach Files Browse My Computer Browse Content Collection

Attached files

File Name	Link Title	File Action

Click **Submit** to proceed. Click **Cancel** to go back.

Cancel **Submit**

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- A clever trick Instagram uses to upload photo quick
- Whenever you upload a photo, Instagram will quickly finish uploading
- Trick users to think it finishes already

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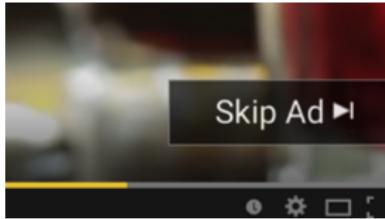
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- Human attention span is 8 secs (goldfish has a 12 secs!)
- 0.1 sec - is the limit that humans can wait while **manipulating**
 - Important for direct manipulation, virtual world navigation
- 1 sec - the limit that user's **flow of thoughts** go uninterrupted
 - Display a busy cursor if things take longer than 1 sec
- 10 sec - the limit that user can **wait**
 - Display a progress bar if things take longer than 10 sec

So...what's a successful design? - Mental Models

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- **Mental model** is how one thinks something works
- **If designer and user mental model matches, it is a successful design**
- **Good** mental model examples:
 - Folder and files icons
 - Scissors
- Matching mental model is hard. Novice and experts, for example, have completely different models. Designers and users also have often very different models

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FIGURE 1.8. Junghans Mega 1000 Digital Radio Controlled Watch. There is no good conceptual model for understanding the operation of my watch. It has five buttons with no hints as to what each one does. And yes, the buttons do different things in their different modes. But it is a very nice-looking watch, and always has the exact time because it checks official radio time stations. (The top row of the display is the date: Wednesday, February 20, the eighth week of the year.) (Photograph by the author.)

Figure: Source: Fg 1.8 (Norman)

- When users have incorrect mental models, your design fails
- **Watch:** There are five buttons. There are **affordances** of buttons but it does not **signifies** what to do. There are also no clear **mappings** between functions and buttons. **Constraints** are also not applied properly - each button can be pressed or hold or press twice, none of which are explained clearly. Only way to use this watch is to read the manual....too bad

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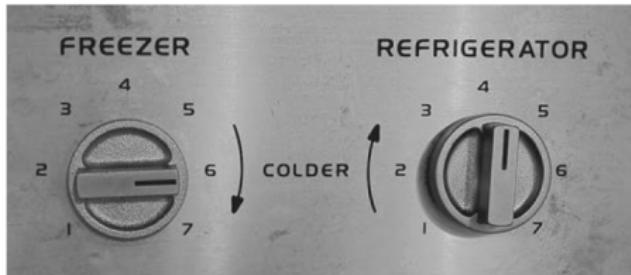


FIGURE 1.9. Refrigerator Controls. Two compartments—fresh food and freezer—and two controls (in the fresh food unit). Your task: Suppose the freezer is too cold, the fresh food section just right. How would you adjust the controls so as to make the freezer warmer and keep the fresh food the same? (Photograph by the author.)

Figure: Source: Fg 1.9 (Norman)

- **Refrigerator:** If the freezer is too cold, what you will do?

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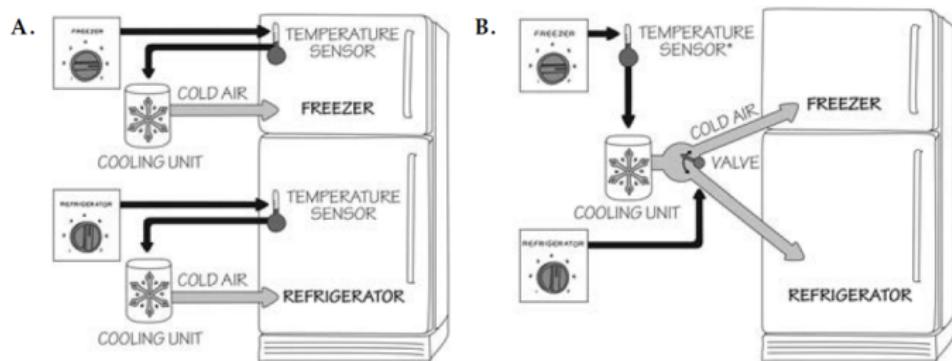


FIGURE 1.10. Two Conceptual Models for a Refrigerator. The conceptual model A is provided by the system image of the refrigerator as gleaned from the controls. Each control determines the temperature of the named part of the refrigerator. This means that each compartment has its own temperature sensor and cooling unit. This is wrong. The correct conceptual model is shown in B. There is no way of knowing where the temperature sensor is located so it is shown outside the refrigerator. The freezer control determines the freezer temperature (so is this where the sensor is located?). The refrigerator control determines how much of the cold air goes to the freezer and how much to the refrigerator.

Figure: Source: Fg 1.10 (Norman)

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- Famous book of Steve Krug's *Don't Make Me Think*
- Key concept of the book is **Don't make users think**
- **Not thinking** means that users should be able to quickly reach their goal without unnecessary cognitive effort

Don't Make Me Think

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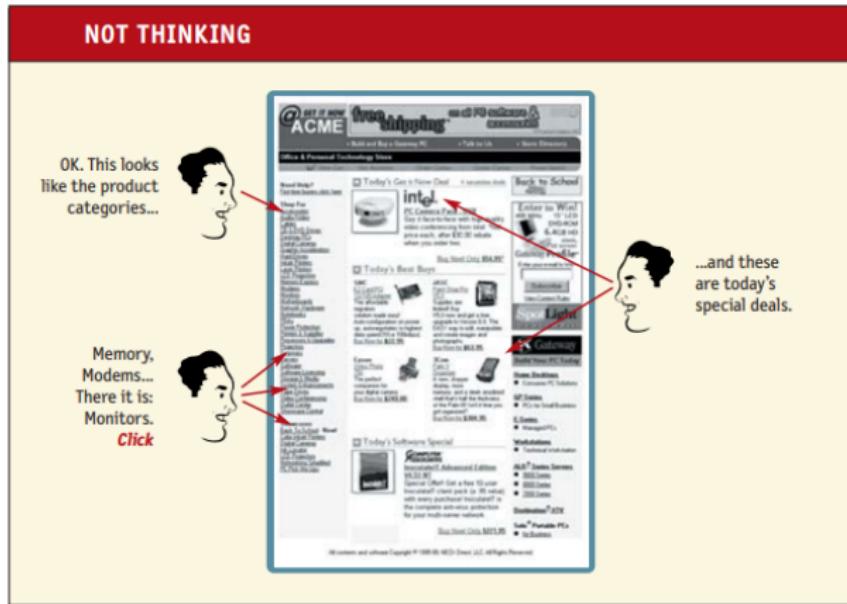


Figure: Source: Pg. 12 (Steve)

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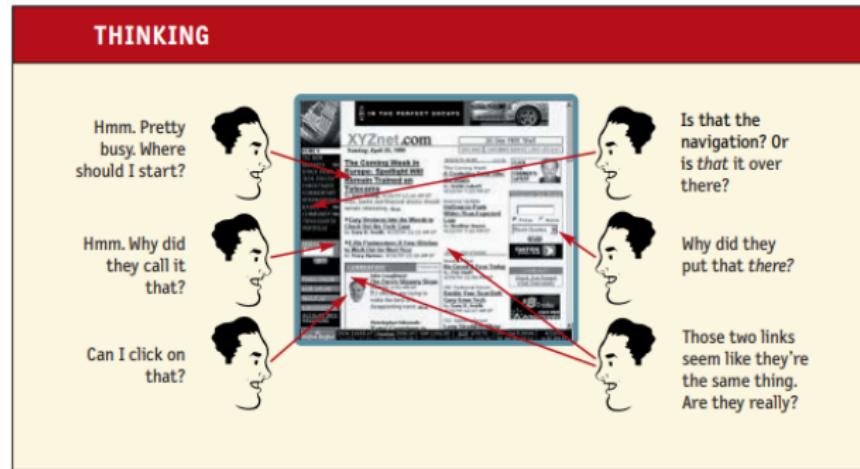


Figure: Source: Pg. 13 (Steve)

Things that Make Us Think - Names

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- Typical culprits include cute or clever **names**, marketing-induced names, company-specific names, and unfamiliar names



Figure: Source: Pg. 14 (Steve)

Things that Make Us Think - Links and Buttons

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- Needless source of question marks over people's heads is **links and buttons that aren't obviously clickable**. The point is simple things like links should not cause any such headache

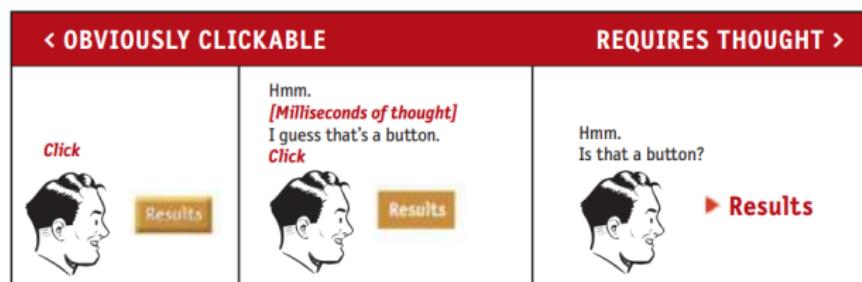


Figure: Source: Pg. 15 (Steve)

Things that Make Us Think - Search

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- Many bookstore sites require us to **think how we want to search** which adds up the cognitive effort



Do I have to click on that drop-down menu thing?

All I know about the book is that it's by Tom Clancy. Is Clancy a keyword?

(What is a keyword, anyway?)



I guess I have to use the menu.

Clicks on the arrow



"Title. Author. Keyword."

OK. I want "Author."

Clicks "Author"



Types "Tom Clancy"

Clicks "Search"

Figure: Source: Pg. 16 (Steve)

How We Really Use the Web

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- A gap often between how we think people use Websites and how they actually use them
- In fact, people mostly is **impatient** and usually in hurry, only care about their **goal**, **does not like to think**
- Thus, most people will just **scan** and **click**, within tenth of a second...

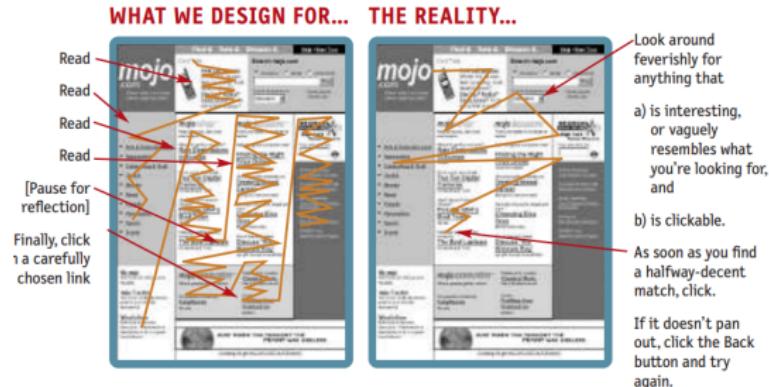


Figure: Source: Pg. 21 (Steve)

Fact of Life I - We scan

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- We don't read. We scan. We are smart to know we do not need to read everything



Figure: Source: Pg. 23 (Steve)

Fact of Life II - local optima

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- We don't choose the **best** option. We choose the **first reasonable** option because
 - We are usually in a **hurry**
 - The **penalty** for guessing wrong is low with the Back button always available
 - Not to mention guessing is **fun**

Fact of Life III - We don't like to learn/think

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- We don't like to think or learn, we usually just **muddle through**
- If we find something that works, we stick to it, we **hardly change our way**

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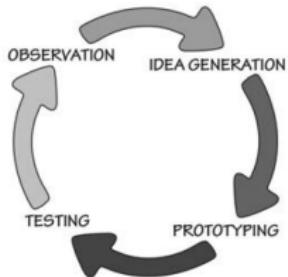


FIGURE 6.2. The Iterative Cycle of Human-Centered Design. Make observations on the intended target population, generate ideas, produce prototypes and test them. Repeat until satisfied. This is often called the *spiral method* (rather than the circle depicted here), to emphasize that each iteration through the stages makes progress.

- Design thinking is the process for **solving design problems**, focusing on iterative and empathy approach

Figure: Source: Figure
6.2 (Norman)

(1) Observation - Classification

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- The first step is to first **understand your users**.
- Classifications often help. Users can be classified according to their:
 - Educational level, Age, Gender, Assumptions
 - **Expertise:** experience of computers in general, understanding of the task domain
 - **Goals:** Low-level and High-level

(1) Observation - Interview

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- Designers need to be aware of:
 - Most people **does not understand their own behavior**
 - Rather than ask, sometimes it is better to **observe** how user use the tools
 - **Do not always follow** your user, understand why and what they really need
 - **Clarifying questions** in the context of use
- Key things to ask: (1) **current way of doing things**, (2) **current problems**, and (3) **what they truly want to achieve (goal)**

Etiquette of Interview

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- Avoid **biases**, focus on listening, don't talk too much...
 - *Are you happy in the products [encourage bias]?*
 - *But I think you may not be thinking right [providing unnecessary opinions]?*
 - *Hmm....[Showing unnecessary approval]...*
- Ask open-ended questions
- Use closed-questions to clarify your answer
- Keep on asking **why why why** to understand their goals and how they reach their goals
- **Summarize** your points to interviewers

(2) Ideation

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- Rules for brainstorming

- ① No one is allowed to **criticize** another's ideas.
- ② Programmers must **not say no**
- ③ Graphic designers must not **laugh**
- ④ Propose **multiple alternatives**
- ⑤ Be as **crazy** and **foolish** as possible (but serious)
- ⑥ **Respect**

- Only *after*, organize ideas and rank them according to:

- **Novelty** - what is new here? Did you carefully check that no one has done this before?
- **Feasibility** - given time, skill, resource, can you really achieve?
- **Effective** - does your system truly solve the existing root-cause problem?

(2) Ideation

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- **Getting ideas from others** are helpful such as reading papers, observing people, or talking with other designers
- Two top-tier conferences in HCI includes **CHI** and **UIST**
- **Trick:** Start with only 1 key paper you really like. Perform **snowballing** (the paper references) and **backtracking** (who cites the paper)

(3) Prototyping

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"There's a mantra at IDEO: "**Never go to a meeting without a prototype.**" At whatever stage of development, one week, one month, or 6 months."

- Tim Brown, President, IDEO, CHI 2004

(3) Prototyping

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- Serves three purposes
 - ① Gathering **requirements**
 - ② **Communication**
 - ③ Initial **evaluation**
- Types of prototypes in order of complexity
 - ① **Verbal** - simple textual description of choices and results (useful for beginnings but often adds confusion because of its ambiguity)
 - ② **Paper** - has two types - low fidelity and high fidelity
 - ③ **Interactive** - adds interaction to high fidelity prototypes
 - ④ **Working** - actual codebase; easy to transition to final product

(3) Prototyping - Low-Fidelity Paper Prototypes

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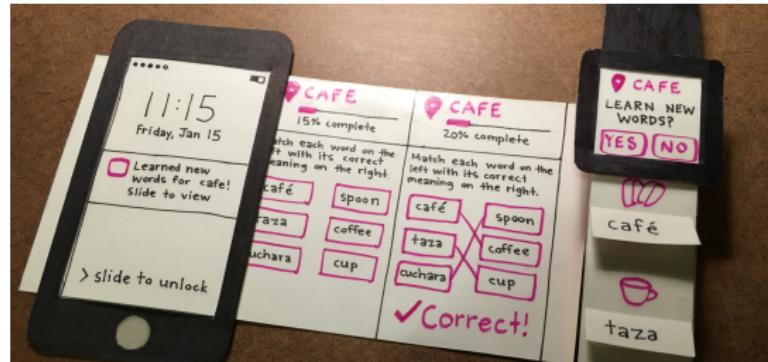
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- Simulate screen and dialogue elements
- Hand-drawn, postits, cardboard etc.
- Mantra: "Maximum Feedback for Minimum Effort" or "Fail Early!"
- **Example Software:** Balsamiq Mockups
- Commonly used in requirements gathering

(3) Prototyping - High-Fidelity Paper Prototypes

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- Elaborate screen designs
- **Software:** Photoshop; Illustrator; Corel Draw; GIMP
- Commonly used in requirements gathering regarding **aesthetical and layout elements**
- **Drawbacks:** more time-consuming than low-fidelity; misleading colors and fonts; cannot depict the interactivity

(3) Prototyping - Interactive Sketches

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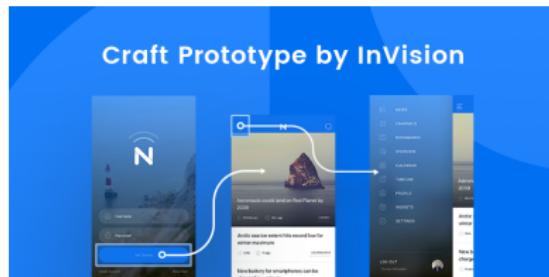
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- Add interactive components to high-fi paper prototypes
- **Software:** Invision, FluidUI, etc.
- Agoda, Google, Facebook, and Uber are using **Framer** (last interviewed: 2017)
- Commonly used in requirements gathering regarding **interaction elements**
- **Drawbacks:** Although interactivity is promised, they can throw off clients when clients truly believe it is working.

(3) Prototyping - Working Prototypes

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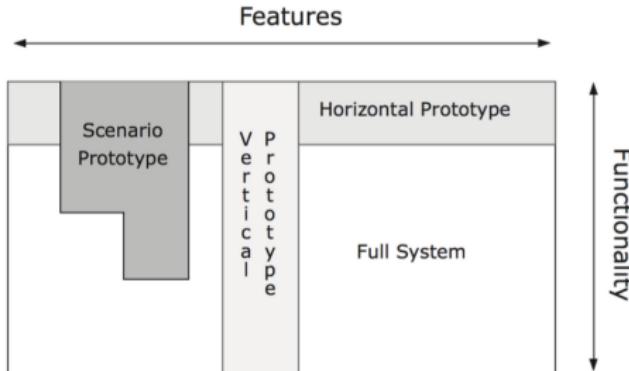
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- Basic logic: ignore special cases
- Actual codebase and hardware
- Fake data: some mockup csv file
- Vertical vs. Horizontal vs. Scenario
- Commonly used during iterations to test **particular component** of the design
- **Drawbacks:** Risky, time-consuming but easy transition to final product

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Classwork

Shower at hotel is something simple that is often frustrating. Have your encounter relatives where they have difficulty understanding how the shower works? Have you ever turn on the shower with water splash right on your face when it's not intended? Attempt to redesign the shower system.



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Classwork

Put these design considerations into your design:

1. Don't assume hot is on the right and cold is on the left. This depends on culture and it is dangerous to design in that way. For example, UK people may think left is hot, while US people think that left is cold. Avoid this mistake.
2. Take care of the affordances. If you use a handle, this implies "continuous" scale. If you use a button, it implies "binary" scale. Be extremely careful.
3. Where should the default temperature be? How it should be set? Should it be reset after use?
4. How do you smartly switch mode between shower and faucet? Which one should be default? Should I be able to use both at the same time?
5. How to best represent temperatures? Should it be absolute (37.2 C) or should it be relative (cold, hot, hotter, hottest)?

Readings For Next Week

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- Jeff, **Designing with the Mind in Mind: Simple Guide to Understanding User Interface Design Guidelines**, 2nd ed. (2014).
- Mackenzie, Chapter 2, **Human Factors**, Human Computer Interaction: An Empirical Research Perspective, 1st ed. (2013)

Appendix: Shneiderman's Eight Golden Rules of Interface Design

- ① Strives for **consistency**: consistent aesthetics, terminologies, layout ease learning process
- ② Seek **universal usability**: Recognize the needs for diverse users - novice vs. experts, age ranges, disabilities, culture, expertise. For example, add explanations for novices, but also add shortcuts for experts. Allowing multiple ways of doing same thing.
- ③ Offer **informative feedback**: For frequent actions, response can be modest. For infrequent and major actions, response should be substantial. Avoid non-informative feedback.
- ④ Design **dialogs** to yield closure: Sequence of actions organizes into groups with a beginning, middle, and end, e.g., checkout process. By leading users, it avoids confusion and errors.

Appendix: Shneiderman's Eight Golden Rules of Interface Design

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- ① Prevent **errors**: design so that users cannot make **serious** errors by graying out items, form validations, provide informative feedback
- ② Permit easy **reversal of actions**: actions should be reversible to relieve anxiety and encourages exploration
- ③ Keep users in **control**: Experienced users want to be in control, get annoyed by tedious data-entry, get annoyed by new convention. Enable control through customization and shortcuts
- ④ Reduce **short-term memory** load: Human have limited short-term memory (rule of thumb is that people can remember seven plus or minus two chunks; for Steve Job, people can best remember three points); lengthy forms, action recall, for example, should be avoided

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Questions