Chapter 1

Introduction to User Centered Design

- Introduction to User Centered Design:

Aspects of User Centered Design, Product Appreciation Assignment – Evaluating the product from user centered design aspects such as functionality, ease of use, ergonomics, aesthetics

Bad designs

Elevator controls and labels on the bottom row all look the same, so it is easy to push a label by mistake instead of a control button.

People do not make same mistake for the labels and buttons on the top row. Why not?

Opening the file drawer

- The handle on the top **doesn't** open the top file drawer.
- Instead, it pulls the whole file cabinet out from under the table.
- The handle to move the cabinet is very close to the top drawer.
- It is easy to mistake the top handle as the handle for the top drawer.

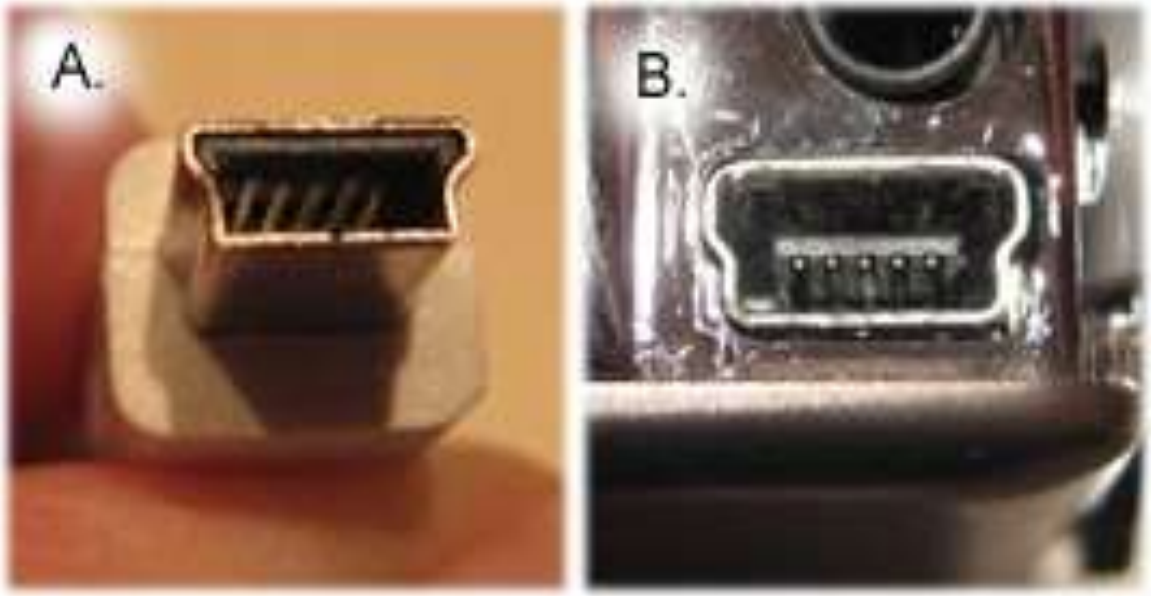
Plugging in a USB connector

- Frequently turn it the wrong way.
- USB symbol on "top" of the connector so if the connector is oriented horizonally, the symbol faces up.
- That doesn't help if the connector needs to plug in vertically.

Good design

If the handle on top had been recessed like the drawer handles as shown , it wouldn't be as likely to be used accidently.

Good Design



- If the connector could be inserted either way or work if it was asymmetrical, like the mini USB connector in Photo A., which plugs into B.

Good design

Why is the TiVo remote much better designed than standard remote controls?

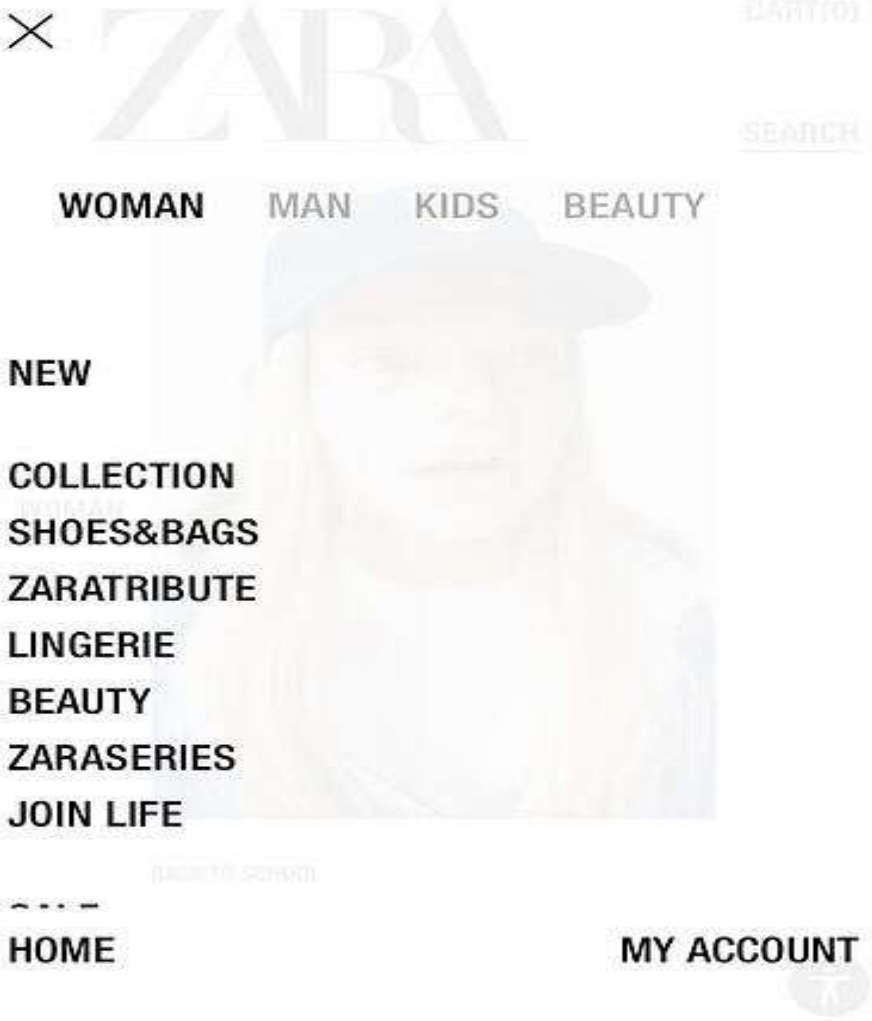
- Peanut shaped to fit in hand
- Logical layout and color-coded, distinctive buttons
- Easy-to-locate buttons

Dilemma

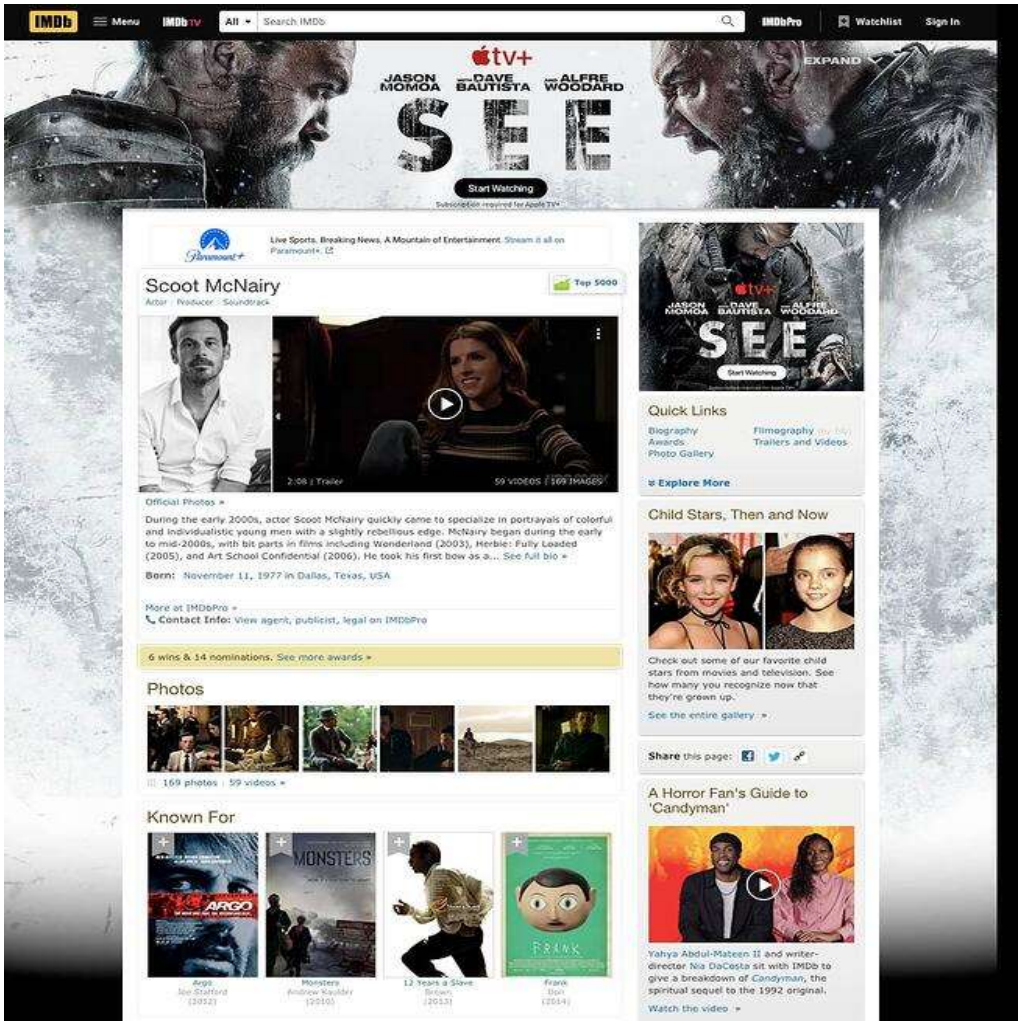
Which is the best way to interact with a smart TV? Why?

- Pecking using a grid keyboard via a remote control
- Swiping across two alphanumeric rows using a touchpad
- Voice control using remote or smart speaker

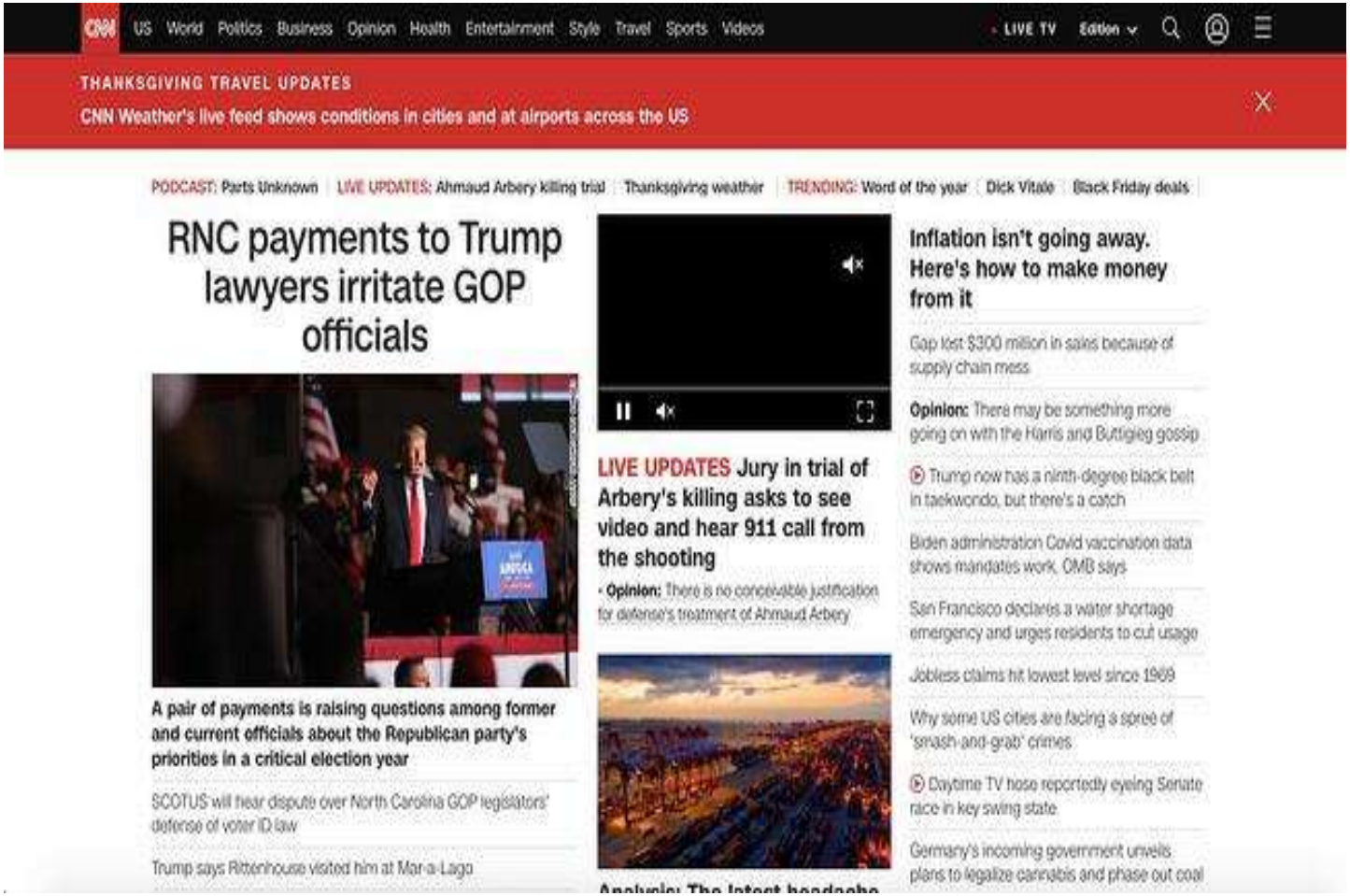
Zara- Unconventional navigation



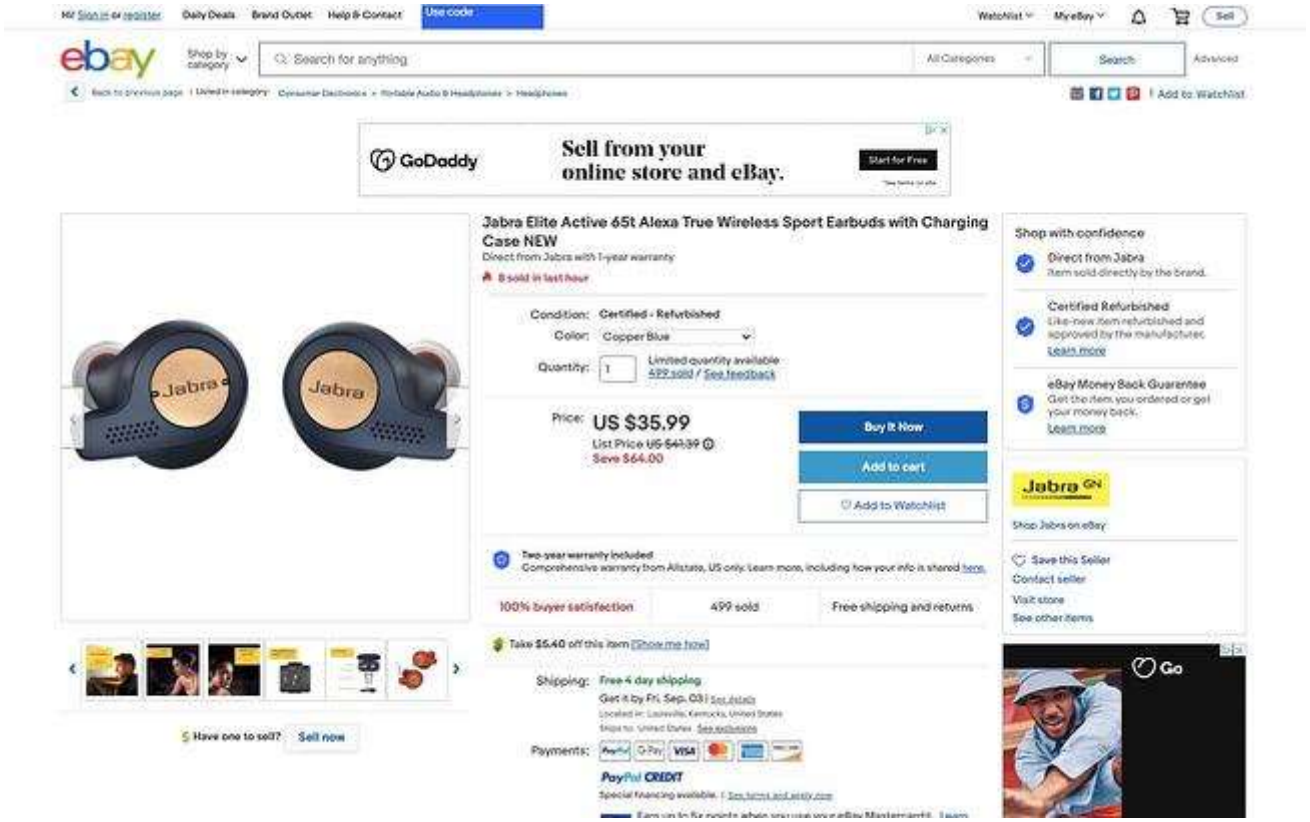
IMDb-Cluttered layout



CNN - Slow load time



eBay-Complex product pages



What to design

Need to take into account:

- Who the users are
- What activities are being carried out
- Where interaction is taking place

Need to optimize the interactions users have with a product:

- So that they match the users' activities and needs

What is user centered(interaction) design?

“Designing interactive products to support the way people communicate and interact in their everyday and working lives.”

Sharp, Rogers, and Preece (2019)

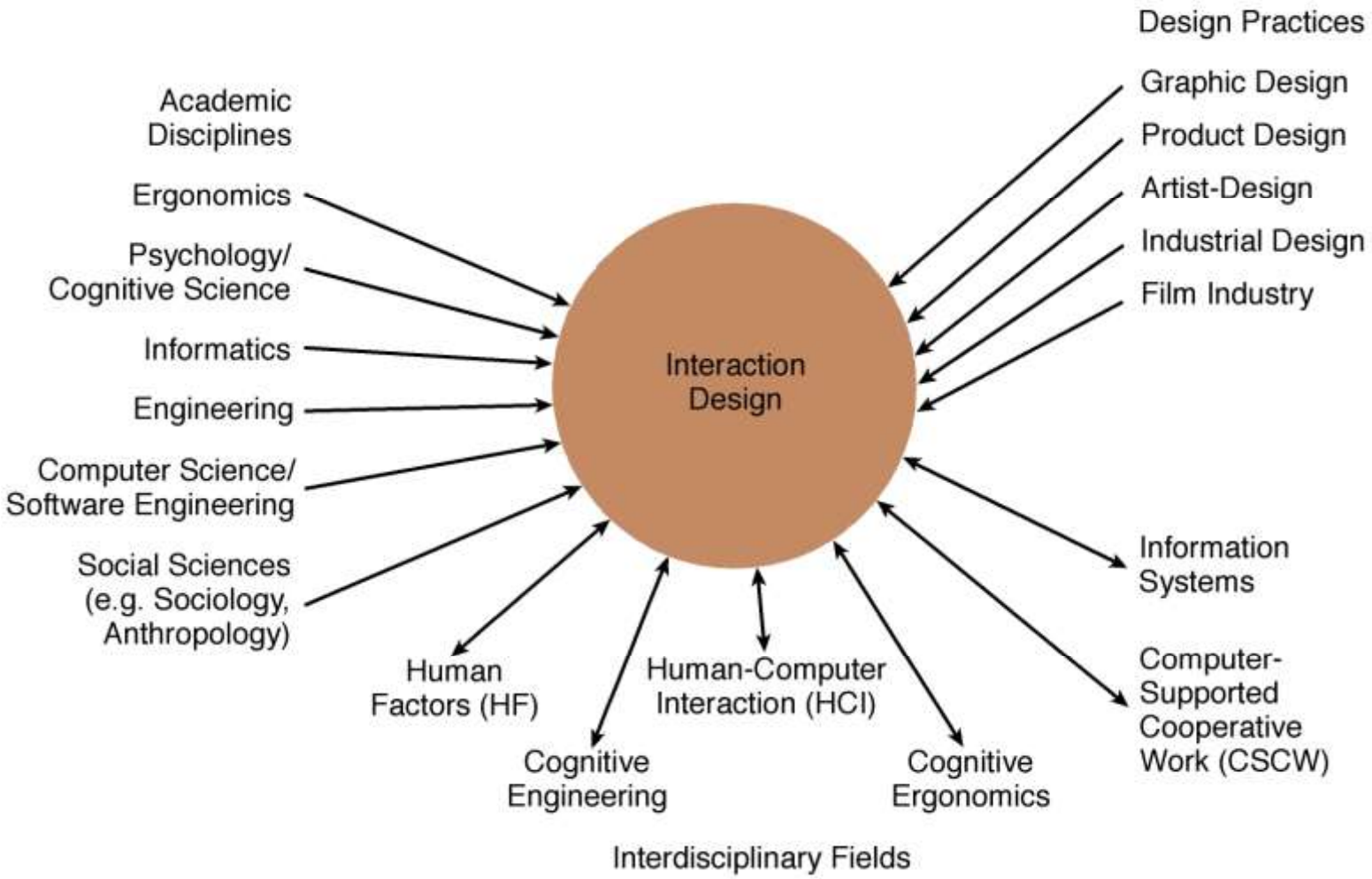
“The design of spaces for human communication and interaction.”

Winograd (1997)

Goals of interaction design

- Develop usable products
  - Usability means easy to learn, effective to use, and provides an enjoyable experience
- Involve users in the design process

Interaction design



Interaction design in business

Large number of ID consultancies. Examples of well known ones include:

- **Nielsen Norman Group**: “help companies enter the age of the consumer, designing human-centered products and services”
- **Cooper:** “From research and product to goal-related design”
- **IDEO: “**creates products, services and environments for companies pioneering new ways to provide value to their customers”

Usability goals

- Effective to use
- Efficient to use
- Safe to use
- Have good utility
- Easy to learn
- Easy to remember how to use

The user experience

How a product behaves and is used by people in the real world

- The way people feel about it and their pleasure and satisfaction when using it, looking at it, holding it, and opening or closing it
- “Every product that is used by someone has a user experience: newspapers, ketchup bottles, reclining armchairs, cardigan sweaters.” (Garrett, 2010)
- “All aspects of the end-user's interaction with the company, its services, and its products. (Nielsen and Norman, 2014)

Cannot design a user experience−only can design *for* a user experience

Why was the iPod user experience such a success?

Figure 1.6 The iPod Nano Touch

Source: ©Press Association, reproduced with permission.

- Quality user experience from the start
- Simple, elegant, distinct brand, pleasurable, must have fashion item, catchy names, cool...

Core characteristics of interaction design

- Users should be involved throughout the development of the project
- Specific usability and user experience goals need to be identified, clearly documented, and agreed to at the beginning of the project
- Iteration is needed through the core activities

Why?

Help designers:

- Understand how to design interactive products that fit with what people want, need, and may desire
- Appreciate that one size does not fit all (for example, teenagers are very different to grown-ups)
- Identify any incorrect assumptions they may have about particular user groups. (for example, not all old people want or need big fonts)
- Be aware of both people's sensitivities and their capabilities

Accessibility and inclusiveness

Accessibility*:* the extent to which an interactive product is accessible by group of people

- Focus is on people with disabilities; for instance, those using apple voiceover(screen reader,spoken descriptions)

Inclusiveness: making products and services that accommodate the widest possible number of people

- For example, smartphones designed for all and made available to everyone regardless of their disability, education, age, or income

Disability

Disabilities can be classified as:

- Sensory impairment (such as loss of vision or hearing)
- Physical impairment (having loss of functions to one or more parts of the body after a stroke or spinal cord injury)
- Cognitive (including learning impairment or loss of memory/cognitive function due to old age)

Each type can be further defined in terms of capability:

- For example, someone might have only peripheral vision, be color blind, or have no light perception

Cultural differences

5/21/2015 versus 21/5/2015?

- Which should be used for international services and online forms?

- Why is it that certain products, like smartphones, are universally accepted by people from all parts of the world, whereas people from different cultures react to websites differently?

Visibility - poor interface

- This is a control panel for an elevator
- How does it work?
- Push a button for the floor you want?
- Nothing happens. Push any other button? Still nothing. What do you need to do?
- It is not visible as to what to do!

Visibility - Improving on a poor interface

…with this elevator, you need to insert your room card in the slot by the buttons to get the elevator to work!

How would you make this action more visible?

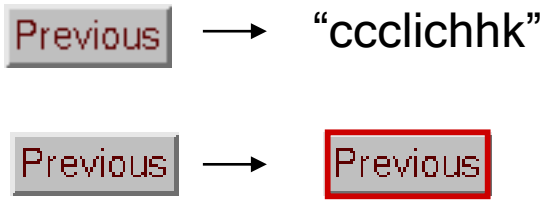
- Make the card reader more obvious
- Provide an auditory message that says what to do (which language?)
- Provide a big label next to the card reader that flashes when someone enters
- Make relevant parts visible
- Make what has to be done obvious

What do I do if I am wearing black?

Invisible automatic controls can make it more difficult to use

Feedback

- Sending information back to the user about what has been done
- Includes sound, highlighting, animation, and combinations of these
  - For example, when screen button is clicked, it provides sound or red highlight feedback:



Feedback

- When a user finally takes an action or interacts with our product, they often get an immediate reward of more content or a completed task.
- **A well designed user experience offers us feedback that keeps us reassured we are on track.**
- Digitally, feedback appears in the form of loading bars, error messages, vibrations, etc.

- In a tangible example, if you've ever turned your car key in the ignition and heard the engine purr—that is great feedback, you know then to shift into drive.
- Feedback is the error message you receive when you type in the wrong password; it's the delightful pinging sound you hear when you've processed a payment in the app store.

Constraints

- Restricting the possible actions that can be performed
- Helps prevent user from selecting incorrect options

Logical or ambiguous design?

- Where do you plug the mouse?
- Where do you plug the keyboard, in the top or bottom connector?
- Do the color-coded icons help?

How to design them more logically

(A) provides direct adjacent mapping between icon and connector

(B) provides color coding that associates the connectors with the labels

Consistency

- Design interfaces to have similar operations and use similar elements for similar tasks. (for example, always use Ctrl key plus first initial of the command for an operation: Ctrl+c, Ctrl+s, Ctrl+o)

- The main benefit is that consistent interfaces are easier to learn and use

When consistency breaks down

- What happens if there is more than one command starting with the same letter? (for example, save, spelling, select, style)
- You have to find other initials or combinations of keys, thereby breaking the consistency rule (for example, Ctrl+s, Ctrl+shift+l)
- Increases learning burden on user, making them more prone to errors

Internal and external consistency

- Internal consistency refers to designing operations to behave the same within an application

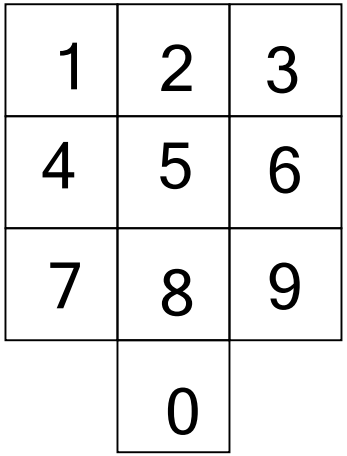
  (eg: your logo is the same online and in print)
- External consistency refers to designing operations, interfaces, and so on to be the same across applications and devices

(eg: the **user interface of Adobe products**. Once you know Photoshop it is much easier to reuse the same knowledge to start using Illustrator and so on.)

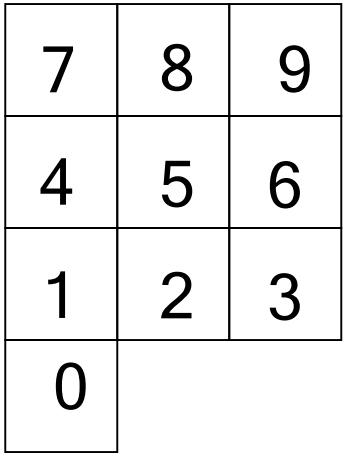
Keypad numbers layout

A case of external inconsistency

(a) phones, remote controls



(b) calculators, computer keypads



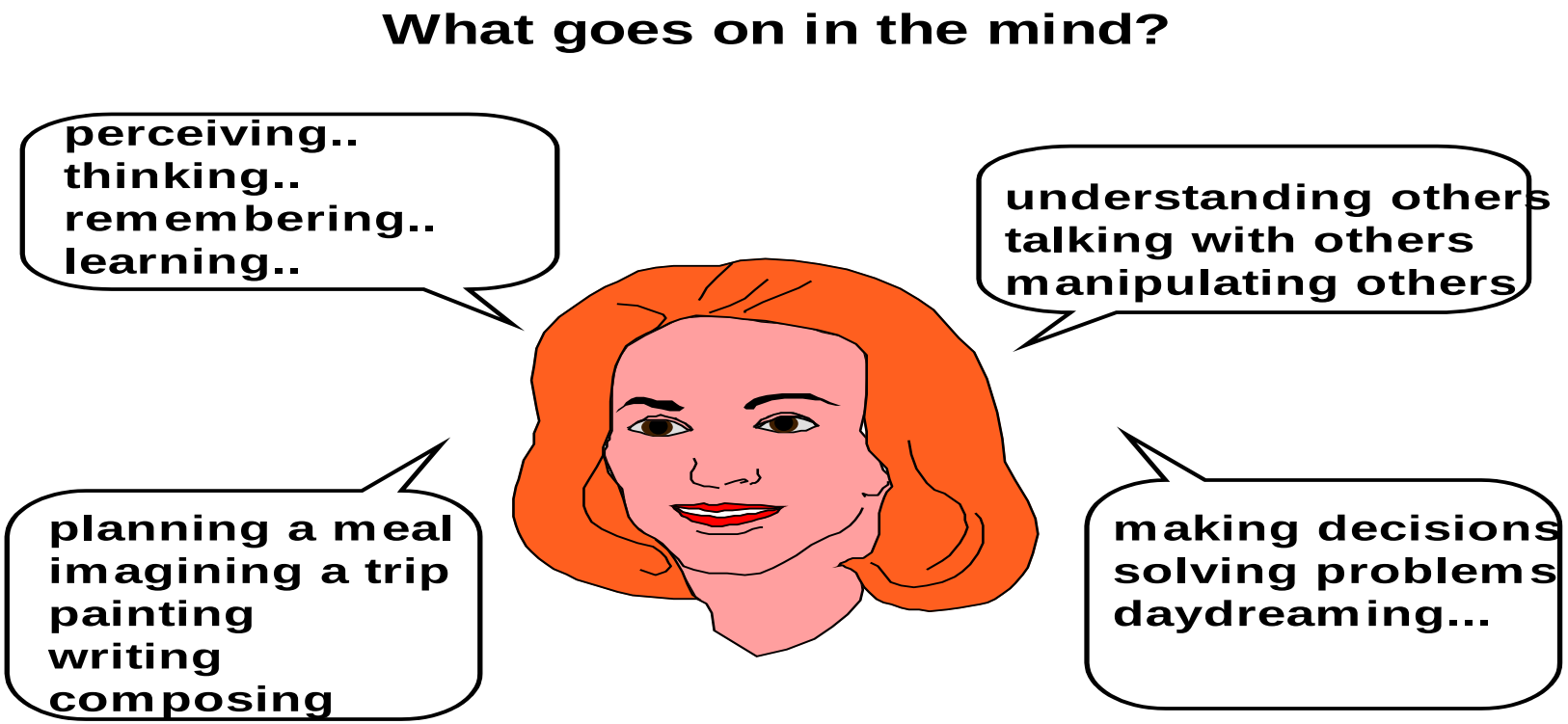
Affordances: to give a clue

- Refers to an attribute of an object that allows people to know how to use it. (For example, a mouse button invites pushing, a door handle affords pulling)
- Norman (1988) used the term to discuss the design of everyday objects
- Has since been popularized in interaction design to discuss how to design interface objects (for example, scrollbars to enable moving up and down; icons to click on)

What does “affordance” have to offer interaction design?

- Interfaces are virtual and do not have affordances like physical objects
- Norman argues that it does not make sense to talk about interfaces in terms of ‘real’ affordances
- Instead, interfaces are better conceptualized as ‘perceived’ affordances:
    - Learned conventions of arbitrary mappings between action and effect at the interface

Bringing cognitive psychology knowledge to HCI



Core cognitive aspects

- Attention
- Perception and recognition
- Memory
- Reading, speaking and listening
- Problem-solving, planning, reasoning and decision-making, learning
- Here we focus on attention, perception & recognition, & memory

Attention

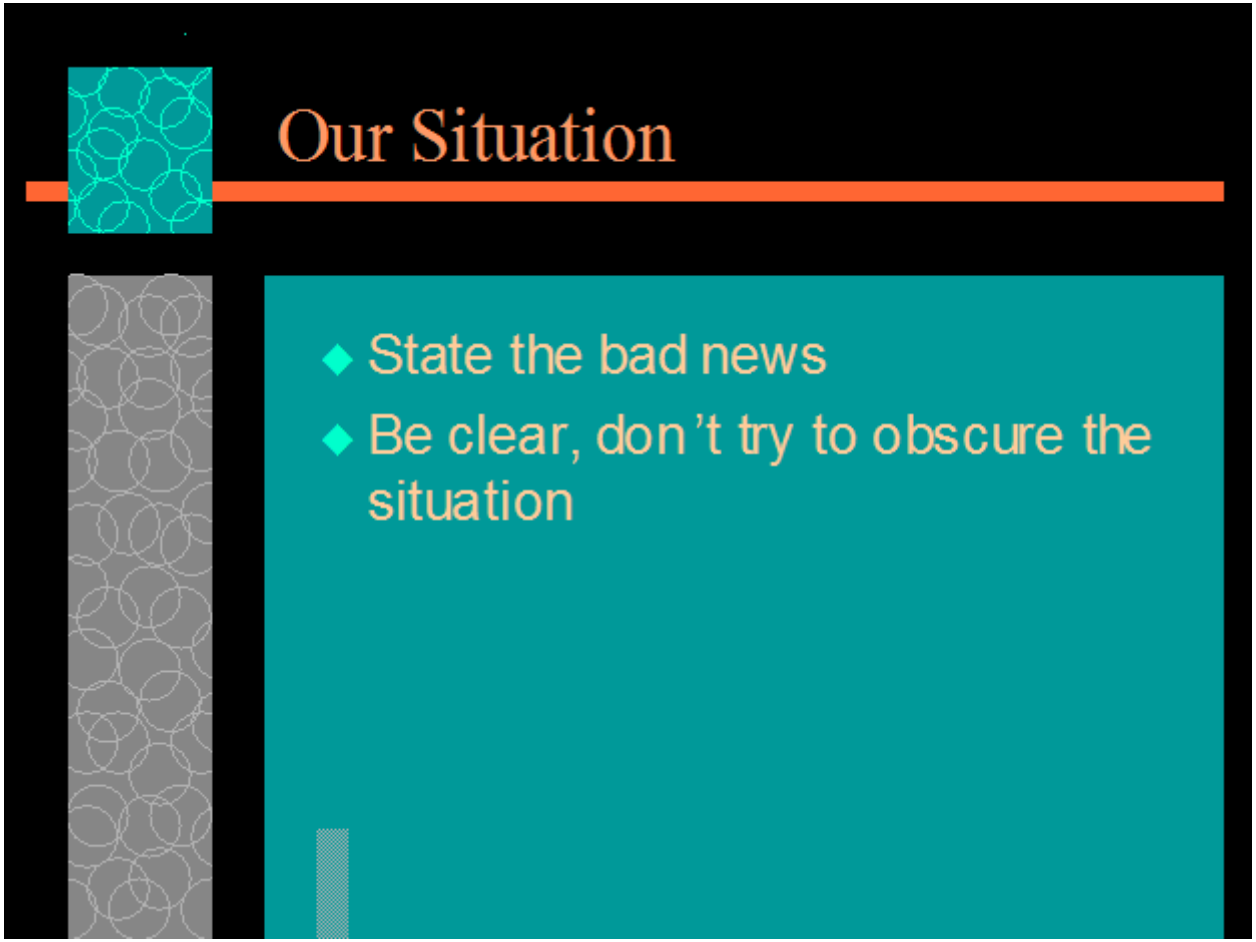
- Selecting things to concentrate on from the mass around us, at a point in time

- Information at the interface should be structured to capture users' attention, e.g. use perceptual boundaries (windows), colour, sound and flashing lights

Design implications for attention

- Make information salient when it needs attending to
- Use techniques that make things stand out like colour, ordering, spacing, underlining, sequencing and animation
- Avoid cluttering the interface - follow the google.com example of crisp, simple design
- Avoid using too much because the software allows it

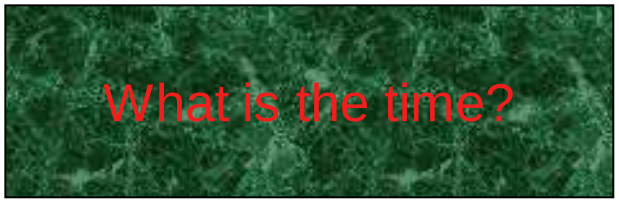
An example of over-use of graphics



Perception and recognition

- How information is acquired from the world and transformed into experiences
- Obvious implication is to design representations that are readily perceivable, e.g.
  - Text should be legible
  - Icons should be easy to distinguish and read

Which is easiest to read and why?



What is the time?

What is the time?

What is the time?

What is the time?

Memory

- Involves encoding and recalling knowledge and acting appropriately
- We don’t remember everything - involves filtering and processing
- We recognize things much better than being able to recall things
  - The rise of the GUI over command-based interfaces
- Better at remembering images than words
  - The use of icons rather than names

The problem with the classic ‘7±2’

- George Miller’s theory of how much information people can remember
- People’s immediate memory capacity is very limited
- Many designers have been led to believe that this is useful finding for interaction design

What some designers get up to…

- Present only 7 options on a menu
- Display only 7 icons on a tool bar
- Have no more than 7 bullets in a list
- Place only 7 items on a pull down menu
- Place only 7 tabs on the top of a website page
  - But this is wrong? Why?

Affordance, Signifier, Mapping and Feedback

Affordance

- **An affordance is the relationship between an object and the actions a person can take with that object.**
- For example, a button **affords** pressing, a door handle **affords** pulling or turning, and a smartphone screen affords all types of interactions like swiping, tapping, pinching, and scrolling.
- Affordances rarely exist on their own. Meaning that a product or experience will have functionality built-in, but there are almost always clues designed to orient the user towards affordances.

- A good example of Affordance on a technological aspect is the volume slider on your computer.
- Its simple, and easy to read and understand, explaining what it is doing while you are operating it.

Implicit Affordance

Explicit Affordance

Signifiers

- Once you've bestowed your product with affordances, you must then decide how you can give subtle but intuitive clues to your user about how to interact with them. These clues are called **signifiers.**
- These can be any kind of perceptible information that signals your user to act in a desired way.
- Signifiers can be explicit textual information, sound, texture, lighting, color, symbols, or even proximity of objects to one another.
- With smartphones and laptops, for example, we rely on cues like shading, color, text, sounds, and haptics(touch and motion).

- “Signifiers” can be used to just mean component labels, but in more complex discussions or within design systems, signifiers can also be:
  - The colour of the component when aligned to accepted digital design patterns
  - Text labels on or near a component
  - Icon labels on or near a component
  - The emphasis of any text (bold, italic, underline)

Good examples of signifiers

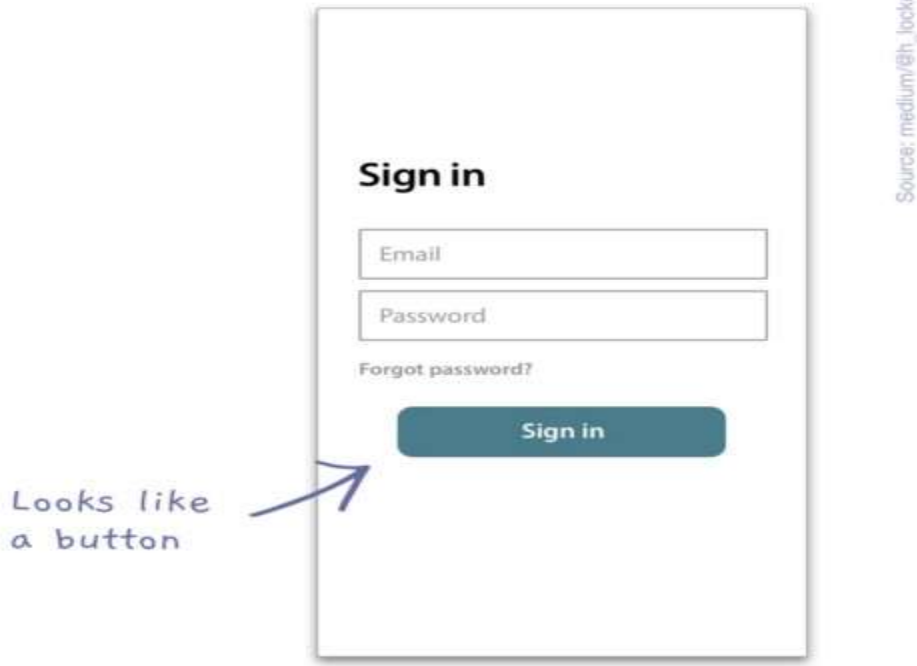

12V 180W
AUX
USB
Source: Kia


App Store
10:35 PM
64%
headspace
Mindfulness for any moment
Stress less. Move more. Sleep soundly.
There's something for everyone.
Continue

Affordances and signifiers together

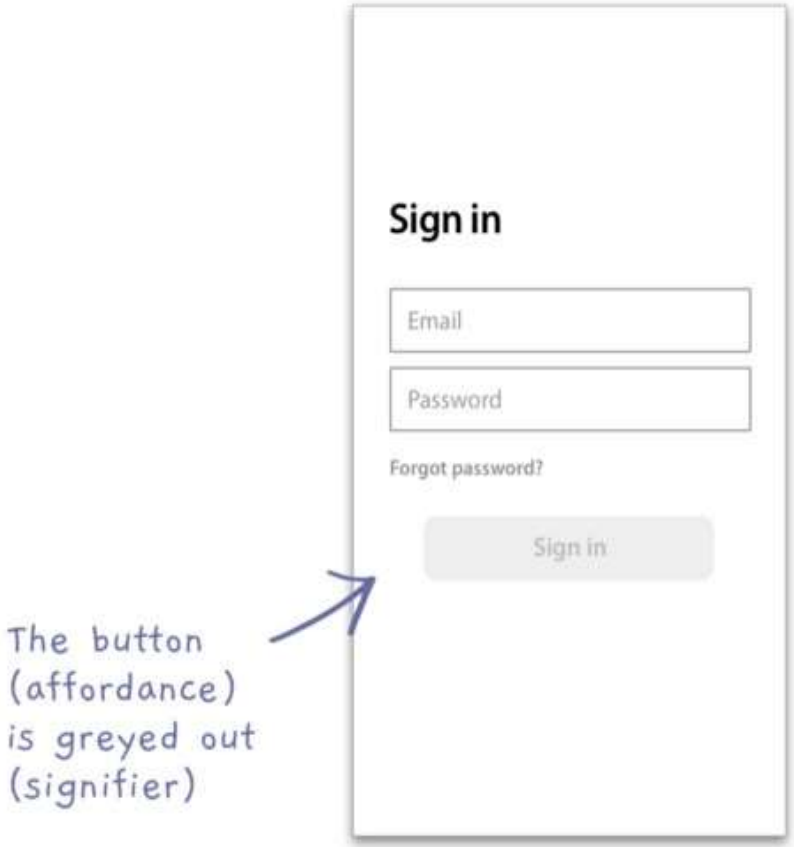
- Through UX and UI design of an interface, we can layer signifiers onto an affordance to communicate:
  a) What the thing can do *(affordance)*
  b) Its current state or significance *(signifier)*

Example: Perceiving a chair, the structure, plains and stability, we know it can be sat or stood on.
Example: Perceiving a button on a screen, we know it is something that can be pressed to produce an action.



Example: The chair has a balloon tied to it, implying that it is reserved for some special occasion.
Example: The button is greyed out, suggesting it is inactive.

Example: The button *(affordance)* is greyed out *(signifier)*



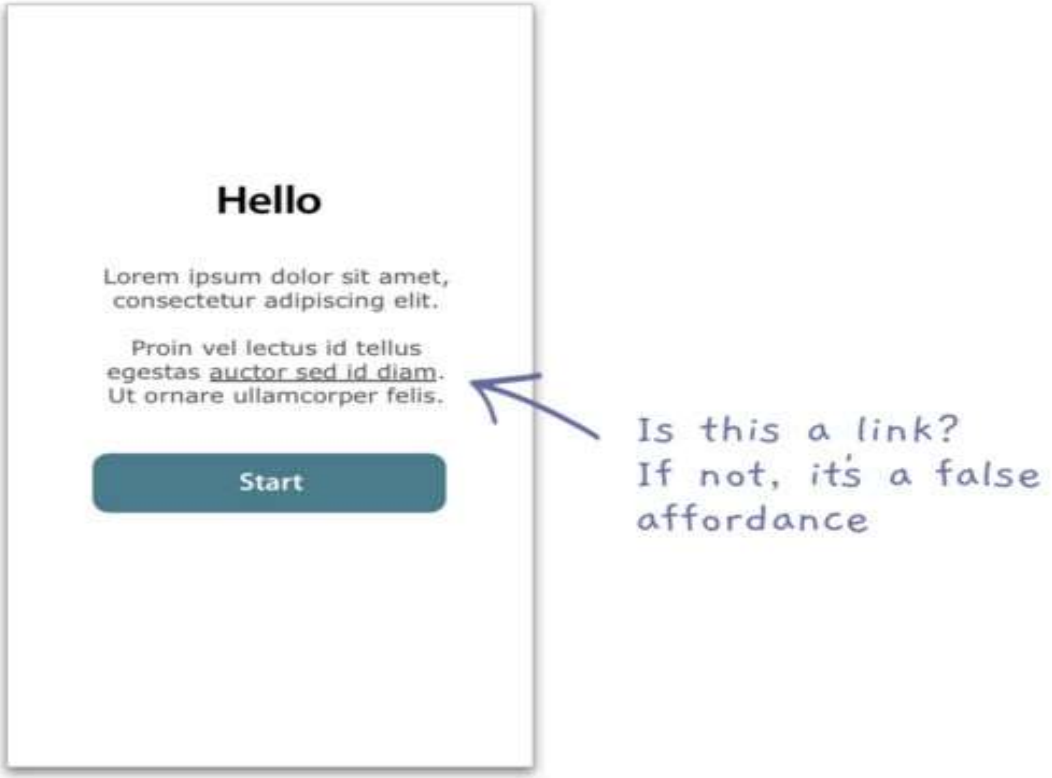
Source: medium/@h_locke

- **Example:** There are two buttons *(affordance)* and it is perceivable that one is probably the preferred action *(signifier)*

- **Example**: A button *(affordance)* which uses the interface's primary action style *(colour signifier)* which describes the action *(word signifier)* which includes a forward arrow *(directional signifier).*

False affordance

- The thing looks like it can do something, but it can’t.



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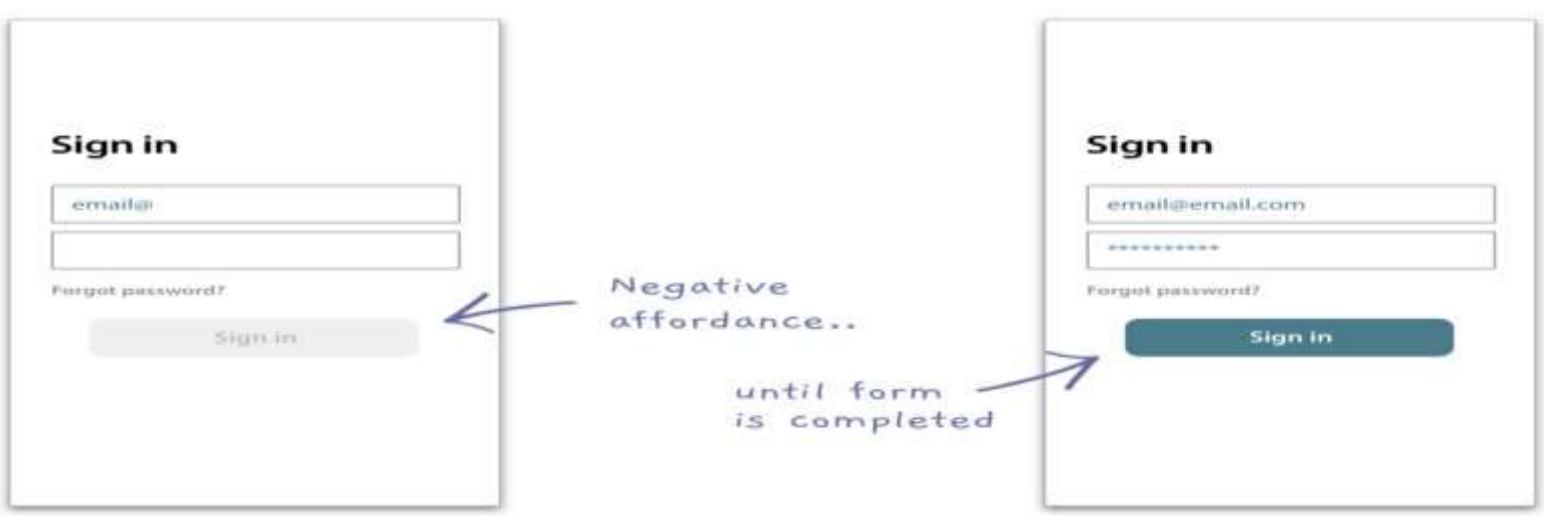
Negative affordance



- There is an affordance such as a button, but it is not active.
- It looks like a button, it is a button, but it doesn't behave like a button.
- This is ok if it's a temporarily disabled button, which becomes active when the user completes a form, but not if it's just a button on a screen doing nothing.

Hidden affordance

- The thing is not perceivable or available until the user interacts with it.
- A classic example is the ghost button, which I see missed all the time by users. Almost invisible until you serendipitously stumble upon it or hover over it and then you can use the interface.

Feedback

- When a user finally takes an action or interacts with our product, they often get an immediate reward of more content or a completed task.
- **A well designed user experience offers us feedback that keeps us reassured we are on track.**
- Digitally, feedback appears in the form of loading bars, error messages, vibrations, etc.

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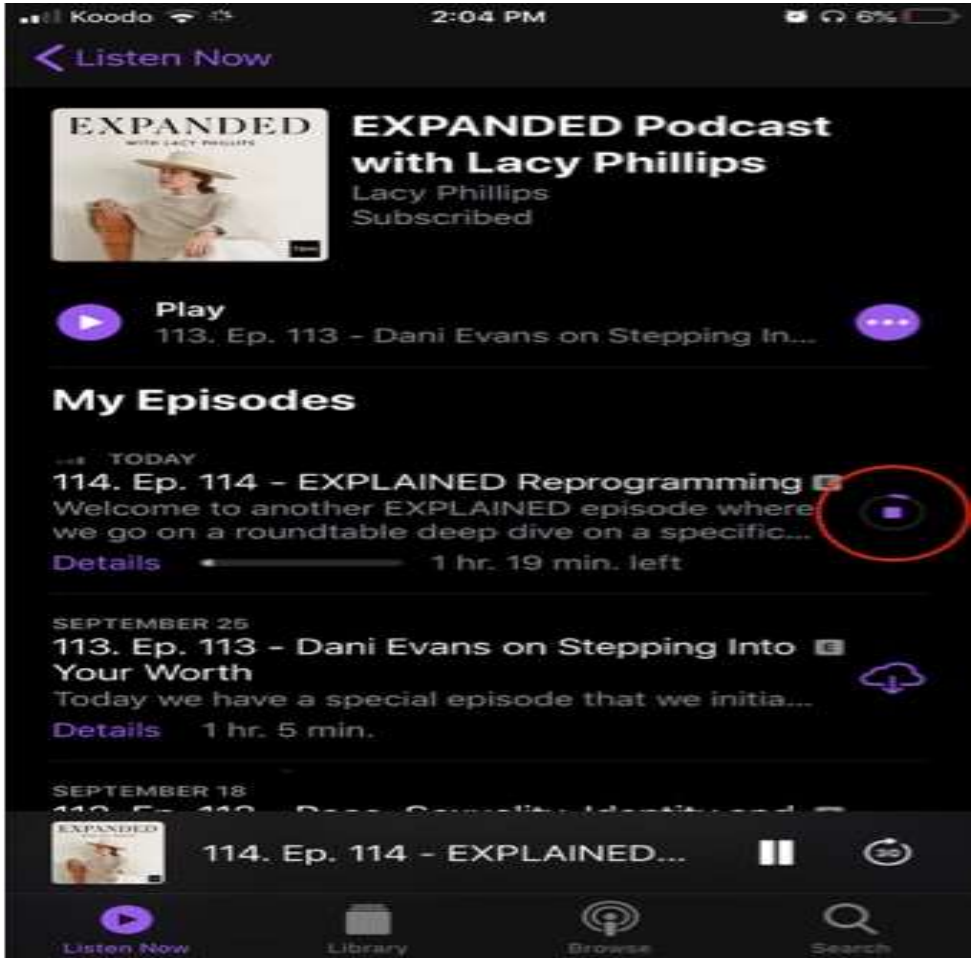
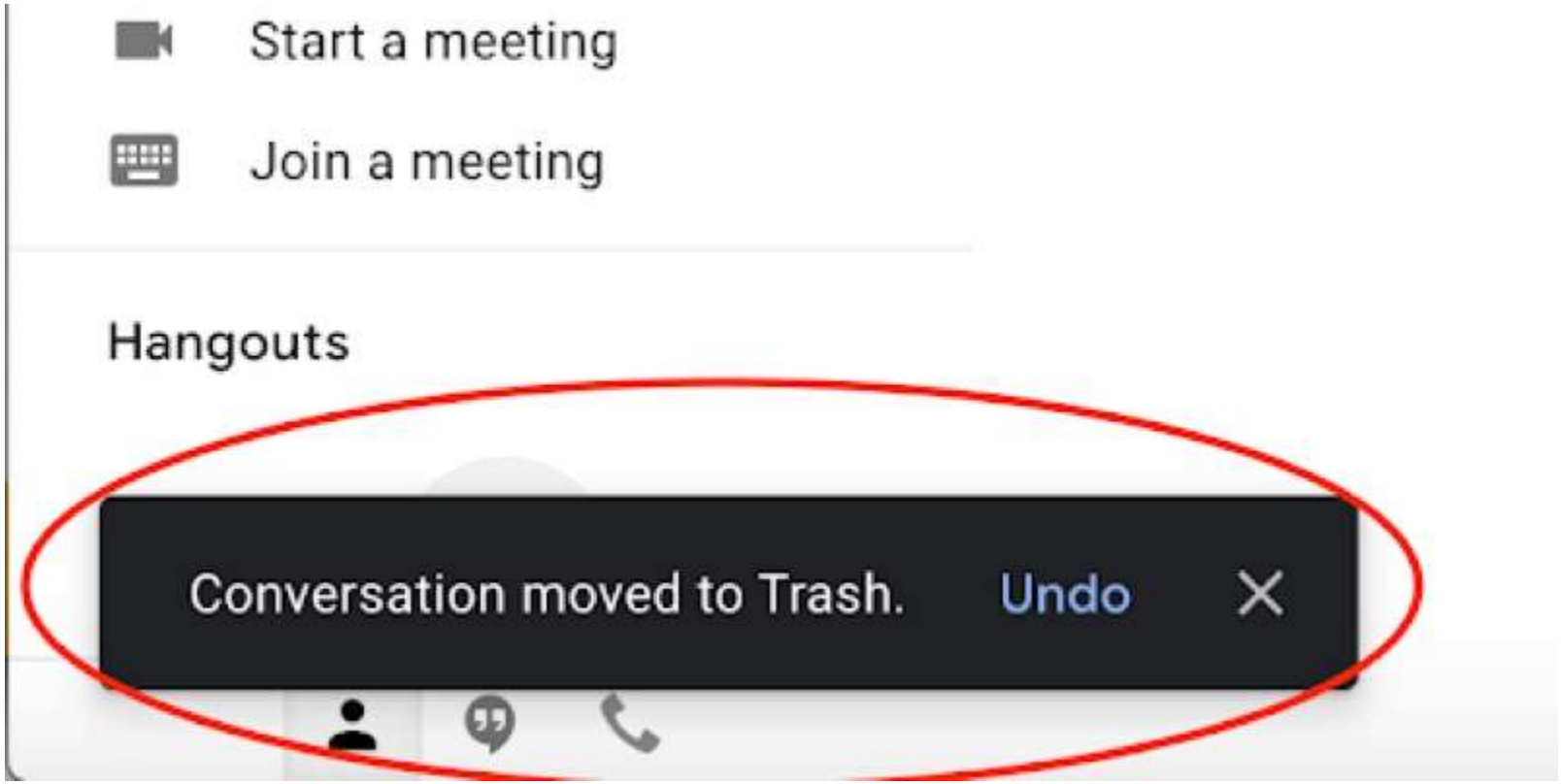
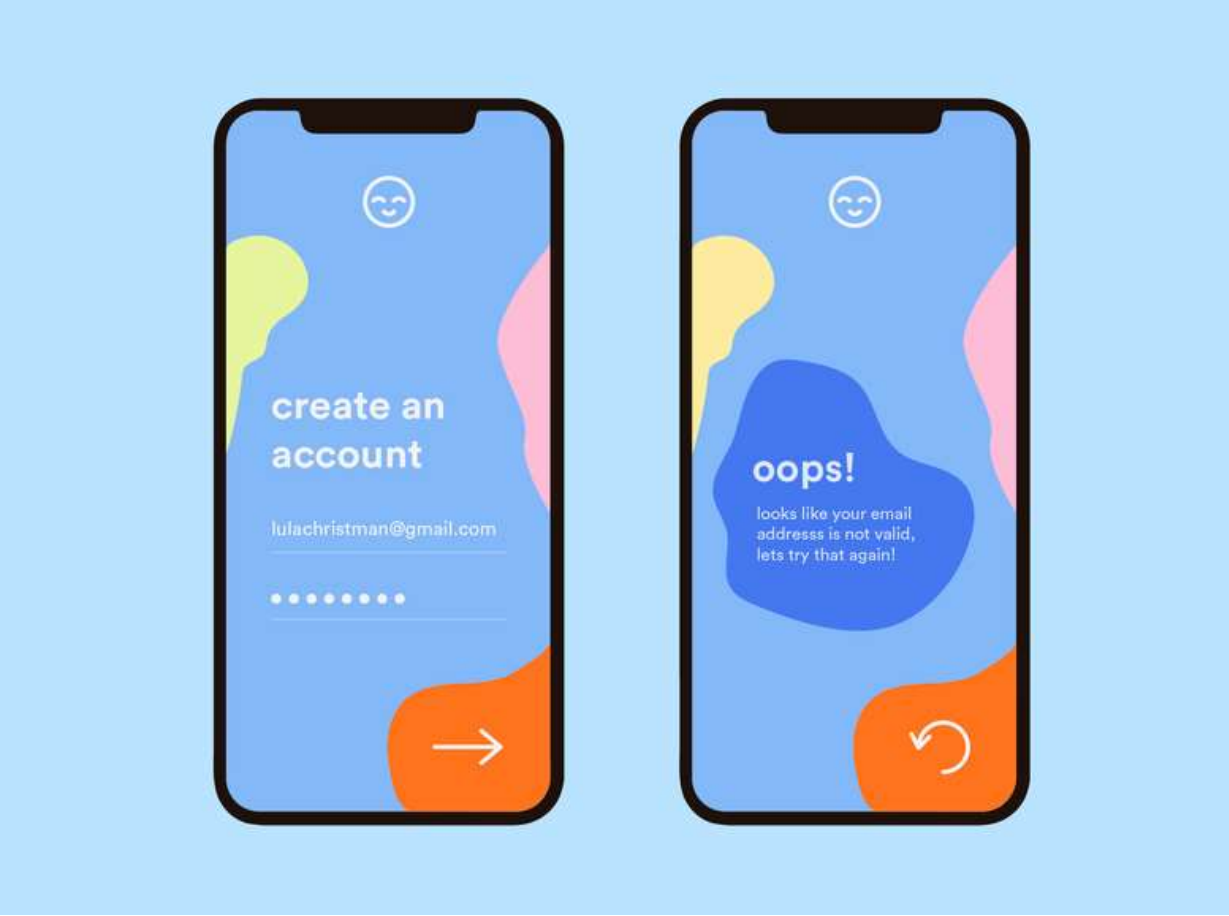


- ✓ Feedback reassures us that we are making progress.
- ✓ For example, when downloading a podcast, if you didn't see any type of loading bar you might assume that the content isn't yours yet or that the app doesn't allow downloading.


Start a meeting
Join a meeting
Hangouts
Conversation moved to Trash.
Undo


create an account
lulachristman@gmail.com
oops!
looks like your email addresss is not valid, lets try that again!

Visibility

- Visibility is the basic principle that the more visible an element is, the more likely users will know about them and how to use them.
- Equally important is the opposite: when something is out of sight, it’s difficult to know about and use.
- The skill in applying this principle is realizing that you can’t make everything visible, because it’ll ultimately clutter the interface but instead need to prioritize what interface elements are by far the most important for the user experience and prioritize their visibility.

- The trade-off between hamburger side-bar menus and tab-bar menus in mobile applications is a very recent design debate centered around this very principle of visibility.
- While the hamburger menu provides a convenient place to store a variety of menu items in a mobile app, it comes at a huge disadvantage: the lack of visibility of the contained menu items.
- We've seen a shift in major apps like Facebook away from hamburger menus and back toward tab-bar menus to improve the visibility of their key experiences.

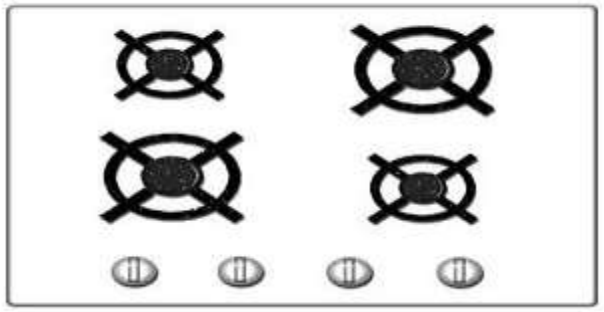

AT&T
3:23 PM
Status
Photo
Check In
Christine Delancy — with Ollie Wagner and 3 others
Good friends, good food, and a lot of laughs.
10 Likes 3 Comments
Like
Comment
Share
Joe Binney likes Fuki Sushi.


AT&T
2:30 PM
News Feed
Status
Photo
Check In
Monica Horak with Ari Grant and 3 others
Yesterday in Menlo Park, CA
Good friends, good food and a lot of laughs.
10 Likes 3 Comments
Like
Comment
Share
News Feed
Requests
Messages
Notifications
More

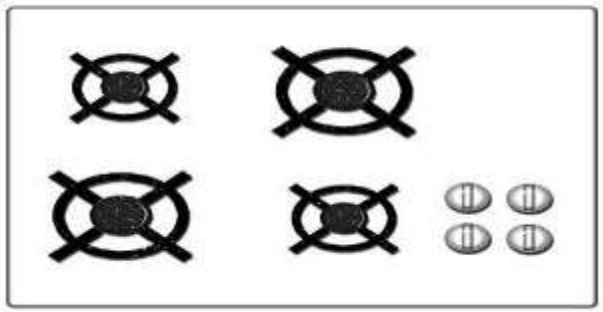
Mapping

- Mapping is about having a clear relationship between controls and the effect they have on the world.
- Mapping should be as natural as possible.
- Stove tops are a great example . When you see the first image, the mapping is not very clear because it's difficult to determine which control operates each burner. Versus the second image, it's far clearer the control that controls each burner, which has a better mapping.

Poor mapping



Good mapping



- This slider also has a strong mapping, since it’s clear moving it to the right will increase it’s value versus moving it to the left will decrease it.

ERGONOMICS

- **Ergonomics** is about ensuring a good fit between people and the things they interact with.
- Ergonomics should be considered in the design of every product, system or environment.
- Ergonomists can help you to identify which **user characteristics** you should take into account during your design process.
- As ergonomists, our goal is to influence the design of man-machine systems so that human capabilities and limitations are considered from the early stages of the design process, and are accounted for in the final design.
- Knowledge and experience, show that a design that considers such issues will result in an optimal system that enhances productivity, safety and job satisfaction.

- **Soft ergonomics** is the study of designing virtual interfaces that cater towards the wellness of the human body, its emotional and cognitive abilities.
- Soft ergonomics can be defined as the ability of any virtual interface(computer application, website, ATM options, parking meter etc.) to make it comfortable for the user to use the interface while working on the user's request.
- It tries to find a compromise between user expectations, system workflow and aesthetics.
- Users from various cultural and technological background are exposed to a common interface. The interface developer seeks to ensure that the interface does not harm the user psychologically, physiologically or emotionally.

Soft ergonomics generally takes into account the following human factors when building a virtual interface:

1. **Physical Limitations**:

- Not all who use a virtual interface are physically equal.
- If the designed interface only caters to right-handed individuals, or people within a certain height range, then the interface might need a redesign.
- One of the leading discussion is with respect to visually impaired users.

2. **Emotional Needs**:

- The interface should be 'designed for the occasion' or context.
- It should not leave the user confused, either by how to start using the interface or what to do when an error occurs.
- Confusion leads to frustration, which eventually builds stress in the body causing long term emotional damage.

3. **Cognitive Abilities**:

- If the product (e.g. software application, website) is designed for any casual user, then the designer should not expect that all users will be experts with high cognitive abilities.
- The usage of the application should not need the user to know a lot of information prior to using the interface.
- For example, using an automated teller machine can require memorizing a pin number but not the account number.

Criteria for Soft Ergonomics

The following lists (non-exhaustive) some of the most common criteria for evaluating soft ergonomics.

- **Consistency**:
  - The design should be consistent across the entire application.
  - Consistent sequence of actions, identical terminologies and platform conventions should be followed throughout the application.

- **Efficiency**:
  - The virtual interface should allow efficient use of user's time. The screens should load and display content within acceptable amount of time.
  - The more than expected time a user has to wait, more stress is built into the human body causing long term damage.
  - The interface should also have functionality for advanced users. While being non-obtrusive to novice users, accelerators or shortcuts should be available for experienced users.

- **Design**:
  - The system should preferably have minimalistic and aesthetically pleasing design.
  - Minimalistic design help user easily consume the data and hence there is less stress on the human mind and aesthetically pleasing design increases the 'feel good' factor in the user.
- **Memory**:
  - User's memory load should be minimized.
  - All information that a user needs from the application to perform a task should be presented or easily retrievable by the user.
- **Context Help**:
  - The 'Help' menu and options that give context help should be always available to the user.

UCD Principles

From Jeffrey Rubin, Handbook of Usability Testing:

- **Early focus on users and tasks**
  - Structured and systematic information gathering
  - Designers trained by experts before conducting data collection sessions
- **Empirical Measurement and testing of product usage**
  - Focus on ease of learning and ease of use
  - Testing of prototypes with actual users
- **Iterative Design**
  - Product designed, modified and tested repeatedly.
  - Allow for the complete overhaul and rethinking of design by early testing of conceptual models and design ideas.

User-Centered Design Process

- Design is based upon an explicit understanding of users, tasks, and environments; is driven and refined by user-centered evaluation; and addresses the whole user experience.
- The process involves users throughout the design and development process and it is iterative.

Phases of the UCD process:

The following are the general phases of the UCD process:

- **Specify the context of use:** Identify the people who will use the product, what they will use it for, and under what conditions they will use it.
- **Specify requirements:** Identify any business requirements or user goals that must be met for the product to be successful.
- **Create design solutions:** This part of the process may be done in stages, building from a rough concept to a complete design.
- **Evaluate designs:** Evaluation - ideally through usability testing with actual users - is as integral as quality testing is to good software development.


Identify Need
Specify Context of Use
Specify Requirements
Produce Design Solutions
Evaluate Designs
System Satisfies

6 Laws that Help You Create a Better Design

- A common goal of every product — to make the users' life easier.
- Some famous principles from psychology, philosophy and economics that you can apply to your design.
  - *Hick's Law*
  - *Jakob's Law*
  - *Ockham's Razor Law*
  - *Fitt's Law*
  - *Weber's Law*
  - *Pareto's Law*
- Apart from the basic design principles, there are other rules or laws that you can follow to make your design stand out like the *golden rules.*

Fitts' Law: Make it simple, but significant

- Fitts's law is a predictive model of human movement developed by Paul Fitts, an American psychologist.

- Fitts' law states that the amount of time required for a person to move a pointer (e.g., mouse cursor) to a target area is a function of the distance to the target divided by the size of the target.

- Thus, the longer the distance and the smaller the target's size, the longer it takes.

- By his law, fast movements and small targets result in greater error rates, due to the speed-accuracy trade-off.

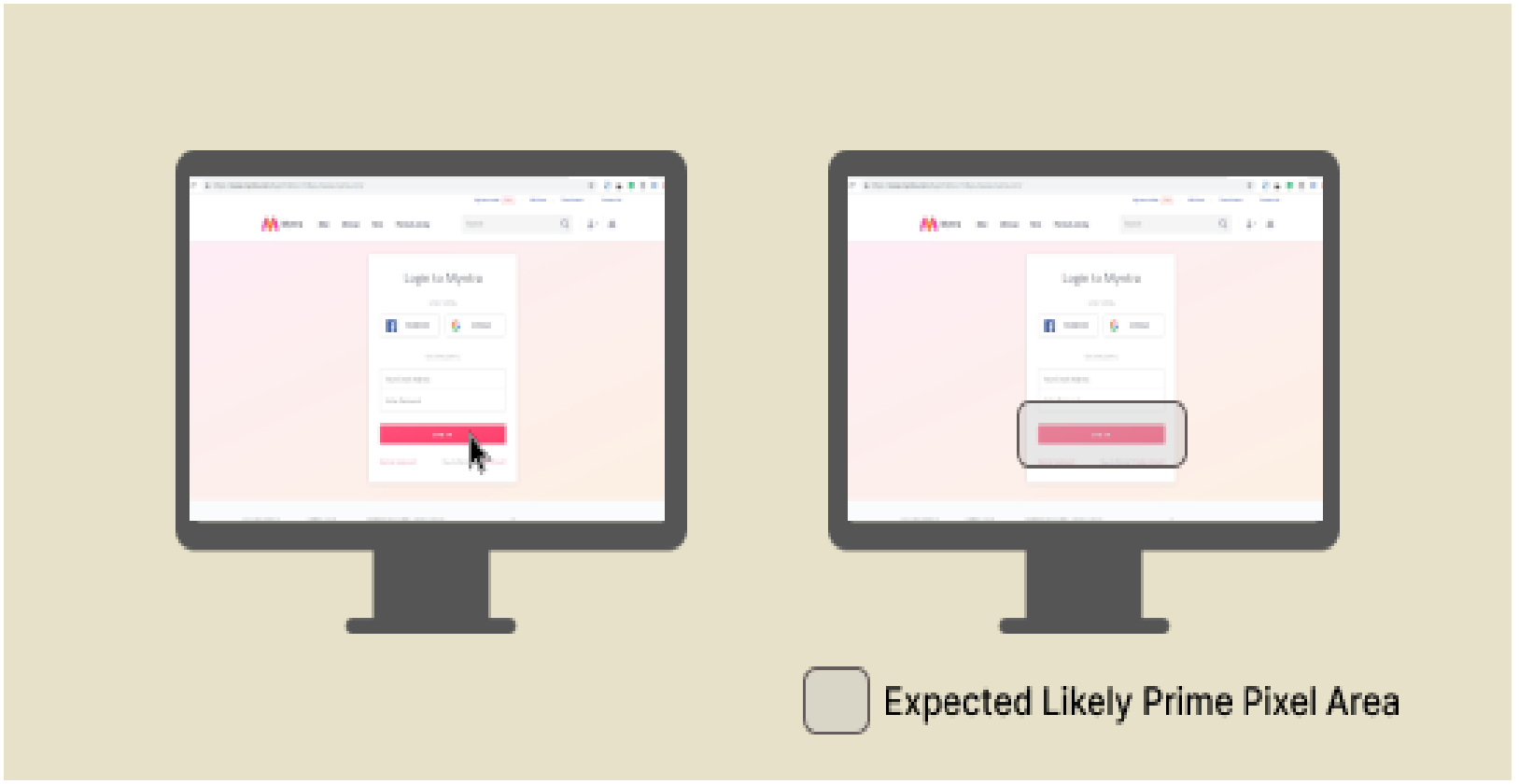
- Fitts' law is widely applied in user experience (UX) and user interface (UI) design.

- For example, this law influenced the convention of making interactive buttons large (especially on finger-operated mobile devices)—smaller buttons are more difficult (and time-consuming) to click.

- Likewise, the distance between a user's task/attention area and the task-related button should be kept as short as possible.

- When it is used in a design, it means that your buttons should be large, obvious and the distance between one action to the next should be minimised.

- Pop-up menus better support immediate selection of interactive elements than dropdown menus as the user does not have to move the cursor from its current position.


Login to Mystra
Login to Mystra
Expected Likely Prime Pixel Area

Hick's Law: More options, more problems

- Hick's law, a psychology principle that is named after two psychologists, William Edmund Hick and Ray Hyman, states that the more options available for the users, the longer time it will take for them to make a decision.

- Delivering a good user experience requires that first you find out the functionalities that will answer users needs; second, you need to guide them to the specific functions they need *most*.

- If users end up stuck in the decision-making process of "what next?", they may become confused, frustrated, or leave your website.

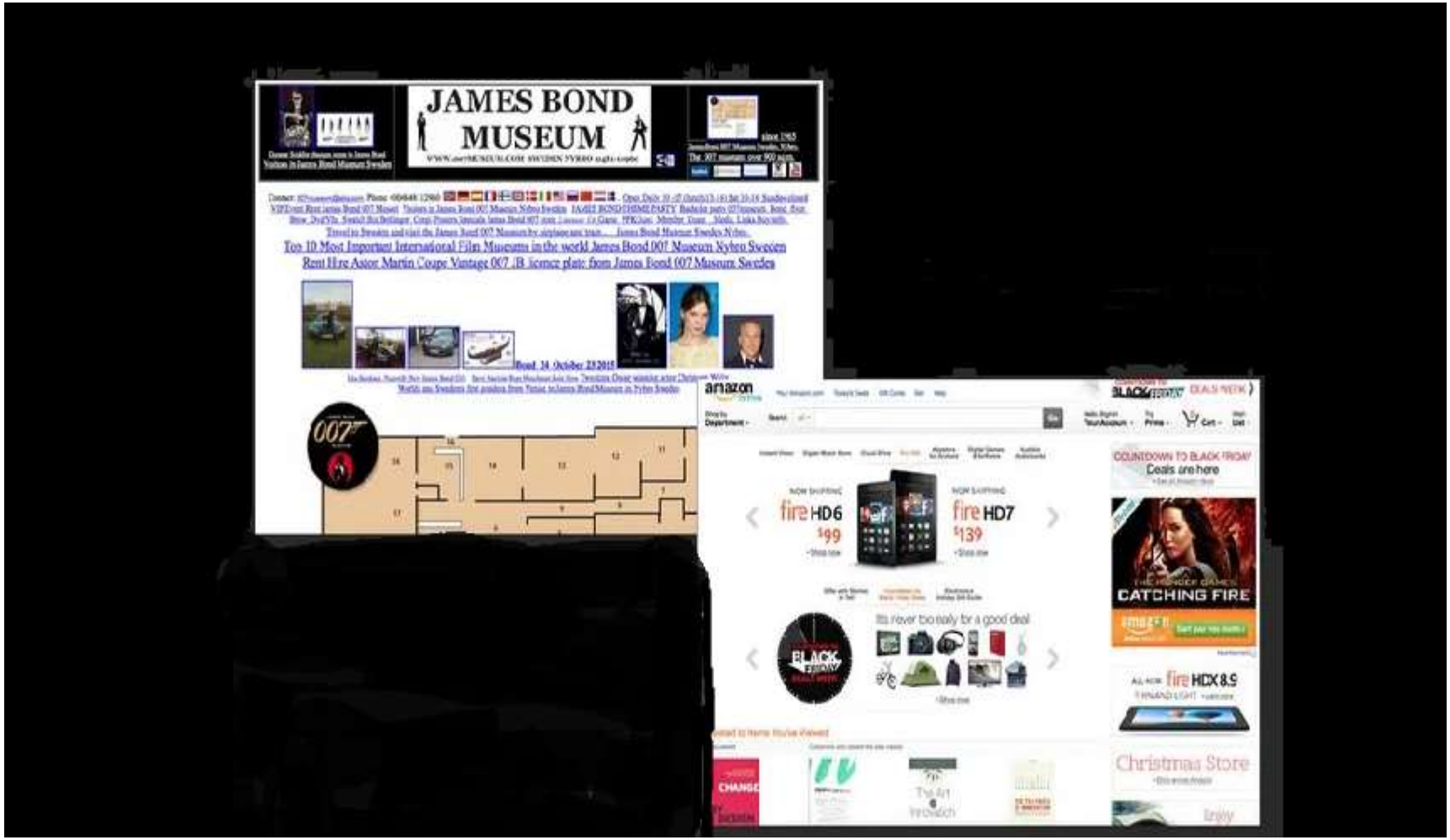
- Hick’s Law is a simple idea that says that the more choices you present your users with, the longer it will take them to reach a decision.

- Users bombarded with choices have to take time to interpret and decide, giving them work they don’t want.

- When there are lots of options available, your users would need to learn, consider and weigh all the options before making up their mind. That means it takes a longer time to reach their goal.

- Apart from this, more options could mean more problems, especially if there is no clear explanation for each option.

- You can see Hick's Law in action in the navigation of almost any website.



Follows Hicks law or not?

Weber’s Law: Just Noticeable Difference

- Weber’s law is named after a German physician, Ernst Heinrich Weber, also called **Weber-Fechner law**, historically important psychological law quantifying the perception of change in a given stimulus.
- The law states that the change in a stimulus that will be just noticeable is a constant ratio of the original stimulus.
- A **stimulus** is anything that causes a reaction in an organism.
- **Perception** is what happens when an organism takes in a stimulus and makes meaning of it.
- Weber's law is an essential concept because it helps understand how people perceive different stimuli.
- The law reveals that perception of stimuli is relative, not absolute.

- Weber’s Law can be used for various sensory modalities in GUIs such as brightness, loudness, line length, visual weight of fonts in typography, color matching etc.
- Many times large amount of information is required to be displayed on a limited size computer screen and in various forms viz. text, pictures, drawings, maps, graphs, videos etc.
- Poor visual design of user interface lacks the ability of differentiating between two close enough visual stimuli e.g. two lines with different thicknesses in a map (for wide roads and narrow lanes).What is this threshold of line thickness that may lead to noticeable difference is governed by Weber’s law.
- The threshold of noticeable difference between color shades is also governed by Weber’s law.

- The law explains that the perceived change in stimuli is proportional to the original stimuli, together with the just noticeable difference, it means that the size of the just noticeable difference (the slightest change in stimuli that can be observed or noticed) is in proportion to the original stimuli.
- When we redesign a product, we should think about how the users adapt to the changes. Usually, if your product has a drastic change, no matter how good the new design is, the users would still think the old one is better. This is a natural human behaviour.
- What you should do instead is — change gradually, so gradually that the users could not see a significant difference. This helps them adapt to and accept the new design.

Jakob’s law

- Jakob’s law was invented by Jakob Neilsen, a user advocate.
- This law states that asking users to adopt new behaviours or even modify their existing behaviours is very, very hard.
- Your users prefer your website to work in the same way as other websites.
- For instance, if your website has lots of content, there should be a search function, your website footer should contain links to important pages, your website logo should be clickable and linked to the homepage.
- Users do not like surprises, they prefer something that is familiar so they wouldn’t need to learn how to use your website.

Ochkam’s Razor Law

- Ochkam’s Razor is a philosophy principle by William of Ockham, a Franciscan friar in the 14th century which believes that “Simplicity is the ultimate sophistication”.

- There are different variations of this principle but it is roughly about when there are multiple solutions to a problem, the simplest one tends to be the best one.

- When designing a product or a website, try to get rid of the unnecessaries as they create clusters and distraction. These make it difficult for your users to reach their goal.

Pareto Principle

- Pareto Principle, as known as 80/20 rule, is named after an Italian economist Vilfredo Pareto.
- This principle says that 80% of the outcome come from 20% of the cause.
- When this is used in product design, it means that the unused functions or features could be removed due to the fact that they do not contribute to the outcome.
- Get rid of everything that is not essential to making a point.

Chapter Ends