

CPSC 427

Video Game Programming



User Experience/Human Computer Interaction



© Alla Sheffer

What are HCI & UX?



- **Human Computer Interaction (HCI)**
 - *Research in designing & understanding the way humans and technology **interact***
- **User Experience (UX)**
 - ***Perception** of a particular product, system or service*
- Part of **user-centered design**

© Alla Sheffer

Even Big Companies Get UX Wrong

- **Easy** & **expensive** to get UX wrong



Google Glass failed in the market because it wasn't clear why people should need it

Connection to Game Design

- Impact of design on ease of use & engagement



In Wind Waker, the direction Link looked indicated to the player something of interest was there

- Design applications & philosophies are interconnected



How do HCI and UX Connect to Game Design?

- **Poor UX design** can prevent players from **experiencing** games as intended



For example, having to follow in-game characters with different walk speeds than your characters

© Alla Sheffer



Game Design Philosophy



Shigeru Miyamoto

- **User-centered** game design = Put **players needs** first
- Make play **easy (& fun)**
- Good design is often **invisible**
 - *How to play is subtly implied*

© Alla Sheffer



Design Concepts

- **Design concepts:** Basic ideas that help us understand & design **what's happening** in a user interface
- Norman's Design Concepts:
 - **Affordances**
 - **Constraints**
 - **Mapping**
 - **Visibility**
 - **Feedback**
 - **Consistency**

© Alla Sheffer



Affordances

- **Affordance** is a **physical** characteristic that suggests **function**
 - *i.e. inviting interaction/use*
- **Chairs afford sitting**, but so do tables, boxes, and floors



© Alla Sheffer

Example of Affordances in Games



© Alla Sheffer

Example of Affordances in Games



- What does the slingshot afford here?
 - *Pulling, aiming*
- What do the blocks afford?
 - *Falling, blocking*
- What does the pause button afford?
 - *Pressing*

© Alla Sheffer

Mapping

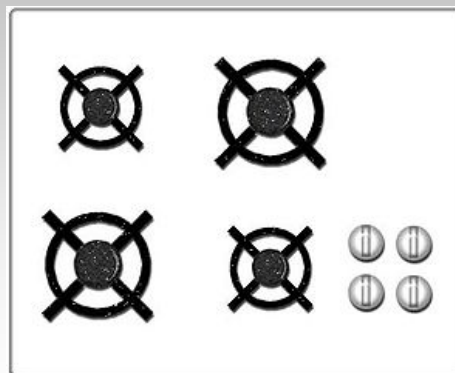
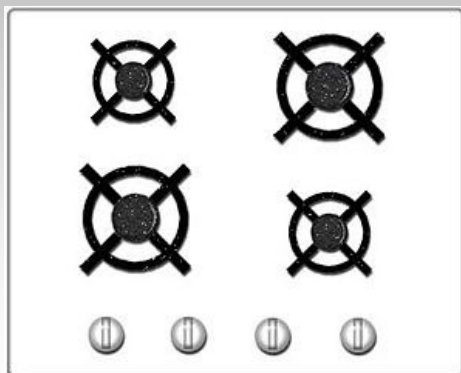
- Some controls are direct (slingshot), some indirect (button)
- **Mapping** is the relationship between look/feel of indirect **controls** & their implied **actions**

<u>Control</u>		<u>Implied action</u>
push button	—————→	start/stop function
twist knob	—————→	increase/decrease value
turn wheel	—————→	rotate left/right

© Alla Sheffer

Mapping Example

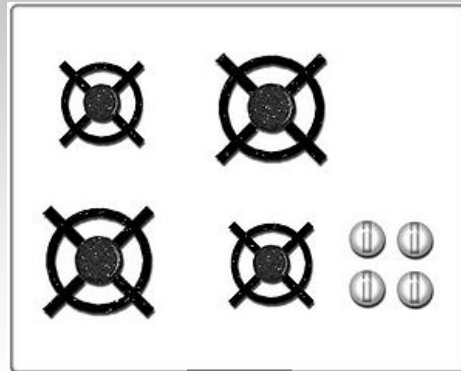
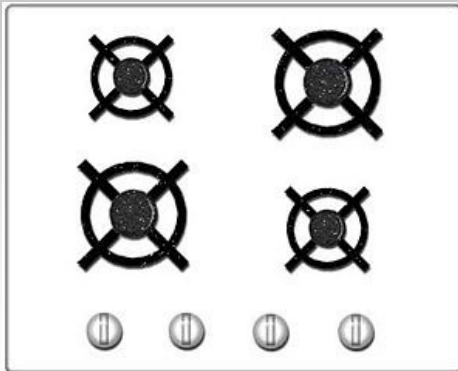
- Which is better?



© Alla Sheffer

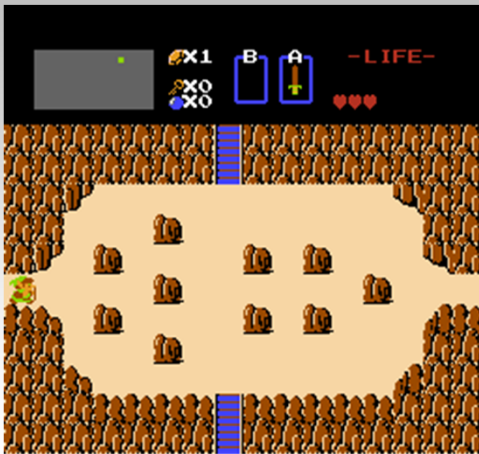
Mapping Example

- Natural mapping **minimizes** the need for labeling relationships



© Alla Sheffer

Mapping Example in Games



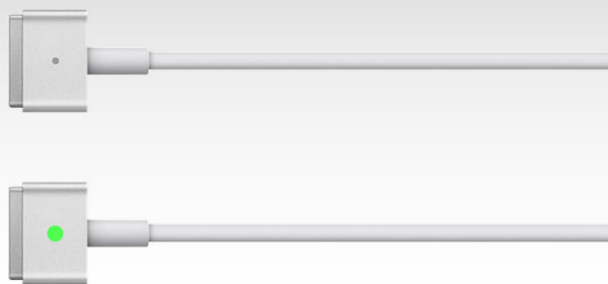
Clear mapping between up, down, right & left controls and game.



© Alla Sheffer

Feedback

- **Feedback: response to action**
- The color **changes** to inform us a connection has been made
- The **sound** of a 'click' tells us if it connected to the port



© Alla Sheffer

Feedback in Games

- Feedback in games is **continuous**



- **Visual**
 - *interaction between sprites*
- **Sound**
 - *music on defeat*
- **Touch**
 - *controller vibrating*



© Alla Sheffer

Design Principles Example in Games



- Affordances?
- Mappings?
- Feedback?

© Alla Sheffer

Users

- Who are the players?
 - *Children, adults, university students*
- Where will they be playing?
 - *Commuting, at home, remotely*
- What do they need or want?
 - *Fulfilling plot, relaxing play*

© Alla Sheffer

Class Poll



- Who is this game designed for?
(A) children
(B) adults
(C) elderly
(D) all ages

Why does it matter?
.... Design choices...

What about this one?



- Who is this game designed for?
(A) children
(B) adults
(C) elderly
(D) all ages

Why does it matter?

Class Poll



- What do the players of this game want?
 - (A) fast-paced action
 - (B) relaxing play
 - (C) rich environments
 - (D) other

And why does this matter?
.... Impacts design choices...

Think:

- Who is your game designed for?
 - (A) children
 - (B) adults
 - (C) elderly
 - (D) all ages



Think:

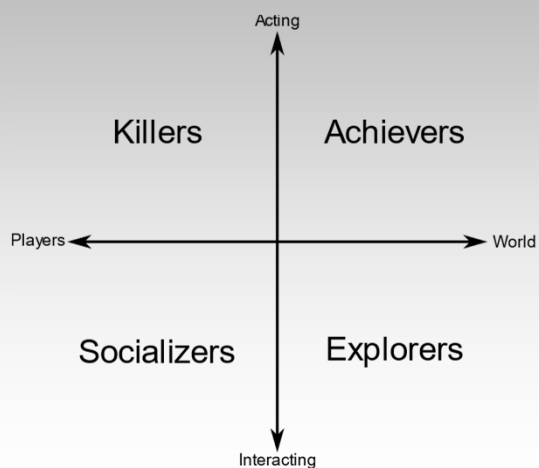
- What do the players of your game want?
 - (A) fast-paced action
 - (B) relaxing play
 - (C) rich environments
 - (D) other

© Alla Sheffer



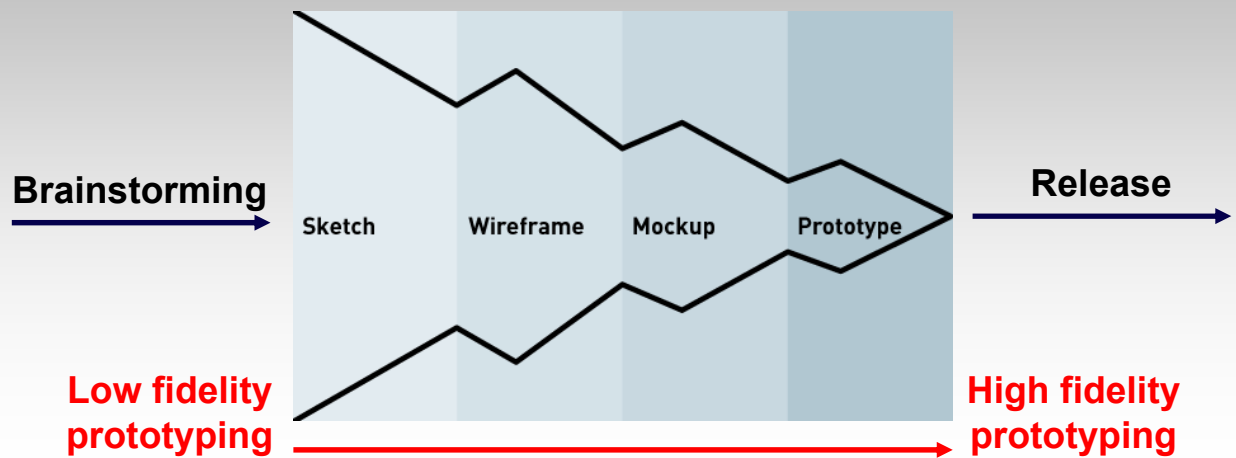
What Motivates Users?

- Work has been done to identify **player types**
- Users can be classified by preference for **interacting/acting with/on others/the world**
- The four classifications tell us what **motivates** each player type



© Alla Sheffer

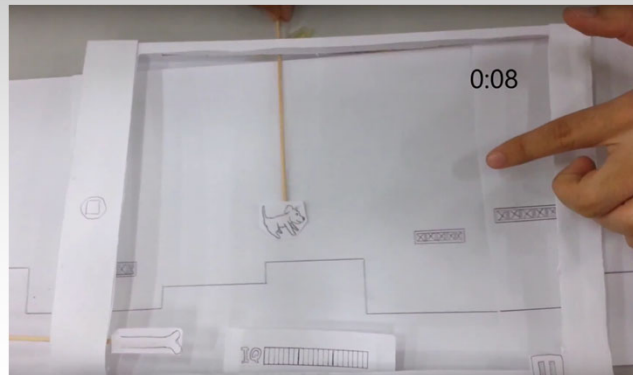
The Design Process



© Alla Sheffer

Low Fidelity Prototyping

- Low fidelity prototyping is great for the **early** stages of design
 - **Quick & cheap** to deploy
 - **Costs are kept low**
 - **Easy to test**
- Iterate on **story** and **core gameplay mechanics**
- **Sketches** are a great way to start designing



© Alla Sheffer



Testing Low Fidelity Prototypes

- Don't commit to one approach, design a few prototypes & **compare**
- Invite someone to try them out
- Try to drill down on **feedback**
 - *If they just say it's "fun", ask **why**?*

© Alla Sheffer



Fail Early, Fail Often, and Iterate on Feedback

- Designing something that people will use is both an art & a science
 - **Iteration** is how you make it better
- **Early feedback** ensures design meets users' needs
- Throwing around ideas is **quick**
 - *Fixing a bad design is **expensive***
- No idea is perfect the first time around

© Alla Sheffer



Medium Fidelity Prototyping

- Use medium fidelity prototyping for the **early to middle** stages of design
 - **Identify** questions before coding
 - Be **selective** with what gets built
 - Get it right in **black and white** first
- Iterate on **tone & feel** of game
 - **Supplementary game mechanics**
 - **Rough visuals & audio**
 - **Feedback**

© Alla Sheffer



Greyboxing

- **Greyboxing** blocks out all elements as **shapes** to **test gameplay**



© Alla Sheffer



High Fidelity Prototyping

- High fidelity prototyping happens during the **late** stages of design
 - **Alpha & beta releases**
 - *Polish artwork*
 - *Perform playtesting*
 - *Fix bugs*
 - *Release*
- Fine tuning before release

© Alla Sheffer