Foundations of Interactive Game Design (80K)

week two, lecture one
Today

- Review syllabus
- Game mechanics
- Game themes
- What’s coming up
Let’s talk about gameplay
Gameplay

- Operational logics characterize the system
- To start thinking further about gameplay, we’ll think about player actions or verbs
- Let’s look at a common action: jumping
Here are two games with jumping as a core action

How is jumping in Pitfall like jumping in Checkers?
Jumping in checkers

- A core action of Checkers is piece *movement*
- The fact that movement is turn-based is very important
- So is the fact that pieces move in defined ways on defined spaces — diagonally on squares
- This interacts with the *jump* action — being able to jump over an enemy piece to another open space beyond, capturing that piece
I’m going to assume we all know games like Checkers

I won’t assume this for many video games
What is Pitfall?

It’s a game for the Atari 2600 that was immensely popular — the number one game in the country for 64 weeks straight.

It helped establish the platforming genre, as well as the action/adventure genre.

Who hasn’t played Pitfall, hasn’t previously demo’d in class, and wants to play Pitfall?
What did you notice about jumping in *Pitfall!*?
Jumping in *Pitfall!*

- A core action of *Pitfall!* is character movement.
- The fact that movement is real time, along with environment/enemies, is very important.
- So is the fact that the character moves, and environment/enemies are arranged, in continuous space.
- Continuous space and time interacts with the jump action — being able to jump from any point, to any reachable point, at any time.
These kinds of comparisons will be key as you design your game: understanding how actions function as mechanics depends on their relationships with the rest of your design.
Game mechanics

• Some game genres are named in ways that hint at their core mechanics
• Can people here think of examples?
• First-person and third-person *shooters*
• More obscurely: jumping for *platformers*, finding/selecting for *hidden object* games
Describing mechanics

- The core mechanics of a game are what players do over and over when playing — jumping, shooting, extracting resources, moving pieces.
- There are other mechanics for other things that can be done — swimming, castling.
- Some designers and theorists use the term “mechanics” for everything that governs the behavior of the game system — every rule.
Look at the mechanics as carefully as we have for Checkers and Pitfall. How does the action connect to other elements of the game to make the mechanic?

A good idea: check a game out from the library and play it attentively for several days, making notes.
Let’s look at another version of jumping — Super Mario Bros

Same design team as Zelda

Another extremely influential game — and the best selling game of all time for more than two decades
What did you notice about jumping in *Mario* versus *Pitfall!*?
What’s different between Pitfall jumping and Mario jumping?

Pitfall jumping grows out of the arcade tradition — a lot of failed jumps lead to instant deaths

A lot of what’s different is the rest of the game. Mario’s levels are designed to encourage a lot of jumps that don’t have lethal consequences. A lot of Mario’s jumps don’t require the level of precision that very early Pitfall jumps require.

Compare this with jumping in Journey. More and more ability to jump, with little danger. More and more about nearly flying, somehow more exhilarating than games that simply give us the ability to fly
What are the core mechanics of *Super Mario Bros.*?

A review question: what are the core mechanics of Mario?
Core mechanics of *Super Mario Bros.*

- Walking
- Running
- Jumping!
- ... across gaps, onto enemies, for coins, to activate surprises, to destroy blocks, to kill enemies on blocks, into pipes...
- Rules: touching an enemy (without landing on them) or falling past floor is death
Platformer genre

Precise walking, running, jumping are still core mechanics today
What mechanics do you see? What are the core mechanics?

Doom
Core mechanics of *Doom*

- Moving forward and back along depth plane in a *first person* perspective
- Moving side to side (sidestepping or *strafing*) along depth plane
- Turning
- Shooting where you are looking
- Gathering health and armor boosts
- Rules: damage from enemies, environment

Moving your viewpoint and firing precisely are really important, as is knowledge of the environment

An important, early First Person Shooter, but not the first
First Person Shooter genre

Precise navigation and shooting are still core mechanics today
Since most of you have probably play some version of Tetris, here (supposedly) is the original running on a Soviet-era computer compatible with the PDP-11 from DEC

What mechanics do you see? What are the core mechanics?

Tetris
Core mechanics of Tetris

- Rotating pieces
- Dropping pieces
- Moving side to side
- Rules: making complete lines to clear them, unpredictable new pieces fall from top as soon as previous reaches bottom, speed increase, reaching the top is death
Tile Matching genre

Following match rules is still a core mechanic today, but often matches follow color

Obviously that was not possible on a computer without color display...
The same mechanics can operate in different kinds of worlds with different kinds of themes

Let’s look at that briefly
Robot Unicorn Attack

This is a free game released on the Cartoon Network website

Who hasn’t played this game, and hasn’t demo’d in class, and would like to play?
Robot Unicorn Attack

Mechanics: forward movement is continuous, like Canabalt, otherwise standard platformer
World: Focus on potential “paths” and when obstacles are revealed
Theme: Goofy sendup of “epic journey against adversity” — lots of failure, but it feels insignificant

Actions: change in continuous forward movement
World: focus on potential “paths” — memory and twitch
Theme: goofy sendup of “epic journey against adversity”
Limbo — an indie title originally released on Xbox Live

This game won the “best visual art” award in the 2011 Game Developer’s Choice awards, beating out multimillion dollar AAA titles!
Actions: all the standard platforming ones (but a jump that feels weak/ordinary), bringing back Pitfall swinging, also dragging/pushing
World: unforgiving (relatively precise jumps) and deadly, mostly puzzling rather than dexterity
Theme: also a journey, presumably to safety (actually to save sister...)

Limbo

Actions: walking, jumping — also swinging, dragging pushing (weak/ordinary jump)
World: relatively precise jumps, deadly, but more puzzling than dexterity
Theme: also a journey, but to what end is slowly revealed
How do we compare Robot Unicorn and Limbo? Both are about not knowing what comes next — as a test of reactions, as a test of puzzle solving — and then knowing, and playing differently.
Can any theme work with a platformer?

Congo Jones

Demo

Ask class to ask themselves: do the theme and the mechanics work together?
To consider theme further, we need more than mechanics
Building from mechanics

A core mechanic of Chess is piece *movement*. The fact that movement is turn-based is very important.

So is the fact that pieces move in defined ways that are different from each other.

This interacts with the *capture* mechanic — ending a movement on the same space as an enemy piece.

This produces *dynamic* of projecting force.
Here’s another game that you’ve probably played, but this video emphasizes a part of the game that isn’t always focused on in descriptions.

The guy here with aces who does the good acting -- he actually loses. Then the guy who does the smart thing by folding kings, he could have won. Then the person who stays in with queens, which looks disastrous, wins. Then they wonder how this will impact the emotions of the other players.

Poker
Core mechanics of Poker

Shuffling (randomizing) cards & giving fixed number to each player — maybe # shared

Betting based on partial information of random situation (only own hand is known) in turns, possibly folding

Getting (& perhaps giving up) cards, in turns

Betting/folding in new partial info state

Revealing hands, fixed rank of combinations
What kind of game is Poker?
Is it a game of chance, acting, or reason?

Random cards
Hidden and limited information, but more for player who goes last each turn
Bluffing and other pretending
Reasoning about hands of others (fixed, non-repeating set of cards, seeing behavior)
Playing the long-term numbers, not the individual hand

Ask!
Dynamics of poker

A lot of luck — and maybe a lot of acting and reasoning

The luck leads to peaks and valleys — getting punished & punished for good play, then rewarded & rewarded for bad play

Game exploits our non-logical behavior (behavioral economics). Novice players lose more the more hands they win — weighing frequent small gains over large losses
Aesthetics of poker

A wild ride on moment to moment chance combined with the absolute need to stay focused on reasoning about the current situation to improve long-term odds while you try to mis-signal other players and get them caught up in emotion
Aesthetics of poker

The aesthetics are about the interplay of cool reason, human emotion, and the random world.
It’s three kinds of fun mixed together!
Frank Lantz: One of the roots of formal game theory, which taught us that nuclear war is unwinnable.
Poker maybe saved the world!
Upcoming

• Team selection document due next week
• One page mechanics analysis next week
• Tutorial #1 and #2 next week