CS/INFO 4154:
Analytics-driven Game Design

Class 22:
Balance
**Mon**

- 10/22
  - Friends Release

**Wed**

- 10/17
  - Interesting Decisions

- 10/19
  - Friends Release

**Fri**

- 10/24
  - Friends Release

- 10/26
  - Friends Release

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**Timeline**

- **by 10:10am:** Upload to CMS
- **by 2pm:** Friends Release Report
Friends Release

• Address feedback from Beta
• ~12 levels (or equivalent)
• Tutorials
• Music
• Sound effects
• Logging

• Privacy policy: “In order to make improvements and provide the best possible experience, this game anonymously records user interactions and IP addresses and uses a cookie to track returns.”
Problem with many games
Review: interesting decisions

“a game is a series of interesting decisions”

(GDC 2012)

Sid Meier
Today: when are decisions interesting?
Outline

- Interestingness
- Decision spaces
- Balancing activity
Outline

- Interestingness
- Decision spaces
- Balancing activity
Interesting decisions
Review: Difficulty

Engagement vs. Challenge
Difficulty → Interesting decisions
Review: Incentives
Incentives

Difficulty

Interesting decisions
“Conjoined Triangles of Success”

- Incentives
- Difficulty
- Balance

Interesting decisions
What is balance?

“Zerg OP, Toss imba!! So can we nerf terran now?”

- rockman

StarCraft 2 Battle.net forums, 11/2013
What is balance?

- Narrowest sense:
  - Fairness
Fair but not interesting
Interesting but not fair

52-56%

What is balance?

- Narrowest sense:
  - Fairness

- Expanded sense:
  - Depth
  - Variedness
  - Interestingness

- A set of desirable characteristics about the decision space of the game
Years of Balancing
Halo 3 Balance Interface

Pistol: 3
Sniper Rifle: 4
Why is balance so hard?

- Games are complex interconnected systems
- A small change to one part affects other parts
Famous Balance Bug: Civilization

Overly Aggressive Gandhi

"Very well, we will mobilize our armies for WAR! You will pay for your foolish pride!"
5 minutes: pair activity

- Pick your favorite game
- **Discuss:**
  - What are the *decisions* you must make in the game?
  - Why are these decisions *interesting*?
  - What characteristics does a game need to have for the *space of decisions* to be interesting?
Outline

- Interestingness
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Outline

• Interestingness
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Goal

- Describe a *perspective* on decision interestingness
- Set of criteria you can use to improve your game
Review: State Transition Diagram
Decision Trees

now

move
Problem?

now

move
Key Questions

- Are there decisions?
Are there decisions?
Problem?

now

move
Key Questions

- Are there decisions?
- Does it matter what the player does?
Example: *Permafrost*, 2017
Problem?

now

tower type A  B  C

move
Multiple situations

now

move

Situation 1

Situation 2

Situation 3
Problem?

now

move

 Situation 1

 Situation 2

 Situation 3
Key Questions

- Are there decisions?
- Does it matter what the player does?
- Is there a strategy that always wins?
Example: *Arc Shield*, 2017
Problem?

Situation 1

Situation 2

Situation 3
Halo 1
Halo 1: Overpowered Pistol
Problem?

now

move

Situation 1

Situation 2

Situation 3
Key Questions

• Are there decisions?
• Does it matter what the player does?
• Is there an action that always wins?
• Is some action always useless?
Ok if *sometimes* useless

now

move

Situation 1

Situation 2

Situation 3
Problem?

Now

move

move
Key Questions

- Are there decisions?
- Does it matter what the player does?
- Is there an action that always wins?
- Is some action always useless?
- Is the outcome known long before the game’s end?
Hiding outcome

Interesting things need to be happening deep in the tree
Key Questions

- Are there decisions?
- Does it matter what the player does?
- Is there an action that always wins?
- Is some action always useless?
- Is the outcome known long before the game’s end?
How can you measure balance?

- Diversity of actions and strategies chosen
- Overall success rate of actions and strategies
StarCraft II
StarCraft II
League of Legends

Highest Win Rate Champions (9/16/2012 - 9/23/2012)

- Win Percentage
- Popularity Percentage

Mouse over elements for details.
Outline

• Interestingness
• Decision spaces
• Balancing activity
Outline

- Interestingness
- Decision spaces
- Balancing activity
Tic-Tac-Toe

- Fun as a kid
- Not so much as an adult
- Why?
Pair Activity: fix tic-tac-toe

- Make it interesting
- Modify the game rules
- Consider the questions described earlier

Inspired by Eric Zimmerman
Outline

- Interestingness
- Decision spaces
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Outline

- Interestingness
- Decision spaces
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Summary: interesting decisions

- Incentives
- Difficulty
- Balance

Interesting decisions