CS/INFO 4154: Analytics-driven Game Design

Lecture 5: Level Design and Progressions
Game design document

- Converge on one idea
- Plan for the development cycle
- Identify unknowns in the design
- Due FRIDAY, SEPTEMBER 18th at 11:59pm
Throwaway Prototype

- Pick *some piece* of your game and build it
  - Avatar moves/jumps on flat land
  - Hexagonal grid with nothing on it
  - Background artwork

- In class on **Tuesday, September 22nd**
Pong / Asset Creation Resubmission

- Thursday, September 17\textsuperscript{th}, 11:59pm
Previously: Learnability
Today: Progressions

learnability + flow = progression
Level design techniques

- Progress through mechanics
- Progress through decisions
- Use design patterns
Level design techniques

- Progress through mechanics
- Progress through decisions
- Use design patterns
Reinforcement

- How long to “dwell” on a mechanic before introducing a new one?

**Actions:**

- A = jump
- B = dash

A  B  vs.  A  A  A  A  B
Recombination

- How often to combine mechanics with other mechanics?

**Actions:**
- $A =$ jump
- $B =$ dash
- $C =$ shoot fireball

$A$ $B$ $C$ vs. $A$ $AB$ $ABC$
Level

Mechanics

- shoot
- dash
- jump

Level
Mechanics

- jump
- dash
- shoot

Level
“The Pit” in Braid
Robot Unicorn Attack
Robot Unicorn Attack Progression

**Mechanics:**

A = jump  B = dash

A A A A B A A B

High reinforcement, low recombination
Hello Worlds

**Mechanics:**
A = move     B = two worlds     C = close world
Hello Worlds

**Mechanics:**

A = move  
B = two worlds  
C = close world

A  AB  AB  ABC  ABC

Moderate reinforcement, high recombination
Starcraft
Starcraft

A    AB    ABC    ABCD

Low reinforcement, high recombination

A    B    C    D

A    A    A    A
What’s the best?

- No correct answer
- Some reinforcement but not too much
- Some recombination but not too much
Level design techniques

- Progress through mechanics
- Progress through decisions
- Use design patterns
Level design techniques

- Progress through mechanics
- Progress through decisions
- Use design patterns
Sid Meier

a series of interesting decisions

(GDC 2012)
Complexity Analysis
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<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Enemy</strong></td>
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<tr>
<td></td>
<td><strong>Rock</strong></td>
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<tr>
<td><strong>Me</strong></td>
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Level design techniques

• Progress through mechanics
• Progress through decisions
• Use design patterns
Level design techniques

- Progress through mechanics
- Progress through decisions
- Use design patterns
Design Patterns

- Conventions of your genre
Arena
Stronghold
Sniper spot
Choke point
What are the design patterns for:

- Tower defense?
- Puzzle platformers?
Level design techniques

- Progress through mechanics
- Progress through decisions
- Use design patterns
Level design techniques

- Progress through mechanics
- Progress through decisions
- Use design patterns
Group activity #1: Play Thermo
Group activity #2: design your levels

Step 1. Make this chart for your game
Step 2. Design a level that *reinforces* a mechanic
Step 3. Design a level that *combines* two mechanics
Step 4. Show to group behind / in front of you