

# Game Genres: Platformers

Foundations of Interactive Game Design  
Prof. Jim Whitehead  
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UC SANTA CRUZ



# Upcoming Assignments

- **Due this week**

- **Partially Operational Game Prototype**

- ❖ Due Friday, February 15
- ❖ Need to have started your game
- ❖ Need to have at least some things working already
- ❖ Demonstration that you have spent at least 5-10 hours on your game already
- ❖ Turn in on a CD-ROM or on a flash drive
  - See course web page for more details
  - CS 80K Home Page -> Project -> Partially operational game prototype

- **Progress Report**

- ❖ Also due Friday, February 15
- ❖ An update on where things stand in your schedule
- ❖ Is your project completing tasks on schedule, or falling behind?

# Game Design Workshops

- **Game Maker**

- Wednesdays, 6-8pm
- Engineering 2, room 180 (Simularium)
  - ❖ Enter on plaza level between E2 and JBE

- **RPG Maker**

- Wednesdays, 5-7:15pm
- Engineering 2, room 280
  - ❖ 2<sup>nd</sup> floor, on front of building, on driving circle/Communications end (right side, east end) of the building
  - ❖ Arrive by 6pm to avoid external doors locking
  - ❖ Knock on nearest door if late...

- **CS 20/C# and XNA Game Studio Express**

- Thursdays, 4:30-7pm
- Engineering 2, room 399 (third floor, by elevators)

# Games with Designed Levels

- Games with **designed levels**
  - Monopoly (design of the game board)
  - Lemmings (design of each puzzle level)
  - Mario Bros.
  - Gadius
  - Kororinpa
- Games with **non-designed levels**
  - More precisely, the design of the level does not extend beyond setting the size of the playfield
  - Pong (always two paddles, one ball)
  - Tetris (always same size, pieces fall randomly)
  - Bejewelled 2 (always same size, semi-random piece fall)
  - Madden (always same football field)
  - Asteroids, Geometry Wars (fixed playfield, randomly spawned enemies)

# Level Design

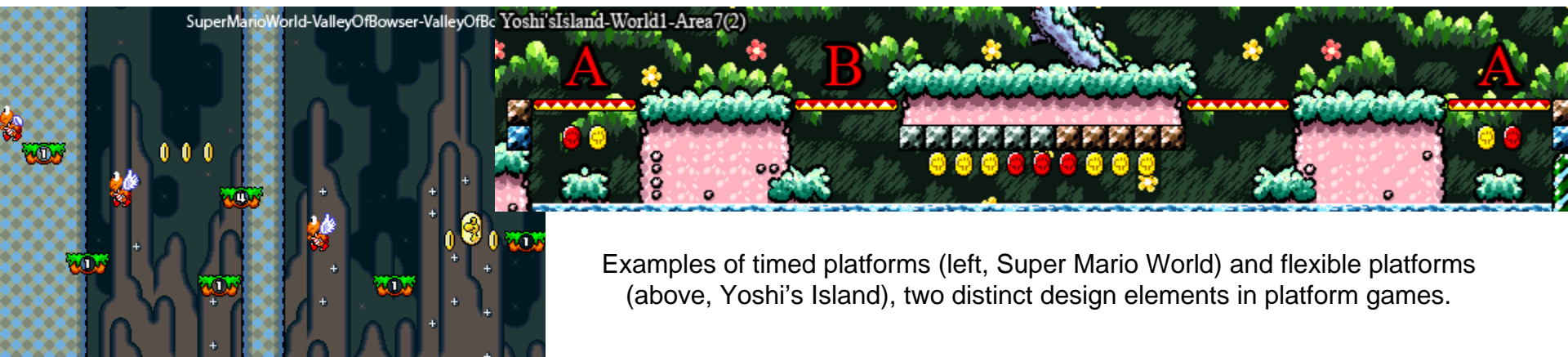
- **Level design** is the
  - conscious sculpting of a player's game experience via
  - the construction of variable physical spaces and
  - the creation and placement of level components, such as obstacles, enemies, rewards, triggers, or other player interactables.
- That is, when engaging in level design, you are
  - Creating a player experience
  - Creating the architecture of a level
    - ❖ You consciously create the space in which action takes place
    - ❖ This space constrains or affords types of gameplay, challenge, conflict
  - Placing elements inside the level to create challenges
    - ❖ E.g., placement of platforms, goombas, coins/stars, triggers in platform games



Example of trigger: Hitting "P" causes blocks to turn into coins

# Level Design for Platform Games

- What are the elements of good design for platform games?
  - This is not well understood
- Need to carefully study examples of genre
  - What were important evolutionary trends, and what do they tell us about the design of platform games?
  - Can think of platform games consisting of utterances in a design language
    - ❖ Following this analogy, what are the phrases, or idioms, that frequently occur
    - ❖ That is, what are the design elements from which you can construct platform games?
  - Will perform a design retrospective of platform games in this lecture to start answering this question
    - ❖ A complete answer is still an ongoing area of research



Examples of timed platforms (left, Super Mario World) and flexible platforms (above, Yoshi's Island), two distinct design elements in platform games.

# Essence of a Platform Game

- Jumping
- Platforms (floors)
- That's it!
  - Well, OK, It must be possible to control jumps, fall from platforms, or miss jumps
    - ❖ Games where jumping is completely automated fall outside of genre (Legend of Zelda, Ocarina of Time)
- Beyond these, very few unifying elements
  - As the Wikipedia article on platform games states, “Not a pure genre”
  - Very frequently coupled with elements of other genres
  - Shooter elements in Contra, RPG elements of Castlevania:

# Donkey Kong: First Platformer

- Created by Nintendo in 1981
  - First game by Shigeru Miyamoto
- Combined jumping over obstacles and jumping over gaps
  - A prior game, Space Panic (1980) does not include any jumping, but does have discernable platforms
- Limited to single screen of play
  - Hardware too limited to support scrolling
- Aside
  - Universal Studios sued Nintendo for King Kong copyright infringement (Universal City Studios, Inc. v. Nintendo Co., Ltd.)
  - Turns out Universal didn't actually own the copyright
  - Worse, they had previously won a lawsuit claiming King Kong was in the public domain!



# Discussion

- *Demonstration of Donkey Kong*
- What are the important design elements of Donkey Kong
  - What makes this a great game design?
- What are some of the important thematic elements of Donkey Kong?
  - What cultural elements does the game tap into?
  - What are some of the background assumptions in the game?

# Important Design Elements

- **Characters**

- ▶ There actually are some!
  - ❖ Compare with Pong, Space Invaders, Asteroids which have none
  - ❖ Pac-Man is only other existing game with discernable characters
- ▶ Donkey Kong is a recognizable, cartoon character
  - ❖ Has a face and body language
- ▶ Princess is recognizable stereotype
- ▶ Even the fireball has eyes!

- **Clear Goal**

- ▶ Opening animation (arcade version) clearly tells story of what needs to be done
  - ❖ Rescue the Princess!

# Important Design Elements

- **Simple core game mechanic**

- Run and jump
- Grab the occasional powerup (hammer)

- **Levels**

- Distinct levels allow the designer to carefully craft the user experience
- Mostly fixed patterns of spawned barrels, with some limited AI for the fireball
- Very few prior games had any discernable level design
  - ❖ Berzerk had distinct levels, as did Phoenix
- Compare with Space Invaders, Pac-Man, Asteroids, Pong
  - ❖ Either no level design, or a single level design

- **Push**

- Fireball encourages player to keep progressing through level

# Thematic Elements

- Explicitly gendered setting

- Protagonist is male
- Princess is female
  - ❖ And needs to be rescued
- Mirrors King Kong movie

- Narrative

- Opening animation for each level tells (limited) story of the creation of the structure of the level
  - ❖ Donkey Kong runs away from player to top of screen
- Landscape narrative
  - ❖ The set of platforms and obstacles, and the progression through them
  - ❖ Player can “read” these elements, and see that they tell a limited kind of story
  - ❖ In Donkey Kong, it appears you’re in a construction site of some sort
    - How can you tell? You “read” the presentation of platforms (girder like structure) and the kinds of obstacles presented (barrels and fireball)



# Screen-at-a-Time Scrolling

- Pitfall! (1982)
  - Adapted platformer genre to home consoles (Atari 2600)
- Large gameworld, navigated by going from screen to screen
  - Consoles not powerful enough to support scrolling
- Breakthrough for the time
  - Over 4 million copies sold
- *Demonstration*



# Full Scrolling

- Pac-Land (1984)
  - First influential scrolling platformer
- Super Mario Bros. (1985)
  - First console game with smooth scrolling levels
- Wonder Boy (1986)



# Design Elements of Scrolling Platformers

- **Large Gameworld**
  - Gives players sense of exploring large, expansive world
  - Camera follows player as they explore
- **Bright cartoon graphics**
  - Creates sense of more whimsical gameworld
  - Creates creative space for more silly game elements
    - ❖ Mushrooms, walking turtles, Goombas
- **Varying challenges**
  - Early games: jumping, climbing, jumping on top of critters “hop and bop”
  - Shooting (Mega Man)
  - Collecting items

# Second Generation Side Scrollers

- Sonic the Hedgehog (1991)
  - Speed, baby, speed!
    - ❖ Blazingly fast progression among areas of the world
    - ❖ Combined with jumps, permitted new style of gameplay
  - Also introduced
    - ❖ Loops, collecting rings, springboards
  - Easy to see how this game was a break from previous scrollers
  - Important in Sega vs Nintendo marketing



# Benefits of 2D Platformer Gameworld

- Many of the mechanics in 2D platformers were ideally suited for 2D gameworlds
  - Jumping
    - ❖ Only have to worry about x position and time, not x, y and time.
  - Simple camera
    - ❖ Keep the player more or less centered
    - ❖ No need to worry about direction
  - Simple controllers
    - ❖ D-pad and a few buttons
  - Level design is more simple
    - ❖ Only have to worry about 2D spatial layout of items

# Move to 3D

- Moving platformers to 3D creates number of design challenges
  - In 3D, can often just go around obstacles
  - Path through world more difficult to control
  - Jumping is more complex
  - Camera angles require more thought
  - Requires more complex control pads
- Took awhile to get right
  - Several transitional games
    - ❖ Alpha Waves (1990), Geograph Seal (1994)
  - Jumping Flash! (PS1, 1995)
    - ❖ First mainstream 3D platformer
  - Bug! (Saturn, 1995)



Jumping Flash

# Super Mario 64 (1996)

- Establishes conventions for the genre
  - Stabilization occurs around this style of game
- Design aspects
  - Free exploration of 3D environment
  - Explore level to find collectable pieces
  - Jumping puzzles (though fewer of them)
  - Hub model
    - ❖ Central world
    - ❖ Other worlds accessed off of it
  - Intelligent camera
    - ❖ Ongoing challenge getting this right



# Recent Platformers

- More recent platformer series
  - Ratchet and Clank
  - Jak and Daxter
  - Psychonauts
- Steady blurring of lines between platformers and action adventure genres