

Game Design Process

EECS 494

9/16/08 by J. Laird and Sugih Jamin

Drawn from a talk by Ernest Adams – 9/16/2003

Idea for a Game

- Most games begin with a single idea
 - A character [James Bond]
 - Gameplay/genre [A twitch FPS, a RTS game, ...]
 - A sport [Football, Baseball, Snowboarding, ...]
 - A story/quest/goal [A time-travel adventure]
 - A new technology [3D tracking of a controller]
- Most sequels have some fresh idea:
 - New story
 - New game play
 - New genre
- Mix existing ideas from other games
- Steal ideas (but not characters) from other media: books, movies, comics, ...
- Market research: surveys, focus groups, ...
- Brainstorm, throw out lots of ideas

Sid Meier's view

“I find it dangerous to think in terms of genre first and then topic. Like, say, ‘I want to do a real-time strategy game. OK. What’s a cool topic?’ I think, for me at least, it’s more interesting to say, ‘I want to do a game about railroads. OK, now what’s the most interesting way to bring that to life? Is it in real-time, or is it turn-based, or is it first-person, ...’”

Ernest Adam's View on Game Design

- Computer games exist to fulfill dreams
 - Dream a dream. Then think of what it would be like to live it
- Dream of Being Someone Else
 - President of the United States
 - A Movie Director
 - An Olympic Skater
 - A Rock Climber
 - The World's Greatest Programmer
 - A University Professor
- Not all games fit this...

Inside-Out Game Design

- DON'T begin at the beginning. Begin inside & work out
- Start with the primary *gameplay mode*
- Ask “**What is the player going to do?**”
- Define that mode, then move on to others
 1. **Player's role**
 2. **Interaction model**
 3. **Perspective**
 4. **Setting**
 5. **Challenges the player confronts**
 6. **Mechanics that create those challenges**
 7. **Actions the player takes to overcome them**
- Create supporting material later
 - It is always easier to fix the story, UI, etc. than to fix an uninteresting or unplayable game.

7 Parts of Gameplay

- 1. Player's role**
- 2. Interaction model**
- 3. Perspective**
- 4. Setting**
- 5. Challenges the player confronts**
- 6. Mechanics that create those challenges**
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1. The Player's Role

- Who is the player trying to be?
 - Critical for representational/realistic games
- In single game may have multiple roles/multiple modes
 - Football – manager, coach, player
- If you can't describe it in one or two sentences, it will be confusing for the player

2. Interaction Model

- How can the player interact with the world?
- As an avatar
 - A single character or object that represents the play
 - Player's actions are limited to the avatar's location
 - FPS, Adventure, Racing, Sports (?)
- Omnipresence
 - Player can act in many or all places in the world
 - Strategy games
 - Not always omniscience: e.g., fog of war

3. Perspectives

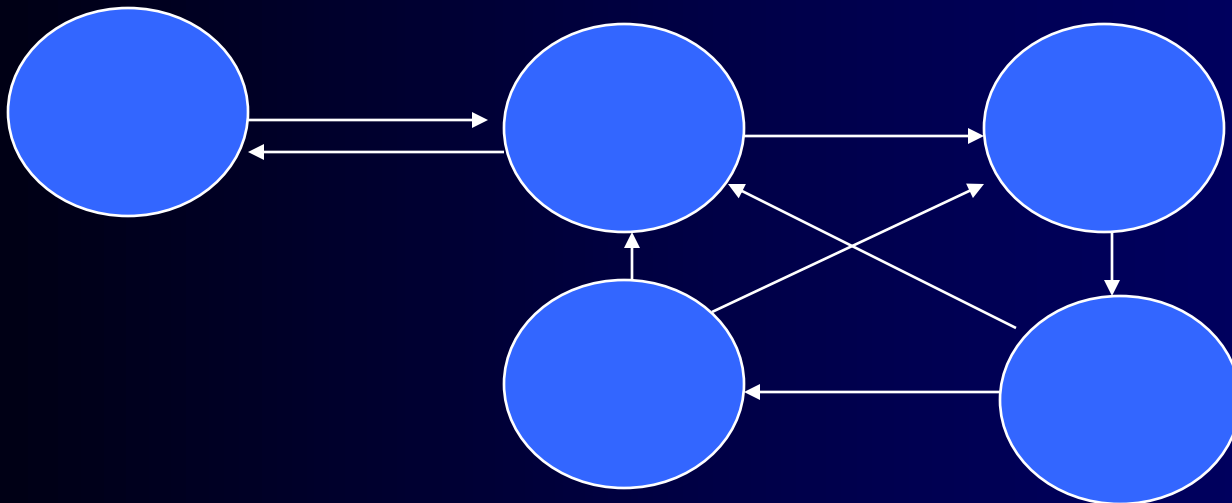
- What perspective does the player have of the world?
- First-person
 - Doom, Quake, ...
- Third-person
 - Tomb Raider
- Side scrolling
 - Sonic
- Aerial – isometric/top-down
 - Isometric: Starcraft, Football
 - Top down: Total Annihilation
- Context sensitive
 - Resident Evil

Example of Multiple Game Modes

- **Dungeon Keeper**
 - Management – isometric, omnipresent, strategic
 - Map mode – top-down, omnipresent, few actions
 - Possession – first-person, avatar, tactical
- **Soccer**
 - Management - FIFA
 - Play calling – isometric, omnipresent, strategic
 - Play execution – isometric/first-person, avatar, tactical
- **Sid Meier's Pirates!**
 - Sea/islad map: isometric, omnipresent, strategic
 - City map: top down, omnipresent, stealth
 - Duel/Dance: first person, avatar, tactical

Game Structure

- The relationship between modes (game states)
- Some entered by explicit choice
- Some entered as part of natural progression
- State diagram:



4. Game Setting Dimensions

- A. Physical
- B. Temporal
- C. Environmental
- D. Emotional
- E. Ethical
- F. “Realism” (Abstract vs. Representational)

Setting: The Physical Dimension

- Dimensionality
 - 2-D, 3-D, 4-D (multiple 3-D spaces)
 - Don't choose 3-D just because it is *cool!*
- Scale
 - How big is the world?
 - How big are things relative to each other?
- Boundaries
 - What happens at the edge of the world?
 - Does it harm suspension of disbelief?

Setting: The Temporal Dimension

- Is time meaningful?
 - Does the passage of time *itself* change the game?
 - Can be merely cosmetic
- Real time or turn based?
- Variable time
 - In *The Sims*, time speeds up while people sleep
- Anomalous time
 - Time goes faster for some things than others
- Can the player adjust time?
 - Often seen in flight simulators and RTS games

Setting: The Environmental Dimension

- Cultural context, in the anthropological sense
 - Beliefs, attitudes, values, social systems, family structure, key ceremonies and rituals, history
- Physical surroundings
 - Landscape, flora, fauna, weather, manmade items: buildings, vehicles, clothing, weaponry, furniture, art
- Level of detail
 - What can the player see? What can the player touch?
- Graphical Style
 - Style of the setting, but also style of your depiction

Setting: The Emotional Dimension

- Emotions of characters within the game
- Emotions you hope to inspire in the player
- Most games are not emotionally subtle
 - Emotions limited to “Yahoo!” and “Damn!”
- Consider others:
 - Jealousy, grief, anger, greed, disdain
- *How* will you inspire these emotions?

Setting: The Ethical Dimension

- In passive entertainment, viewer bring their own ethical system to the work
- In interactive entertainment, we give them one
- The victory condition defines what is “good”
- Players must conform to our morality to win
- Games get into trouble under two conditions:
 - A game is highly representational of the real world AND
 - Its ethics are highly disjoint from the real world
 - It is OK to kill aliens and robots realistically
 - It is OK to kill people unrealistically
 - but ...

5. Types of Challenges - 1

- Human vs. Human
- Human vs. Nature
- Human vs. God
- Human vs. Self
- Human vs. Machine

5. Types of Challenges - 2

- Physical Challenges
 - Speed and reaction time (twitch games)
 - Accuracy and precision (steering and shooting)
 - Timing and rhythm (dance games)
 - Learning special moves (fighting games)
- Races – achieving something first
- Logical challenges (puzzles)
 - Should be based on an underlying principle
 - Trial-and-error solution is a sign of bad design
- Exploration Challenges
 - Locked doors and traps
 - Mazes and illogical spaces
 - Teleporters

5. Types of Challenges - 3

- Conflict
 - Strategy, tactics, and logistics
 - Logistics (food for armies) is rarely used
 - Survival and reduction of enemy forces
 - Defending vulnerable items or units
 - Stealth
- Economic Challenges
 - Accumulating wealth or points
 - Efficient manufacturing
 - Achieving balance or stability in a system
 - Caring for living things within a system
- Conceptual Challenges
 - Understanding something new
 - Deduction, observation, interpretation
 - Detective games offer conceptual challenges

6. Core Mechanics

- Define the internal economy of the game
 - Most games have an internal economy
- Economy of a FPS
 - Resources: ammunition, hit points
 - Sources: clips, medical kits
 - Drains: firing weapons, being shot by enemy
- Economy of a RTS
 - ?
- You *balance* the game by adjusting sources and drains.

6. Mechanics: Game Balance

- Symmetry is fun for pure skill
 - All players have identical choices
 - Chess, most deathmatch games, ...
- Asymmetry is harder but can be more interesting
 - Starcraft, Warcraft, ...
- Need to insure that no race or strategy is unbeatable
 - Rock - Paper - Scissors model
 - Lots of playtesting
- Use positive and negative feedback to make game dynamic and avoid stalemate

7. Player Actions

- Actions directly on another player/character
 - Shooting, hitting, magic, conversation, ...
- Action on a shared object
 - Many sports
- Action through the environment
 - Racing, explorations
- Actions on the environment
 - Move, create, destroy structures
 - Change physics of environment?
- Actions on self
 - Power-ups

8. Dynamics

- How does the game change overtime?
- People learn
 - They get faster (power law of practice)
 - They make better decisions
- If they stop learning, they often get bored.
- How does your game change so they can change the way they play the game?
 - Big changes
 - Medium changes
 - Small changes

Gameplay

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