

Game Design

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Anatomy of a Game

Anatomy of a game

- What is a game?
- What makes a game?
- What kinds of games are there?
- What is a game made of?
- How do you make a game?



What Is a Game?

- There can be no precise definition of a game
 - Games form a family, and have various similarities, such as the members of the same family have
 - Some of these feature sets overlap, but it is possible that some games have nothing in common

What Is a Game?

- Even good definitions are not complete
 - *A game is a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome [1]*
 - By this definition, D&D is NOT a game

Why Do You Play Games?

- *The role of the game designer is, first and foremost, to be an advocate for the player. The game designer must look at the world of games through the player's eyes. [2]*
 - **Solid gameplay** is what makes a game great



How Do You Make Games?

- Game mechanics must be developed with the player experience at the center of the process
- Determine what you want the player to experience and iterate toward that goal

Player Experience

- Examples

- Players should work together in order to win (raids or dungeons in WoW)
- Players can do whatever they choose, in any order they choose (sandboxes such as Minecraft)
- Players should feel relaxed and happy rather than be in a competition (Sims, Farmville)



Building a Game

- Once the desired player experience is set, iterate towards the complete game
 - Prototype gameplay systems
 - Build gameplay systems
 - Test gameplay
 - If results are negative, redefine gameplay systems
 - If results show improvement, keep iterating on building gameplay
 - Repeat until gameplay seems to satisfy player experience goals.

What Are Games Made Of?

- Formal Elements – define the structure of a game
 - Players, Objectives, Procedures, Rules, Resources, Conflict, Boundaries, Outcome
- Dramatic Elements
 - Challenge, Play, Premise, Character, Story, World Building, The Dramatic Arc
- System Dynamics
 - Games as Systems, System Dynamics, Interacting with Systems, Tuning Game Systems

Formal Elements: Players

- The interactive bit of our work
 - Start of play
 - Number of players
 - Roles



Formal Elements: Players

- Types of player interaction
 - Single player PvE – player versus environment (Witcher, Desperados, Solitaire)
 - Multiplayer individual PvE (solo questing in WoW)
 - Cooperative PvE (raiding in WoW, Portal 2)
 - Individual PvP (Fortnite, Starcraft)
 - Cooperative PvP (Dota, CS:GO)

Formal Elements: Objectives

- Define what the players are trying to achieve within the framework and the rule set of the game
- All objectives **MUST** be achievable but not all need to be as difficult



Formal Elements: Types of Objectives

- **Capture** – take or destroy something of the opponent's without being captured or destroyed (chess, RTS games)
- **Chase** – catch or evade an opponent (GTA)
- **Race** – reach a goal before other players (NFS)
- **Alignment** – arrange pieces in a certain pattern (Bejeweled, Candy Crush, Connect 4)
- **Rescue or Escape** – get a defined unit or piece to safety (XCOM, Prince of Persia)

Formal Elements: Types of Objectives

- **Forbidden act** – get the opponent to break the rules (Twister)
- **Building** – build, create or maintain structures (Zeus, Cities: Skylines)
- **Exploration** – explore the game area; it is usually paired with other objectives (Red Dead Redemption)
- **Solution** – solve a puzzle or problem (Secret of Monkey Island)
- **Outwit** – gain and use knowledge to defeat opponents (Diplomacy)

Formal Elements: Procedures

- The methods of play and the types of actions that can be performed by players
 - Performed via controls
- Defining procedures:
 - Types of IO devices
 - Position with regards to the screen



Formal Elements: Rules

- Define the framework of play
- Define what actions are permitted to the player
- Define objects, concepts, effects



Formal Elements: Resources

- Assets such as chips in poker, minerals in SC2, etc.
- Resources need to be
 - Useful
 - Scarce



Formal Elements: Types of Resources

- Lives (Space Invaders, Super Mario Bros.)
- Units (SC2)
- Health (XCOM)
- Currency (FarCry)
- Actions, moves, turns (D&D, XCOM)
- Power-Ups (Super Mario Bros., FarCry)
- Inventory slots (Witcher3)
- Special Terrain (SC2)
- Time (chess)

Formal Elements: Conflict

- Occurs when the players attempt to achieve goals within the game rules and boundaries
 - Player need to employ certain skills in order to comply to the game framework
 - Conflict needs to be enjoyable so that the players will have the sense of achievement

Formal Elements: Sources of Conflict

- Opponents
 - NPCs in FarCry5
 - PCs in PUBG
- Dilemmas
 - Raise or fold in Poker
 - Choose an NPC in a quest
- Obstacles
 - Physical , such as platforms in a platformer
 - Mental, such as puzzles



Boundaries

- The border that separates the area of play from everything which is not the game
 - Borders of a football field, terrain hexes in Catan, etc



Formal Elements: Outcome

- Desired end state for a game
 - In many cases, determining a winner or winners
 - Not all games must produce a winner (WoW)
 - Not all games must have a clearly defined end state (Minecraft, D&D)
 - Emergent behavior: players defined their own desired end state



Further Reading

- Chapter 3: Working with Formal Elements from Fullerton, T., Game Design Workshop: A Playcentric Approach to Creating Innovative Games, CRC Press, 2014

Bibliography

1. Elias, G. F., Garfield, R. and Gutschera, K. R. Characteristics of Games, MIT Press, 2012
2. Fullerton, T., Game Design Workshop: A Playcentric Approach to Creating Innovative Games, CRC Press, 2014