

Week 5: System Dynamics

Games as Systems

A **System** is a set of interacting elements that form an integrated whole with a common goal or purpose.

Objects refer to entities with properties and behaviours.

Relationships may either be fixed or dynamic (where rules change).

Tractability

Tractable Games are simple games in which one can often find an optimal solution. They are easy to predict without playtesting and therefore creating an optimal AI is quite easy.

- All components are important
 - Minor changes to properties, behaviours, or relationships can lead to major gameplay changes.
- The sum is greater than its parts
 - Studying individual qualities != studying the system as a whole.

Intractable Games are more complex games that require simulation and playtesting to understand the result. Human and AI strategies must be derived from memory of previous games and simulating future possibilities/moves.

More objects, properties & behaviours == larger possibility spaces == less predictable != more fun

Game Economies

- Dynamics of Resources
 - Simple bartering
 - Complex bartering
 - Simple market
 - Complex market
 - Meta-economy

Emergent systems exist through complex behaviours that are composed of a number of simple rules.

Interacting with Systems

- Player Controls
 - Direct vs Indirect
 - The type of input should suit the game experience
- Information Structure
 - Hidden vs open vs mixed (Secret Hitler vs Tic-Tac-Toe vs Empire Earth)
- Feedback
 - **Reinforcing** where good play is rewarded (i.e. giving an extra turn for sinking the ball in pool)
 - **Balancing** where good play is countered in order to balance the game (i.e. handing over play after reaching black in pool)

Tuning Game Systems

1. Internally Complete (rules make sense, no loopholes)
2. Fair & balanced
3. Fun & Challenging

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Week 4: Working With Dramatic Elements

Challenge

Challenge is individualised and dynamic, meaning that each individual player has a certain set of skills and knowledge.

- **Flow Theory** is a theory that suggests that when a persons ability matches a challenge in the right kind of way, they will become lost sun the activity. If it is too challenging, the player will be frustrated and if their ability is too high, the player will become bored.
 - **Achieving Flow**
 - Challenging activity that requires flow
 - Merging of action and awareness
 - Clear goals and feedback
 - Concentration on the task at hand
 - Paradox of control
 - Loss of self-consciousness

- The **Number of Players** alters the kind of game that will be played.
 - **Roles of the Players** can be fixed, hidden, custom, etc... They will affect the way the player fits into the game world.
 - **Player Interaction Patterns** refer to the format of the player interaction, such as single-player, multiplayer teams, free-for-all, 1v1, etc...
- **Objectives** include capture, race, rescue, escape, forbidden act, construction, exploration, solution, outwit.
- **Procedures** govern who does what, where when and how
 - Common Types
 - **Starting Action** refer to actions that initiate play.
 - **Progression of Actions** are actions that take place throughout the game.
 - **Special Actions** may only take place under certain conditions.
 - **Resolving Actions** are actions that...
 - Defining Procedures - Environment
 - Digital games may have more complex procedures, however they should be handled in the background.
 - Player Interface
 - Other Physical Considerations
- **Rules**
 - Types
 - **Defining Objects & Concepts** refer to the properties of elements in the game.
 - **Restricting Actions** often exist to patch loopholes, protect the player and add challenge.
 - **Determining Effects** provide the effects of actions or events.
 - Defining Rules
 - Complexity
 - Intuitiveness
 - How do players learn?
 - How are rules enforced?
- **Resources**
 - Classic Types
 - Lives
 - Units
 - Health