Elements of Strategy

Game Design

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The Role of Skill in Games

A good game is **a series of interesting decisions**. The success of decisions is a measure of player skill.

- Good games cause players to **exercise their skills frequently** and reward them with **immediate and obvious feedback**.
- By constantly making decisions, the player enters a psychological state called "flow."
- It is an **optimal play state** and one designers work hard to achieve.

Types of Decisions

The extent that the player's **actions affect the outcome** of the game is broadly classified as "skill", as *opposed to factors outside of player influence*, called "chance" or "luck".

- The player **skill influence the outcome** of a game depending on the **decisions the game lets the players make**.
- The **player experience** involves making decisions that influence the game state.
- A **game designer should consider** what these decisions are, and **why making them is fun or interesting or compelling**.

Types of Decisions

When the winning decision is **obvious** the choice is **not compelling** because there is *no reason to make any other choice*.

Obvious Decisions

- When the decision is blindingly obvious, a designer can **remove the choice** and make it automatic.
- Or, to take an obvious decision and **add time pressure**, changing it from a strategic decision to a test of dexterity.

Types of Decisions

The only thing more **frustrating** than an obvious choice is **a choice with no right or wrong answers at all**.

Meaningless Decisions

- The choice has **no effect on the game's outcome**.
- It's usually better to **eliminate these from the game** entirely.
- The exception is related with the **player's perception**:
  - Some games offer a **narrative** that doesn't affect the overall outcome.
  - But the player perceives that it does, due to the way the game responds to those choices.
  - Only on **replaying the game** is obvious these choices had no effect.

Types of Decisions

Roulette has a real decision of what number to bet on:

- **Not obvious:** the answer if not known.
- **Not meaningless:** affects the outcome.
- But **not interesting:** no information to base the decision.

Only the hard cash reward makes the game **compelling**.

Blind Decisions

- Blind decisions can be turned into other kinds of decisions by **giving the player enough information**.
- **Ongoing decisions can be quite interesting** because they change as more information is revealed over time.

Types of Decisions

A tradeoff happens whenever a player doesn't have enough resources to accomplish all of his goals.

Tradeoffs

- No option is clearly "right" or "wrong" but each has advantages and disadvantages.
- All of a sudden this **feels like a real, important, choice**.
- If one option is clearly better it becomes an *obvious* choice.
- In a balanced choice the options are **weighed** so that there is no single best one that always "wins".

With several **viable paths** to victory, players must choose based on their **personal styles** and environmental factors in the game, the decisions made are **quite interesting**.

The Prisoner's Dilemma

- Two prisoners are **independently** asked which committed a crime.
- Each can choose to **cooperate** (saying nothing) or **defect** (denouncing the other).
  - If both cooperate: each pays a small penalty.
  - If both defect: each pays a big penalty.
  - If one cooperates but the other defects: the first pays the maximum penalty and the defector pays the minimum penalty.
- One (possible) **Payoff Matrix** is

	A cooperates	A defects
B cooperates	$-1, -1$	$0, -5$
B defects	$-5,\ 0$	$-2, -2$

- The **optimal joint state** is when both cooperate.
- But the **optimal player option** is defect, that avoids the maximum penalty.
- So, each player will defect and the **final state** is not *joint optimal*.
- This holds for one-shot games.
- But for iterated games, the dynamic become quite different!

Types of Decisions

A dilemma is a tradeoff where **all options will harm the player**.

Dilemmas

- Variations of *Prisoner's dilemma* are common in turn based strategy games.
- If a game poses **a series of these decisions** the dynamics change greatly.
- Adding **multiple players** also changes the dynamics, especially if players have the ability to *seek retribution* against those who defected.
- If players *don't know* who cooperated and who defected, that can likewise change things, bringing in **feelings of paranoia**.

Types of Decisions

Risk versus Reward, happens in situations that have multiple outcomes, but whose **level of risk is different**.

Risk Versus Reward Tradeoffs

- These kinds of tradeoffs are common in board games with dice, cards, or other random mechanics.
- Players often have the option of making a **safer move** with a smaller reward, or a **risky move** with a greater reward if it succeeds and a penalty if it fails.
- In these games, typically, **a player who is behind tends to take more risks** in order to catch up, while **a player in the lead prefers to play it safe** in order to preserve his lead.

Frequency of Anticipation of Decisions

A designer's goal, at the physical level, is to **keep the player's brain busy with possibilities**.

- The **frequency** with which the players make decisions is paramount.
- There are some cases where **decisions are not frequent**...
- ...but the **anticipation** of a known pending decision sustains the player with thoughts of what she *may* do when decision time rears its head.

Strategy and Tactics

A "grand strategy" is the overarching means to achieving an **ultimate, long-term goal**.

- A grand strategy consists of several **supporting strategies**, that must be performed in order to achieve the ultimate goal.
- "Tactics" are the **lowest-level micro-decisions** made when carrying out a strategy.
- Players make **strategic decisions** when planning for the *long term*, and **tactical decisions** when achieving *short-term* goals.
- **Tradeoffs** make for interesting strategic or tactical decision-making.
  - Fast decisions ("twitch" mechanics) are limited to tactics.
  - So, "more strategic" games do better to focus on tradeoff decisions.
  - "More tactical" games can use tradeoffs or fast decisions, with very different gameplay.

Completely Skill-Based Games

Pure skill games have **no chance** elements thus can be "solved".

- Games that focus on strategy and tradeoffs tend to have at least some elements of chance.
- In **pure skill** games, decisions once interesting can become *known* and therefore obvious.
- Designing a pure-skill game requires that there be enough **depth of choices** in the game that it cannot easily be solved.
- Many pure skill games are **physically based action** games.
  - Unlike tradeoff decisions, it is not about getting the right answer but getting it **quickly**.
  - Human reaction time can continue improving over time forever, especially in games where humans play against each other.

Mechanics of Skill

Players **bid some resource in order to earn an item**. The winner of the auction pays his bid and takes the item.

Tradeoff Mechanics | Auctions

- Open auction: players call out bids at any time, each one being higher than the last, until everyone is silent.
- Sequential auction: players make a bid in turn order.
- Silent or Closed auction: players make their bids simultaneously and in secret.

Mechanics of Skill

Tradeoff Mechanics | Auctions

- Fixed-price auction: the item is offered at a named price; the first player to accept the price gets the item.
- Dutch auction: offer the item at an initial high price, that falls over time until a player accepts the current value.
- Reverse auction: the item is a disadvantage and players bid to avoid it.

Designers can vary auction mechanics. For example:

- Items can be grouped into lots.
- Multiple auctions at once lead players to resource management.
- All players can loose their bids.
- The second-highest bidder gets a lesser item.
- The auction winner pays to some or all the losers.

Mechanics of Skill

Players have the ability to purchase items, abilities, or actions at fixed prices.

Tradeoff Mechanics | Purchases

The **choices** come from *which stuff and when* to purchase.

- The players will be limited in the currency used to make the purchases.
- The resource is limited.
- The item may not be available later in the game.

Mechanics of Skill

Special abilities give players the ability to break the standard rules of the game in specific ways.

Tradeoff Mechanics | Limited-Use Special Abilities

- Players can gain advantages only once (or twice, or n times).
- The choice of **when** to use that ability becomes a compelling decision.
- Use it **now** or will there be a **better** use later?

Mechanics of Skill

The strategic nature of the decision is amplified by varying the strength of special abilities based on space, time, location, or some other factor.

Tradeoff Mechanics | Dynamic Limited-Use Special Abilities

- Using it now or saving it until later presents the player with an interesting decision.
- Weighing the **immediate benefit against larger future rewards** isn't always an obvious decision.

Mechanics of Skill

Simple, immediate, choice between clear options.

Tradeoff Mechanics | Explicit Choices

- A game gives a choice to a player, making clear the effects of each option.
- The player must then **weight the relative values** of the options.

Mechanics of Skill

Managing allocation of resources.

Tradeoff Mechanics | Limited Actions

- Having only one "avatar" all actions are taken by that character.
- When the player controls many avatars, choosing which one takes which action becomes a difficult decision.
- For example, in board games.

Mechanics of Skill

Whenever multiple players are working together toward mutual goals, a whole host of social choices come into play. There's the mix of **cooperation versus competition**.

Tradeoff Mechanics | Trading and Negotiation

- Alliances can be forged and broken.
- Promises of future considerations in exchange for help at present can be made.
  - formally binding,
  - non-binding,
  - or else with a penalty when the contract is broken
- There are even the **metagame considerations** of the social relationships of the players outside of the game itself.
  - one plays a board game differently with close friends than with total strangers.

Strategic Evaluation

How do game designers **assess the success of the strategy and tactics** they hoped to create?

- A designer can gather a lot of information by interviewing players or watching them play.
- The level of strategy in your game should **fit the audience's desire** for the same.

Strategic Evaluation

A strategic game requires players to care about the outcomes of each player's move, because those moves will, in turn, affect their move.

Do players care when other players are taking their turn?

- In a game with a high degree of strategy, players are reluctant to leave the table, let alone the room.
- They are **constantly reassessing the play state** as each player takes his or her turn.

Strategic Evaluation

Strategic games invite the player to form strategies that can be carried out over multiple turns.

Are players making long-term plans?

- If players are stifled by the existing mechanics of the game or allowed too much latitude, they may be **unable to see how their strategy could be sustained or achieved** over multiple turns.
- When playing a game, ask the players what they plan to do or how they think they will win the game.
- These answers usually reveal a strategy or lack thereof.

Strategic Evaluation

The more rich the strategic opportunities are, the more diverse the answers will be.

Are there multiple strategies for multiple games?

- At the beginning of any given game, the player should have an idea of how he will approach the play of the game.
- A player may have literally dozens of different strategies to play against different players or to compensate for different starting states.