

TJ

Title: "Strategic Duels: A Game Theory Analysis of Yu-Gi-Oh! Players and Monsters"

Yu-Gi-Oh! Overview:

Yu-Gi-Oh! is a globally renowned trading card game that originated from the Japanese manga series created by Kazuki Takahashi. The game was first introduced in 1999 and has since captivated players of all ages worldwide. Yu-Gi-Oh! combines elements of strategy, skill, and a touch of chance in an engaging and competitive card game format.

Gameplay Basics:

- **Deck Construction:** Players build their decks from a vast array of cards, each representing monsters, spells, and traps. Decks are customized to suit individual playing styles and strategies.
- **Duel Format:** Duels are one-on-one battles between two players, each with their deck of cards. The objective is to reduce the opponent's life points to zero.
- **Monster, Spell, and Trap Cards:** Cards are divided into three main types—monsters, spells, and traps. Monsters engage in battles, spells provide various effects, and traps offer strategic defenses or surprises.
- **Turn Structure:** Each player takes turns drawing cards, summoning monsters, casting spells, and setting traps. Timing and sequencing are crucial, creating a dynamic and evolving battlefield.

Strategic Depth and Decision-Making:

- **Deck Building Strategy:**
 - Players must carefully construct decks that balance offensive and defensive capabilities. The choice of monsters, spells, and traps influences the overall strategy and synergy within the deck.
- **Resource Management:**
 - Players must manage resources such as life points, cards in hand, and the state of the playing field. Optimal resource allocation is key to sustaining a competitive advantage.
- **Adaptability:**
 - Yu-Gi-Oh! offers a vast card pool with frequent additions, requiring players to stay adaptable and adjust their strategies based on new card releases and evolving metagames.
- **Bluffing and Mind Games:**
 - Bluffing plays a significant role in duels. Players may set face-down cards, creating uncertainty about their intentions. Predicting opponents' moves and making strategic bluffs are crucial elements of the game.
- **Combo and Synergy:**
 - Successful players leverage card combos and synergies to create powerful plays. Understanding the interactions between different cards and orchestrating combos adds depth to strategic decision-making.
- **Risk and Reward:**
 - Every action in Yu-Gi-Oh! involves an inherent risk. Players must assess the potential rewards and drawbacks of their decisions,

whether it's an aggressive attack, a defensive move, or activating a powerful card effect.

- **Continuous Learning:**
 - Yu-Gi-Oh! constantly evolves with new card releases and rule adjustments. Successful players engage in continuous learning, adapting their strategies to the ever-changing landscape of the game.

In our case:

Players: are the decision makers (Cards owners)

Strategies: are the monsters

Pay-offs: Life points

Methodology:

Case1: Choosing n monsters to be n strategies for the 2 players (same ones)

Case2: Choosing n monsters to be n strategies for the 2 players (different ones)

1. Establishing the Payoff Values:

- Blue-Eyes White Dragon (BEWD)
- Dark Magician (DM)
- Red-Eyes Black Dragon (REBD)
- Elemental HERO Neos (Neos)
- Cyber Dragon (Cyber)

a. Blue-Eyes White Dragon (BEWD):

- **BEWD vs. BEWD:** A neutral interaction where

both players choose the same monster. (0, 0)

- **BEWD vs. DM:** A slightly unfavorable scenario for BEWD. (-1, 1)
- **BEWD vs. REBD:** A favorable scenario for BEWD. (2, -2)
- **BEWD vs. Neos:** A moderately unfavorable scenario for BEWD. (-2, 2)
- **BEWD vs. Cyber:** A favorable scenario for BEWD. (3, -3)

b. Dark Magician (DM):

- **DM vs. BEWD:** A slightly favorable scenario for DM. (1, -1)
- **DM vs. DM:** A neutral interaction where both players choose the same monster. (0, 0)
- **DM vs. REBD:** An unfavorable scenario for DM. (-3, 3)
- **DM vs. Neos:** A moderately favorable scenario for DM. (2, -2)
- **DM vs. Cyber:** A moderately unfavorable scenario for DM. (-2, 2)

c. Red-Eyes Black Dragon (REBD):

- **REBD vs. BEWD:** An unfavorable scenario for REBD. (-2, 2)
- **REBD vs. DM:** A favorable scenario for REBD. (3, -3)
- **REBD vs. REBD:** A neutral interaction where both players choose the same monster. (0, 0)
- **REBD vs. Neos:** A moderately unfavorable scenario for REBD. (-1, 1)
- **REBD vs. Cyber:** A moderately favorable scenario for REBD. (1, -1)

d. Elemental HERO Neos (Neos):

- **Neos vs. BEWD:** A moderately favorable scenario for Neos. (2, -2)
- **Neos vs. DM:** A slightly unfavorable scenario for Neos. (-2, 2)
- **Neos vs. REBD:** A moderately unfavorable scenario for Neos. (-1, 1)
- **Neos vs. Neos:** A neutral interaction where both players choose the same monster. (0, 0)
- **Neos vs. Cyber:** A favorable scenario for Neos. (3, -3)

e. Cyber Dragon (Cyber):

- **Cyber vs. BEWD:** An unfavorable scenario for Cyber. (-3, 3)
- **Cyber vs. DM:** A moderately favorable scenario for Cyber. (2, -2)
- **Cyber vs. REBD:** A moderately unfavorable scenario for Cyber. (-1, 1)
- **Cyber vs. Neos:** A favorable scenario for Cyber. (3, -3)
- **Cyber vs. Cyber:** A neutral interaction where both players choose the same monster. (0, 0)

2. Interpretation:

The payoffs in each cell of the matrix represent the outcomes for Player 1 and Player 2 based on their chosen monsters. Positive numbers indicate life point gains, and negative numbers indicate life point losses. These values are determined by considering the thematic strengths and weaknesses of the chosen monsters and the strategic interactions between them in the context of a Yu-Gi-Oh! duel. Players can use this matrix to make informed decisions and optimize their strategies during gameplay.

Player 1 / Player 2	BEWD	DM	REBD	Neos	Cyber
BEWD	(0, 0)	(-1, 1)	(2, -2)	(-2, 2)	(3, -3)
DM	(1, -1)	(0, 0)	(-3, 3)	(2, -2)	(-2, 2)
REBD	(-2, 2)	(3, -3)	(0, 0)	(-1, 1)	(1, -1)
Neos	(2, -2)	(-2, 2)	(1, -1)	(0, 0)	(-3, 3)
Cyber	(-3, 3)	(2, -2)	(-1, 1)	(3, -3)	(0, 0)