Board Game Design and The Psychology of Loss Aversion

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Ludology

Game Designs

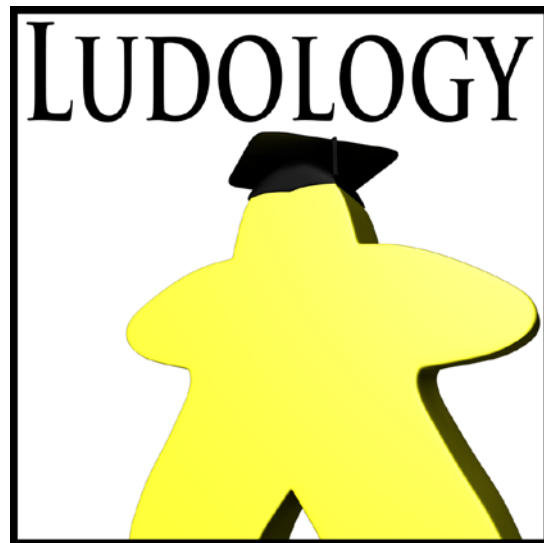- Space Cadets
- The Ares Project
- Dragon & Flagon
- The Fog of War
- The Expanse

Podcasts

- The Dice Tower
- Ludology

- NYU Game Center

Loss Aversion

Loss Aversion

Gaining something feels good.
Losing the same thing feels worse.

Gain $10 ☺

Loss Aversion

- Losses are 2x more intense than Gains
  - Kahneman and Tverskey: 1984
- First applied to economics
- Fundamental to many human behaviors

Purpose of this talk:

Give you tools to manipulate player emotion and experience. Not to say players should always feel positive emotions.

Sometimes you want to make players feel anxious or fearful or angry or sad.

Game Time!

- ## Choice A:
  - ### Guaranteed to get $3,000

- ## Choice B:
  - ### 80% chance to get $4,000
  - ### 20% chance to get $0

Hint: Expectation value of Choice B is $3,200

UBM

- # Choice A:
  - ## Guaranteed to get $3,000

80% Choose A

- # Choice B:
  - ## 80% chance to get $4,000
  - ## 20% chance to get $0

Hint: Expectation value of Choice B is $3,200

- ## Choice A:
  - ### Guaranteed to lose $3,000

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Hint: Expectation value of Choice B is $3,200

- ## Choice A:
  - ### Guaranteed to lose $3,000

- ## Choice B:
  - ### 80% chance to lose $4,000
  - ### 20% chance to lose $0

72% Choose B

Hint: Expectation value of Choice B is $3,200

Take-Away

- People will take a sure gain over a gamble
- People will gamble to avoid a sure loss

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Tracking

I see the use of Tracking, but psychologically I've always disliked the idea of burning two cards to get a third. If I put a card in my deck it means I wanted to use it, not to discard it in favour of something else. If I want to draw a card, I can Flare instead. ((user gbrading))

Tracking: Burn 2 other cards to draw 1 and possibly lose key parts of your deck! ((user SpaceMonke575)

Alternate Effect:

Look at the top three cards of your deck. Keep one and shuffle the other two back into your deck.

Then discard the bottom two cards in your deck, without looking at them.

Case Study: Level Draining

I was discussing level draining the other day with my D&D group. My players are adamantly opposed to the concept of level draining undead. I never used to be. In fact, I was thinking "come on, pansies! This is part of the game. Deal with it!" After all, it can't be THAT bad. It's a hallmark of old school gaming. Watch out for that Wight!

Reader 'brendan' responded:

I used to feel this way, but I've since come around (somewhat) to the idea of level draining. This mostly came from reading somewhere that level-draining monsters are not creatures to be fought, they are obstacles to be avoided (if used correctly). **_There is little you can do in D&D to viscerally terrify players, but for whatever reason level draining does it._** *And undead are supposed to be terrifying.*

Case Study: Level Draining

And a later comment on the same thread, from 'George':

*All versions of D&D have some form of raise dead. But not all versions have restoration. And to many players, they would rather die than lose 50% of their XP. **Maybe that is a more emotional than sensible reaction, but many players feel that way**.*

And Joshua chimes in later in the thread:

*While it is a pain in the ass, because yes, as you've pointed out, that is a lot of XP gone! Especially considering how much IRL time/campaign progress can be lost with one good hit. **But what I've always liked about the level drain is just how personal that loss can be; as if part of the character's life truly was just ripped away forever, lessening them for it**.*

History of D&D and Level Draining

- **AD&D:** Level draining is an undead ability. No save allowed.

- **Third Edition:** Saving roll allowed, but if failed, level permanently lost.

- **Fourth Edition:** Level draining eliminated.

- **Pathfinder (3.5+):** Also eliminated level draining.

Giving something to a player and then taking it away is very emotional.

Much worse than never giving it to them in the first place.

Case Study:

Deal or No Deal

Case Study: Deal or No Deal

Banker ALWAYS offers less than expected value

So why does anyone take the offer?
Why is it interesting to watch?

Case Study: Deal or No Deal

- Utility Theory
  - $1,000,000 is just as life-changing as $2,000,000

- Choice A:
  - Guaranteed to get $3,000

- Choice B:
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  - 20% chance to get $0

- Choice A:
  - Guaranteed to get $3,000
- Choice B:
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  - 20% chance to get $0

Same mental space for most.

Game Time!

- ## Choice A:
  - ### 200 people will be saved

- ## Choice B:
  - ### 1/3 chance that all 600 are saved
  - ### 2/3 chance that no people are saved

- Choice A:
  - 200 people will be saved

72% Choose A

- Choice B:
  - 1/3 chance that all 600 are saved
  - 2/3 chance that no people are saved

- Choice C:
  - 400 people will die

- Choice D:
  - 1/3 chance that no one dies
  - 2/3 chance that 600 people die

- Choice C:
  - 400 people will die

- Choice D: **78% Choose A**
  - 1/3 chance that no one dies
  - 2/3 chance that 600 people die

- Choice A:
  - **200 people will be saved**
- Choice B:
  - **1/3 chance that all 600 are saved**
  - **2/3 chance that no people are saved**
- Choice C:
  - **400 people will die**
- Choice D:
  - **1/3 chance that no one dies**
  - **2/3 chance that 600 people die**

72% Choose A

- Choice A:
  - **200 people will be saved**
- Choice B:
  - **1/3 chance that all 600 are saved**
  - **2/3 chance that no people are saved**
- Choice C:
  - **400 people will die**
- Choice D:
  - **1/3 chance that no one dies**
  - **2/3 chance that 600 people die**

SAME!

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Framing

So what's a gain or a loss?

- Choice A:
  - **200 people will be saved**
- Choice B:
  - **1/3 chance that all 600 are saved**
  - **2/3 chance that no people are saved**
- Choice C:
  - **400 people will die**
- Choice D:
  - **1/3 chance that no one dies**
  - **2/3 chance that 600 people die**

Loaded Words

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Framing in a Board Game

- Penalty Points
- How to handle?

Shifting Away from Losses

- Old school design arcs:
  - Gain then lose
  - Monopoly
  - Risk
- European school (1990's)
  - Players are building
  - End up with more than you started
  - Catan – Longest Road / Largest Army

Casinos

Given Loss Aversion, why do people game in casinos?

Casino Strategies

- Chips

- Jackpots
  - People overestimate their chances

- Choice A:
  - Guaranteed to lose nothing

- Choice B:
  - 99.9999% chance to lose $1
  - 0.00001% chance to gain $500,000

Hint: Expectation value of Choice B is -$0.50

Chips and Tokens

- The 'chips' strategy is often used by online games
  - League of Legends "Riot Points"

Case Study:

Chicago Teacher Bonus Study (2012)

Chicago Bonus Study

- Group #1:
  - No performance-based bonus
- Group #2:
  - Bonus awarded if students improve test scores
- Group #3:
  - Received bonus at start of year. Had to give it back if students did not improve.

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Chicago Bonus Study

- Group #1:
  - No performance-based bonus
- Group #2:
  - Bonus awarded if students improve test scores
- Group #3:   **← Only group to improve**
  - Received bonus at start of year. Had to give it back if students did not improve.

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Problems with this study

- Novelty factor
- Implementing on a large scale
- Beware of studies

Game Idea

- Pick-up and Deliver game
- Players are paid IN ADVANCE for contracts. If they fail to complete within X turns, they need to give the money back.

Game Time!

Regret

Regret

- Equal Value: 10% switch
- 3x Value: 50% switch
- 10x Value: 90% switch

Regret

- Switching to a wrong choice feels **three times** as bad as sticking with an initial choice

- Multiple choice tests: Go with your first instincts: *probably about avoiding regret.*

Game Time!

Roll a Die – Even or Odd

- Choice A:
  - You make your pick (even or odd)
  - Then I roll the die
- Choice B:
  - I roll the die but don't show you the result
  - You make your pick (even or odd)

Roll a Die – Even or Odd

67% Choose A

- Choice A:
  - You make your pick (even or odd)
  - Then I roll the die
- Choice B:
  - I roll the die but don't show you the result
  - You make your pick (even or odd)

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Competence

Amount known in proportion to
whatever can be known

(Tversky & Heath)

Game Design Example

- One player plays Attack Card (hidden):
  - **Punch**
  - **Kick**
- Other player plays a Defense Card (hidden)
  - **Block Punch**
  - **Block Kick**
- Would you rather:
  - Play your card first?
  - Play your card second?

Too Many Choices is BAD

- When choices get to more than seven, decision-making ability plummets

- People will avoid making a decision rather than make a wrong one

Too Many Choices is BAD

- When choices get to more than seven, decision-making ability plummets
- People will avoid making a decision rather than make a wrong one

    Loss Aversion

Too Many Choices is BAD

- 401K Study
  - Investment Options
  - More options is better, right?
  - For every five choices, plan participation dropped by 2%

Struggle of Empires (Wallace, 2004)

Endowment Effect

Endowment Effect

- Once people "have" something, Loss Aversion kicks in.
  - Endowed Progress
  - Sunk Costs
  - Investment Holdings

Rifleman's Creed

This is my rifle.

There are many like it, but this one is mine.

Endowment Effect

- Give your players something tangible
  - Weapon
  - Sidekick
  - Pet

Endowment Effect

- Give your players something tangible
  - Weapon
  - Sidekick
  - Pet
- *Then threaten to take it away*

Endowed Progress

Car Wash Study (Nunes-Dreze 2006)

Eight punches = free car wash
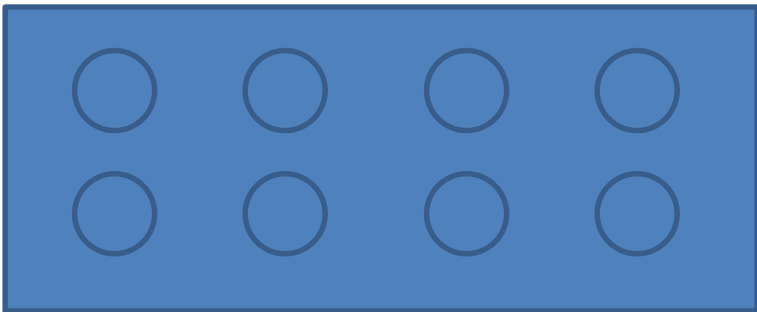
Ten punches = free car wash.
Two 'starter' punches

Car Wash Study
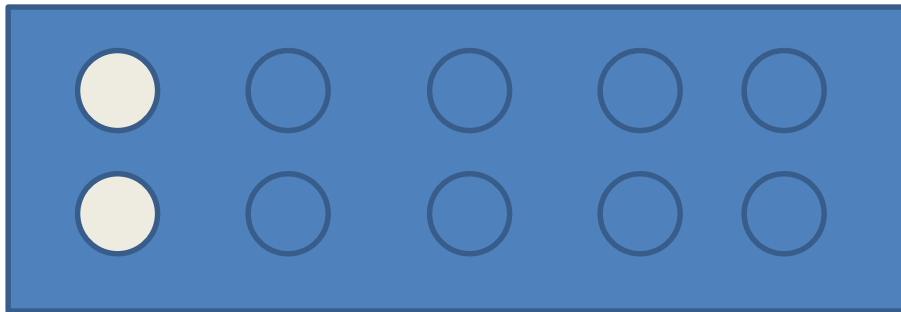
- People felt 'invested' in the progress they were given.
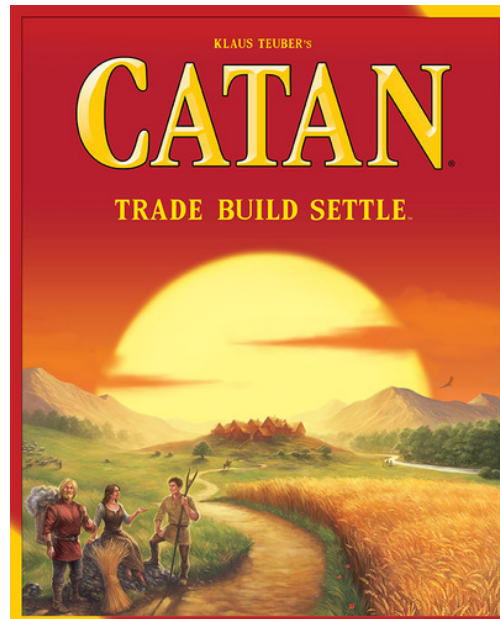
- They were afraid to lose what they had received.

The Settlers of Catan

- 10 VP for win
- Players start with 2 VP
- Important to have a goal – not just highest.

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