**Game Theory**

Prisoner’s Dilemma

- what is “rational” play?
- what is optimal play?
- you have to assume that the other player the same decision that you will – that’s one line of argument – so stick to your story
- the other line of reasoning says you should minimize your losses – so defect!
- “game theory has mostly stuck to economics – it’s marketable!”
- “it predicts people’s decisions better than probability”
- game theory for games works best for games designed for game theory
- let’s talk about some cheesy, annoying winning strategies
  - a lot of discussion about Super Smash Brothers…
- “degenerate strategies”
  - any game that allows “infinite” cycles of damage
- optimal strategies don’t allow for decision making, maybe skill
- so if you have a comprehensive possibility space (which applies to computer games too!) but there’s a narrow slice that guarantees a win, it’s a problem
- important when designing AIs
  - you can’t just take the optimal strategy
  - “what would a player do?”
  - if it’s really an optimal strategy, the game is impossibly hard
  - otherwise, it can be just too predictable
  - but players don’t like it when you “let” them win (as in trivially easy)
- it can be fun to lose!
- optimal alliances?