

Problem Set 2: More Static Game Theory

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1. Dominance and Pareto Dominance

Two actors, Stephen J. Seagull and Clod VandeCamp must decide how much effort to put into a movie they are making: each may provide either 0 or 1 unit of effort. If both provide an effort, the movie is a success and both get a utility (taking account of their effort) of x . If neither makes an effort they both get zero. If one makes an effort and the other doesn't, then the one who does not gets a utility of 2 and the one making the effort gets $x-2$. Consider two cases: $x=1$ and $x=3$. In each case, write the payoff matrix. Which outcomes are Pareto dominated by another outcome? What is predicted by the theory of dominant strategy equilibrium?

2. The Challenge

Stephen J. Seagull and Clod VandeCamp once again meet in a bar. Now Stephen must decide whether or not to challenge Clod to a duel. If he does not, both get a utility of 0. If Stephen does challenge Clod to a duel, Clod must decide whether to accept the challenge or leave the bar. If he leaves the bar, he gets a utility of -1 and Stephen gets a utility of 10. If he accepts the challenge, both get a utility of -5. Draw the extensive form of this game. Find the normal form. Find all the Nash equilibria. Find all the subgame perfect equilibria.

3. Forward Induction

Stephen J. Seagull must decide whether or not to start a new movie project. If he decides not to, he and Clod VandeCamp both get a utility of ten. If he decides to begin the project, both he and Clod must simultaneously decide who the director should be: George Spellbinder, or Ed Tree. If they disagree on the director, the movie isn't made, but both

have wasted time, so they get only a utility of zero. If they agree on George Spellbinder, the movie will be a roaring success, and each gets a utility of 20. If they agree on Ed Tree, the movie will be terrible, and they will only get a utility of 5. Draw the extensive form of this game. Find the normal form. Find all the Nash equilibria. Find all the subgame perfect equilibria. Apply the theory of iterated weak dominance.