Problem Set 1: Static Game Theory

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1. Chicken

Stephen J. Seagull and Clod VandeCamp meet in a bar. Each must choose between fighting the other, or losing face. If both lose face, both get a utility of 6. If both fight, both get a utility of 0. However, if one fights and the other loses face, the fighter gets 7, and the one who loses face only 2. Write out the payoff matrix for this game. What strategies are weakly or strongly dominated in this game?

2. First Price Auction

Stephen J. Seagull and Clod VandeCamp are the only bidders in an auction on a chinese jacket. The seller does not value the item, but Seagull would pay up to $20,000 for it, while VandeCamp will pay no more than $1,000. Both submit sealed bids, which can be for any of the following amounts: $0.00, $500, $1,000, $10,000, $20,000 or $25,000. In case of a tie, a coin is flipped to see who will get the jacket. Write payoff matrix for this game. What strategies are weakly or strongly dominated? Eliminate weakly dominated strategies, then apply iterated strong dominance. Apply iterated weak dominance.

3. 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 an 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?