Homework 1  PS 30  October 2016

1. Read “You Yawn, We All Yawn—And Empathy May Explain Why” by Alison McCook (available at the “Media Clips” link on the course website). Is the explanation here of why a person yawns a rational choice explanation? Why or why not?

2. Read “Which Price is Right?” by Charles Fishman (available at the “Media Clips” link). The article mentions a behavior which seems to be a violation of our simple model of individual choice as we defined it in class. Point out the behavior and explain why a rational choice model (at least the most obvious one) cannot capture this behavior. What do you think explains the behavior?

3. Read “Does Blanket ‘Don’t Go to Graduate School!’ Advice Ignore Race and Reality?” by Tressie McMillan Cottom (available at the “Media Clips” link). Can you make McMillan Cottom’s argument using our simple model of individual choice? Or is McMillan Cottom making a different kind of argument?

4. Say that you and a friend are meeting for lunch. Both you and your friend can either be late or on time. If both of you are on time, you each get a utility of 3. If one is on time and the other is late, the prompt one gets a utility of 1 (since she has to wait around doing nothing) and the tardy one gets a utility of 4 (since she doesn’t have to wait). However, if both are late, you don’t find each other and you each get a utility of 0.

   a. Model this as a strategic form game.

5. Say you and a friend each privately choose a whole number between 0 and 5 (that is: 0, 1, 2, 3, 4, or 5). If you both choose the same number, I will give you both that number times $100. If your number is exactly one less than your friend’s, however, you will get your friend’s number times $100 plus a bonus $100 and your friend will get nothing. Similarly, if your friend chooses a number exactly one less than yours, then your friend will get your number times $100 and you will get nothing.

   In any other case, both of you get nothing. So for example, if you both choose the number 5, I will give you both $500. If you choose 4 and your friend chooses 5, you will get $600 and your friend nothing. If you choose 3 and your friend chooses 2, then your get nothing and your friend gets $400. If you choose 3 and your friend chooses 5, you both get nothing.

   a. Model this as a strategic form game.

   b. Read the article “Hollywood’s Death Spiral” by Edward Jay Epstein on the web site. Can you use this game to think about the situation described in the article?
6. Ann and Bob are each trying to win a prize in a school raffle (lottery). Each can buy either 0, 1, 2, or 3 raffle tickets. Ann and Bob are the only two people in the raffle, and each ticket has an equal chance of winning. So for example, if Ann buys 2 tickets and Bob buys 3 tickets, then Ann has a 2/5 chance of winning and Bob has a 3/5 chance of winning (if no one buys any tickets, the raffle is cancelled). The prize is worth $60, and both Ann and Bob care about their “expected payoffs”: for example, if Ann has a 2/5 chance of winning, her expected payoff is $24. Model the following situations with strategic form games.

a. Say that raffle tickets are free. What does the game look like?

b. Now say that raffle tickets cost $6 each. What does the game look like?

c. Now say that raffle tickets cost $10 each. What does the game look like?

7. Say that Spy 1 is trying to listen in on Spy 2. There are three rooms, A, B, and C, arranged in a line like this: A—B—C. In other words, A is on the left, B is in the middle, and C is on the right. Each spy must decide independently and simultaneously which room to enter. Their payoffs are determined as follows. If they both choose the same room, then they will see each other, a bloody gun battle will ensue, and both get payoff −10. If they are in adjacent rooms (for example, if Spy 1 is in room A and Spy 2 is in room B) then Spy 1 can set up her eavesdropping equipment and can intercept Spy 2’s communications; hence Spy 1 gets a payoff of 5 and Spy 2 gets a payoff of −5. If they are not in adjacent rooms and they are not in the same room (for example, if Spy 1 is in room A and Spy 2 is in room C) then the distance between them is too great for the eavesdropping equipment to work; Spy 1 gets no secrets and Spy 2 gets to keep hers, and so both get a payoff of 0.

a. Model this as a strategic form game.

8. Say that persons 1, 2, and 3 each decide whether to go to restaurant A or restaurant B. Person 1 wants the dinner group to be as large as possible. For person 1, the worst thing is if she goes to a restaurant alone, the best thing is if all three go to the same place, and going with one person (it doesn’t matter which) is OK, neither best or worst. Person 2 is the exact opposite; she wants the dinner group to be as small as possible. All person 3 cares about is going to the same place as person 1, since he likes person 1.

a. Model this as a strategic form game.

b. Now say that person 3 loses interest in person 1 and becomes grouchy like person 2. Model this as a strategic form game.

9. Say that there are two people, a security guard and a thief. The security guard can either be vigilant or relax. The thief can either steal or do nothing. If the guard is vigilant, then the thief would rather do nothing than steal. If the guard is relaxed, however, the thief would rather steal than do nothing. If the thief steals, the guard would rather be vigilant than be relaxed. If the thief does nothing, however, the guard would rather be relaxed than vigilant.

a. Model this as a strategic form game. Feel free to choose payoffs which make sense to you.

11. In the movie *Return to Paradise* (see the “Media Clips” link), Sheriff, Tony, and Lewis went to Malaysia and did various illegal things. After Sheriff and Tony left, Lewis was charged and scheduled to be executed. If either Sheriff or Tony returns to Malaysia and admits shared responsibility, Lewis’s sentence will be reduced and he will live. If both Sheriff and Tony return, then each will have to serve three years in prison in Malaysia. If only one returns, then that person will have to serve six years in prison. The two players, Sheriff and Tony, can each either decide to go back to Malaysia or stay in New York. Model the situation as a game with two players (Sheriff and Tony). Feel free to choose payoffs which make sense to you (that’s what makes the problem kind of interesting).