Dis 3: Property Law [†]

1 Review: Property Law Concepts

- How to design an efficient property law system?

Goal	How To
Assign the ownership of rights efficiently	Private goods are privately owned; public goods are publicly owned
Allow owners to do efficient amount of things within their rights	Maximum liberty
Establish property rights efficiently	First possession vs. Tied ownership
When rights are violated, give out efficient remedies	Property rule vs. Liability rule vs. Inalienability

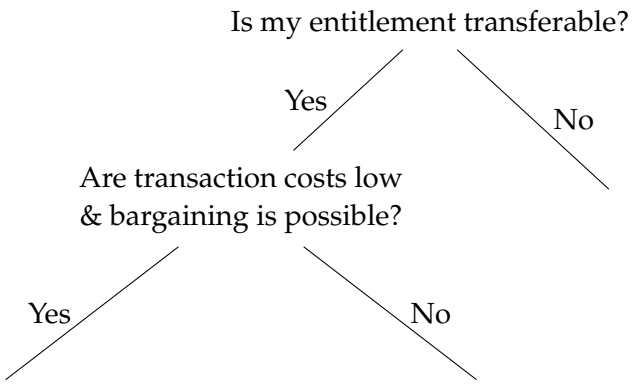
- Principles of establishing ownership
  - **First possession:** First person to capture a resource owns it (ex. Whoever kills a fox owns it)
    - Pro: Relatively simple to determine who possessed the property first.
    - Con: Incentivize people to enegage in preemptive possessory acts.
  - **Tied ownership:** Ownership is tied to something else to clear the property rights (ex. Whoever started chasing the fox first owns it)
    - Pro: Encourage efficient use of the resource.
    - Con: Difficult to establish and verify ownership rights (i.e. Costly to administer)
- Remedies for violation of entitlement
  - **Property rule / injunctive relief:**
  - **Liability rule / damages:**
  - **Inalienability:**

[†] Adapted from Jonathan Becker's Fall 2018 handout

Why do we want to use inalienability? Because the following exists:

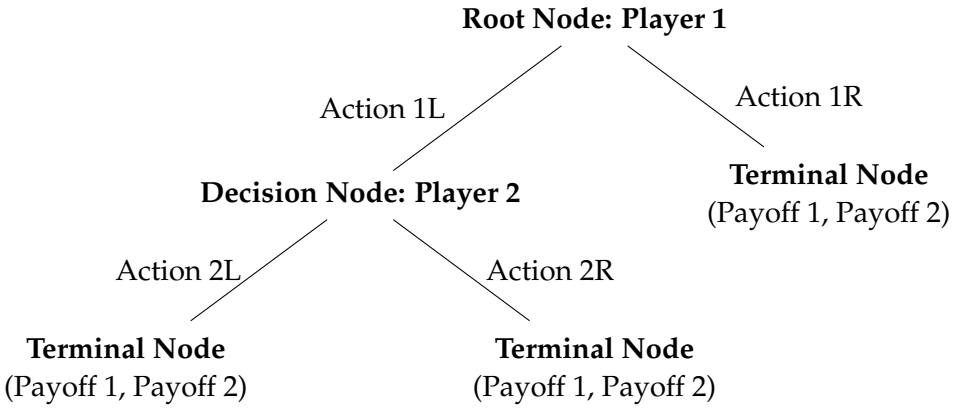
* **Allocative externalities:** Wrongfully allocated items incurs externalities to non-bargaining parties (ex. Selling enriched uranium leftover from experiments to a terrorist)
* **Indirect externalities:** Some complementary markets are affected by the trades in another market (ex. Human organs)
* **Paternalism:** Regulating conduct when people cannot be trusted to make optimal decisions (ex. Child selling kidney for an iPad)
* **Repugnant markets:** markets that are illegal because people think they are repugnant

When are each of these remedies efficient? (as a general rule of thumb)



2 Review: Extensive Form Games

- Components in an extensive form game:



- Assumptions:
  - **Common knowledge of rationality:** Players are rational. All players know that all players are rational. All players know that all players know that all players are rational ...
  - **Principle of sequential rationality:** When a player can count on the other players to behave rationally from any point forward.
- Solution:
  - **Subgame-Perfect Equilibrium (SPE):** When an equilibrium satisfies sequential rationality, we call it Subgame-Perfect.

    SPE require that all players play best-responses (Nash Equilibria) in each subgame.
  - **Backwards Induction:** Using rational belief about opponents' actions in future subgames to determine actions in the current subgame.

    That is, going from the last-stage subgame, figure out player's action based on payoff, then going backwards to see what the player would do one more stage before.

    Iteratively going backward gets us to the SPE.

3 Problems

1. (Adam the heavy smoker, continued)

   Adam is a heavy smoker. He obtains utility as a function of the number of cigarettes (X) he smokes and the amount of money (m_A) he has:

   $$U_A = 36X - 2X^2 + m_A$$

   The costs of smoking X cigarettes are $C(X) = X^2$.

   Bob, who is Adam's roommate, detests smoking. His utility is a decreasing function in the number of cigarettes Adam smokes:

   $$U_B = 128 - X^2 + m_B$$

   where m_B represents the amount of money Bob has.

   Assume that Adam and Bob each starts with a sufficiently large amount of money M, such that their budget constraints never bind.

   From last week's discussion, we learned the following:

	Adam has property rights, Bob attempts bargaining	Bob has property rights, Adam attempts bargaining
Pre-bargaining X	X = 6	
After-bargaining X	$X = 4.5$	
Adam's threat point	$U_A\,(X = 6, M - C(6))$ $= 108 + M$	
Bob's threat point	$U_B\,(X = 6, M)$ $= 92 + M$	
U_A after bargaining	$U_A\,(X = 4.5, M - C(4.5) + S)$ $= 101.25 + M + S$	
U_B after bargaining	$U_B\,(X = 4.5, M - S)$ $= 107.75 + M - S$	
Range of transfers S	$6.75 \leq S \leq 15.75$	
If gains split evenly	$S = 11.25$ $U_A = 112.5 + M$ $U_B = 96.5 + M$	

   (a) What happens when Bob has the property rights, and there is no impediment to bargaining? Fill in the blanks.

(b) Who should have property rights to the apartment according to Normative Coase approach? Who should have property rights to the apartment per Normative Hobbes approach?

Bob sues Adam to the court. The judge could give out one of the three rulings: injunction relief, damages, or ruling in favor of Adam.

(c) Suppose that Adam and Bob can negotiate. Which ruling is efficient? What happens under each ruling scenario? (Assuming that all surpluses are evenly split.)

(d) Suppose that Adam and Bob refuse to talk to each other and will simply carry out the court rulings. Which ruling is then more efficient?

2. (Adapted from Pedro Guinsburg's Fall 2016 handout)

   Gary owns the only bar in a village, and he makes about $2000 a month. One of his workers, Amy, is not happy with her $300 wage, and is thinking about leaving and opening her own bar.

   If Amy stays, Gary has two choices:

   - Give her a $200 raise, or
   - Pay her the same

   On the other hand, if Amy decides to leave, Gary can choose between:

   - Fight: compete with Amy and lower prices, in this case Gary will get $600, and Amy gets $200.
   - Share: share the market with Amy, in this case Gary will get $1200, and Amy gets $1000.

   (a) Find all (pure strategy) Nash equilibria.

   (b) Find all (pure strategy) Subgame-Perfect Equilibria.