

## Dis 4: Property Law (Cont'd) <sup>†</sup>

### 1 Problem on Extensive Form Games from Last Week

1. (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.

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<sup>†</sup>Adapted from Jonathan Becker's Fall 2018 handout

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

## 2 Review: Property Law Concepts

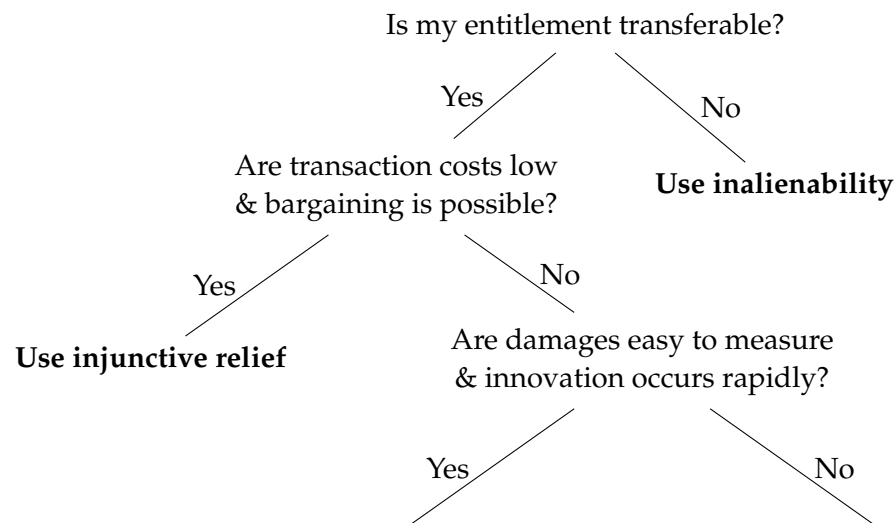
- More on remedies for violation of entitlement:

For **liability rule / damages**, we can divide compensatory damages into these two types:

– **Temporary damages:**

– **Permanent damages:**

Updated flowchart to determine when remedies efficient (as a general rule of thumb):



- Intellectual Property: Property rights applying to ideas or information.
  - **Patents:** Private monopolies on products or commercial processes.
    - \* TC: Expected to be high, due to uncertainties about the validity of a patent, about research outcome, and the high number of parties that might be involved.
    - \* Efficiency: Solves one inefficiency (underinvestment in R&D) by introducing another (DWL from giving patentholders monopoly control over their product).

- **Copyrights:** Property rights over original expressions.
  - \* Efficiency: Solving one inefficiency (underprovision of original expressions since they are non-excludable and non-rivalrous) by introducing another (lasting 70 years after creator's death – significantly hinders the creation of derivative works).
- **Trademarks:** Property rights over brand names or distinctive images/symbols.
- **Trade Secrets:** information “used in one's business” that gives its owner “an opportunity to obtain an advantage over competitors who do not know or use it.”

### 3 Review: Limitations to Property Rights

#### 3.1 Why we want to impose certain limitations on property rights?

- Limitations might result in **more efficient use of the property** (ex. Adverse possession, private necessity, eminent domain).
- Without said limitations, the efficient allocation might **never be achieved due to high TC when negotiating** (ex. Private necessity, unbundling restrictions, eminent domain)
- Limitations might lead to **the most efficient outcome we can get when facing certain tradeoffs** (ex. Regulation)

#### 3.2 Types of Limitation

- **Adverse possession (“Squatter’s Rights”)**: If someone occupies another person’s property for long enough, that person becomes the legal owner, provided the following conditions are met:
  1. Adversarial Use: The occupation was adverse to the owner’s interests.
  2. Open Use: The occupation was not concealed or conducted in secret.
  3. Uncontested Use: The owner did not object or take legal action.

Efficiency implication:

- Allow the land to be put into more efficient use, while clearing up uncertainty over time to lower TC for future bargaining
- On the down side, adverse possession incurs monitoring costs for property right owners so that they can protect their property
- **Private necessity**: In case of emergency, the law need not enforce property rights via injunctive relief.
  - Principles in Calabresi and Melamed (i.e. Use injunctive relief when TC are low; use damages when TC are high) still apply in here – during emergency, many of the standard bargaining costs are amplified, so it’s much more efficient to have the rights violated & pay damages instead.
- **Unbundling restrictions**: Restrictions on how a property right can be subdivided.
  - Pro: Unbundling might increase TC, as it increases uncertainty about rights and may increase number of parties involved in future transactions.
  - Con: Less usage of property compared with Maximum Liberty → inefficiency.
- **Eminent domain (Government takings)**: The right of the government to seize property for public use, at fair market value.
  - Pro: Address inefficiency when high TC lead to government undersupplying public goods.
  - Con: Exercise of eminent domain isn’t always efficient (homeowners often value their home more than fair market value; government corruption might lead to overuse of eminent domain)

Eminent domain should only be used when high TC preclude purchasing the necessary property through voluntary negotiation.

- **Regulations**: Exercising public control by imposing usage restrictions (ex. Zoning Laws).

Middle ground between *open access* (overutilization of public resource) and *unanimous consent* (underutilization of public resources).

## 4 Problems

1. In 2015, the Wisconsin Alumni Research Foundation (WARF) claimed that Apple's A-series chips infringed on its patent for a method of boosting the efficiency of integrated circuits, and claimed damages of \$862M. WARF was initially granted a damages payment less than what it has claimed, but the case was thrown out by the U.S. Federal Circuit Court of Appeals in Washington, D.C., and the U.S. Supreme Court declined to hear the case further in 2019, thereby upholding the Federal Circuit Court's decision.

During this process, Apple responded to the initial claim by saying its processor "worked differently than how WARF's patent did." And commenting on the decision by the U.S. Supreme Court, WARF spokesperson indicated the group's pursuit against Apple is "far from over." \*

- (a) Does the Coase theorem applies in here? Why?

The patent held by WARF was developed by a UW-Madison Computer Sciences Professor back in 1998. Suppose that Apple using the patented intellectual property in its A-series chip design has greatly improved their phone performance, and hence generated a total of \$100M surplus to everyone who has used the newly improved phone.

- (b) When the patent was granted in 1998, the U.S. was using the "first-to-invent" patent system (a patent is awarded to the person who first had the idea). Starting in 2013, the U.S. has been using the "first-to-file" patent system (a patent is awarded to the first person to file for a patent).

Consider the principle of establishing ownership, does the "first-to-invent" rule more closely resemble a first possession or a tied ownership rule? What about "first-to-file"?

- (c) What's the efficient use of the intellectual property in this case?

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\*See [U.S. Supreme Court declines to hear UW-Madison's \\$506 million case against Apple](#)

(d) If the court had issued a temporary damages, what would Apple be incentivized to do?

(e) If the court had issued a permanent damages instead, what would Apple be incentivized to do?

(f) Does the principles of Calabresi and Melamed agree with the use of either temporary or permanent damages?

2. (From sample exam questions)

The government is interested in acquiring land to build a school. The school will be a public good, creating \$5,000,000 in total value. The land the government wants to build on is currently privately owned.

(a) First, suppose the land is made up of 30 small plots, each one owned by a different owner. Each owner values his own land at \$100,000.

i. Would transaction costs be high or low if the government tried to acquire the needed land through voluntary negotiations?

ii. Would the government's use of eminent domain to acquire the land be efficient or inefficient?

(b) Now instead, suppose the land is in one piece, and is currently owned by a wealthy retiree. The "fair market value" of the land is \$2,000,000, but the retiree has lived on the land his whole life and values it at \$10,000,000.

i. Would transaction costs be high or low if the government tried to acquire the needed land through voluntary negotiations?

ii. Would the government's use of eminent domain to acquire the land be efficient or inefficient?



Conceptually, eminent domain is similar to using a liability rule (damages), rather than a property rule (injunctions), to protect ownership rights – the government is allowed to take your land and pay you for it, rather than negotiating to buy it from you.

- (c) Which type of rule, property or liability, is generally more efficient when transaction costs are high, and which is generally more efficient when transaction costs are low? Given this, is the use of eminent domain more likely to be efficient in the presence of high or low transaction costs? Does this agree with your answers to parts (a) and (b) above?