

1. (10 pts.) Briefly explain the nature of the disagreement between Del Webb Development Co. and Spur Industries.
2. (10 pts.) In one or two sentences, state the case for patent laws. In one or two sentences, state the case against patent laws.
3. (10 pts.) The state of Maryland is trying to decide how to handle a particular resource. Private property rights have been established for all land within state borders that is above water. Offshore "land" is publicly owned, however. This means that oyster beds in the Chesapeake Bay along the Maryland shoreline can be used by anyone who wants to harvest oysters. Are oyster beds a private or public good? Briefly explain how you would advise Maryland's legislature.
4. (20 pts.) Robinson Crusoe and Friday are stranded on an island. They produce and consume two goods, bananas and fish. They pick bananas from the trees on the island, and they catch fish in the lagoons on the island. They use only their own labor in the production process, so they don't have to worry about the marginal rate of technical substitution between labor and capital. They do have to worry about the other two aspects of efficiency, however. In fact, they often sit around the campfire at night and talk about Pareto optimality. They have found that at their current rates of consumption, Crusoe is willing to trade two bananas for one fish, while Friday is willing to trade at the rate of two fish for four bananas. They have also discovered that if they spend a little more time fishing and a little less time picking bananas, they can increase fish production by two while giving up three bananas. They haven't been able to decide whether their situation is Pareto optimal or not. Fortunately they didn't lose their cell phones when their boat wrecked on the island, so they call you for advice. Is this a Pareto optimal allocation of resources? Explain why or why not. If not, then go through a simple example to explain how they can increase their well-being.
5. (20 pts.) The year is 2030. Manhattan Island has been turned into a prison. No one gets in, no one gets out. Anarchy reigns. Might makes right. The president of the American Economic Association comes to you with a mission. She wants you and your buddy Kurt Russell to parachute into Manhattan and convince the lawless inhabitants that they would be better off if they all established a social contract. This would require them to agree to live under a system of law, with clearly defined and enforced property rights. Kurt Russell, although he is getting along in years, is there to provide the muscle, but it is up to you to present the logical argument.
6. (30 pts.) Stewart owns property in Indiana. He discovers the opening to a large cave on his property. The cave is very deep and very long, and has very interesting rock formations. Stewart decides to develop the cave as a tourist attraction, and begins charging admission to tourists who go through his cave. Ross owns land adjacent to Stewart's property. She is a petroleum engineer, and suspects that there is oil underneath her property. When she drills a well, the shaft sinks right through the middle of Stewart's cave. She also strikes oil further down. The two uses of this resource are incompatible. If Ross is allowed to drill for oil, Stewart will not be able to continue his cave tours. If Stewart is to continue operating his tourist attraction, Ross will not be able to extract the oil from underneath her property. Ross and Stewart sue one another.
  - a. Suppose you are the judge and your only concern is economic efficiency. What factors would you consider in determining whether Ross or Stewart should get their way?
  - b. Suppose the price of oil is over \$100 a barrel, the nation is in the middle of an energy crisis, and the proved reserves below Ross's land rival those in Saudi Arabia. The court decides that since Stewart was using the cave before Ross started drilling, he should have the right to operate his cave undisturbed by any drilling activity. Will this ruling result in an inefficient outcome?
  - c. Suppose that Ross and Stewart discover that they are attracted to one another and decide to get married. They decide to drop their lawsuits against one another and to merge their companies. What resource allocation will the merged company decide on regarding the tourist attraction vs. the oil well?

1. (10 pts.) How does the legal system establish implicit prices? Give an example.
2. (20 pts.) As rajah of our island, you have decreed a completely centrally planned economy. You make all production and consumption decisions. Our current output of coconuts and rabbits is such that you are able to allocate five rabbits and twenty coconuts to each person each month. Being a benevolent ruler, you ask us how we like that arrangement. One person, known only as A, speaks up and declares that at her current rates of consumption she would be willing to trade two rabbits to get one more coconut per month. Someone else, known only as B, lets it be known that at his current rates of consumption, he would be willing to trade three coconuts to get one more rabbit per month. All of your loyal subjects look at you to see how you will respond. Is the current allocation Pareto optimal? Illustrate A's and B's current situations in the diagrams below, drawing an indifference curve for each of them that reflects their current situations and marginal rates of substitution. If you think there is some way to improve things, explain how.
3. (20 pts.) One rule for establishing property rights is the rule of first possession. This rule was applied to buffalo (actually bison) in the United States as the Great Plains were being settled. The buffalo almost became extinct. A non-native hoofed animal (cattle) was introduced into the same environment by these settlers, but property rights were determined differently. A system of branding was established so that ownership of each animal could be clearly determined. Cattle thrived. Use this example to explain the inefficiency that may result from a rule of first possession.
4. (20 pts.) The newly formed government of Tajikistan hires you as a consultant to help them in making the transition from a socialistic command economy to a capitalistic market economy. Since no system of property rights has existed in the past, you are asked, "What things can be privately owned, and what things inherently must be publicly or commonly owned?" What guidance can you, as an economist, offer? Specific examples of types of goods might be useful to include in your answer.
5. (30 pts.) Read the facts of *Sturges v. Bridgeman* on the attached sheet. Suppose that the damage suffered by the doctor because of the disruption is \$5,000 in lost income and that the cost to the factory of installing less noisy equipment, moving the existing equipment, or adjusting its production schedule so as to eliminate the nuisance to the doctor is \$10,000.
  - a) Imagine that Sturges is female, and that Sturges and Bridgeman fall in love during the trial, and decide to drop the lawsuit and get married. How do you think that the merged household would manage its combined businesses?
  - b) Forget the fairy tale ending imagined in part (a), and instead let's go back to the original legal dispute. Suppose the court is swayed by the fact that Bridgeman had operated a candy factory on the same spot for a long time, and that Sturges "came to the nuisance." Suppose the court then rules in favor of Bridgeman and refuses to grant an injunction or award damages to Sturges. What will be the ultimate outcome?
  - c) Suppose instead that the court considers health care to be a higher calling than candy-making, and decides in favor of Sturges, granting an injunction against the operation of the offending equipment by Bridgeman. What will be the ultimate outcome?

***Sturges v. Bridgman***

11 Ch.D. 852 (1879)

The Plaintiff in this case was a physician. In the year 1865 he purchased the lease of a house in Wimpole Street, London, which he occupied as his professional residence. Wimpole Street runs north and south, and is crossed at right angles by Wigmore Street. The Plaintiff's house was on the west side of Wimpole Street, and was the second house from the north side of Wigmore Street. Behind the house was a garden, and in 1873 the Plaintiff erected a consulting-room at the end of his garden.

The Defendant was a confectioner in large business in Wigmore Street. His house was on the north side of Wigmore Street and his kitchen was at the back of his house, and stood on ground which was formerly a garden and abutted on the portion of the Plaintiff's consulting-room and the Defendant's kitchen [abutted] the party-wall. The Defendant had in his kitchen two large marble mortars set in brickwork built up to and against the partywall which separated his kitchen from the Plaintiff's consulting-room, and worked by two large wooden pestles held in an upright position by horizontal bearers fixed into the partywall. Those mortars were used for breaking up and pounding loaf-sugar and other hard substances, and for pounding meat.

The Plaintiff alleged that when the Defendant's pestles and mortars were being used the noise and vibration thereby caused were very great, and were heard and felt in the Plaintiff's consulting-room, and such noise and vibration seriously annoyed and disturbed the Plaintiff, and materially interfered with him in the practice of his profession. In particular the Plaintiff stated that the noise prevented him from examining his patients by auscultation for diseases of the chest. He also found it impossible to engage with effect in any occupation which required thought and attention.

The use of the pestles and mortars varied with the pressure of the Defendant's business, but they were generally used between the hours of 10 A.M. and 1 P.M.

The Plaintiff made several complaints of the annoyance, and ultimately brought this action, in which he claimed an injunction to restrain the Defendant from using the pestles and mortars in such manner as to cause him annoyance.

The Defendant stated in his defense that he and his father had used one of the pestles and mortars in the same place and to the same extent as now for more than sixty years, and that he had used the second pestle and mortar in the same place and to the same extent as now for more than twenty-six years. He alleges that if the Plaintiff had built his consultingroom with a separate wall, and not against the wall of the Defendant's kitchen, he would not have experienced any noise or vibration.

10 point questions, answer any three:

1. Give an example of moral hazard. Briefly define adverse selection.
2. Briefly explain the nature of the disagreement between Del Webb Development Co. and Spur Industries.
3. In one sentence state the case for patent laws. In one sentence state the case against patent laws.
4. The state of Maryland is trying to decide how to handle a particular resource. Private property rights have been established for all land within state borders that is above water. Offshore "land" is publicly owned, however. This means that oyster beds in the Chesapeake Bay along the Maryland shoreline can be used by anyone who wants to harvest oysters. Are oyster beds a private or a public good?

Answer each of the next three questions. Point values are indicated beside each question.

5. (20 pts.) Robinson Crusoe and Friday are stranded on an island. They produce and consume two goods, bananas and fish. They pick bananas from the trees on the island, and they catch fish in the lagoons on the island. They use only their own labor in the production process, so they don't have to worry about the marginal rate of technical substitution between labor and capital. They do have to worry about other aspects of efficiency, however. In fact, they often sit around the campfire at night and talk about Pareto optimality. They have found that at their current rates of consumption, Crusoe is willing to trade two bananas for one fish, while Friday is willing to trade at the rate of two fish for four bananas. They have also discovered that if they spend a little more time fishing and a little less time picking bananas, they can increase fish production by two while giving up three bananas. They haven't been able to decide whether their situation is Pareto optimal or not. Fortunately they didn't lose their cell phones when their boat wrecked on the island, so they call you for advice. Is this a Pareto optimal allocation of resources? If not, then go through a simple example to explain how they can increase their well-being.
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  - a. Suppose you are the judge and your only concern is economic efficiency. What factors would you consider in determining whether Ross or Stewart should get their way?
  - b. Suppose the price of oil is over \$30 a barrel, the nation is in the middle of an energy crisis, and the proved reserves below Ross's land rival those in Saudi Arabia. The court decides that since Stewart was using the cave before Ross started drilling, he should have the right to operate his cave undisturbed by any drilling activity. Will this ruling result in an inefficient outcome?
  - c. Suppose that Ross and Stewart discover that they are attracted to one another and decide to get married. They decide to drop their lawsuits against one another and to merge their companies. What resource allocation decision will the merged company decide on regarding the tourist attraction vs. the oil well?

Answer all five questions:

1. (10 pts.) Three goals for any legal system are stability, uniformity, and flexibility. How does a common law system of judge-made law achieve uniformity and stability?
2. (20 pts.) The marginal rate of substitution common to all consumers between guns and butter is 3 guns : 2 butter. The marginal rate of transformation between guns and butter is 2 guns : 1 butter. Is this allocation of resources Pareto optimal? If so explain why. If not, explain why not and give an example of a Pareto improvement that you might accomplish.
3. (20 pts.) TRUE or FALSE and EXPLAIN your answer using a diagram. Markets will over-allocate resources (i.e., an inefficiently large amount of the good will be produced) to the production of goods when external costs are present as well as when external benefits are present.
4. (20 pts.) One rule for establishing property rights is the rule of first possession. Suppose the U.S. government, instead of auctioning off drilling rights to specific parcels of the seabed, decides to open up offshore oil deposits to whoever can get the oil out of the ground first. What problems do you see with this approach and what inefficiencies might arise? Are there any advantages to such an approach?
5. (30 pts.) The E Electric Company emits smoke, which dirties the wash at the L Laundry. No one else is affected because E and L are near to each other and far from anyone else. E can abate this external cost by installing scrubbers on its stacks, or L can reduce the damage by installing filters on its ventilation system. The installation of scrubbers by E (at a cost of \$500) or filters by L (at a cost of \$100) completely eliminates the pollution problem. The presence of pollution (i.e. no scrubber and no filters) reduces L's profits from \$300 to \$100. The following table shows the profits of each company depending on what action is taken:

		Laundry	
		<u>no filter</u>	<u>filter</u>
Electric Company	<u>no scrubbers</u>	L: \$100 E: \$1000	L: \$200 E: \$1000
	<u>scrubbers</u>	L: \$300 E: \$500	L: \$200 E: \$500

- (a) Suppose that you own both companies. What course of action would you take? Is your decision efficient or is there an externality here that makes your decision inefficient?
- (b) Suppose that the companies are independently owned, and the laundry sues the electric company for the nuisance they have created. The court decides in favor of the electric company. What is the likely outcome and will it be efficient?
- (c) Suppose instead that the court decides in favor of the laundry, and grants an injunction forbidding E from polluting. What is the likely outcome and will it be efficient?

Answer any five questions, 20 points each:

1. Define Pareto optimality. Briefly discuss the necessary conditions for the allocation of resources in a society to be Pareto optimal.
2. Two different scenarios under which milk is produced:  
(a) Jack owns a dairy farm with lots of cows. The cows graze in his pastures and defecate in the creek that runs through his property. Downstream residents use the stream for drinking water, washing clothes and dishes, and bathing. Jack sells the milk from his cows in a competitive marketplace.  
(b) Jill also owns a dairy farm with lots of cows. The cows graze in her pastures and defecate in a small lake located entirely within Jill's property. The lake does not drain into anyone else's property. Jill uses the lake for drinking water, washing clothes and dishes, and bathing. Jill sells the milk from her cows in the same competitive marketplace that Jack does.  
Now to the question. Will Jack's decision about how much milk to produce be efficient from society's point of view? Will Jill's decision about how much milk to produce be efficient from society's point of view? In each case explain why or why not.
3. RE the case of *Spur Industries, Inc. v. Del E. Webb Development Co.*, 494 P.2d 701 (Ariz. 1972): Discuss the particulars of the case. Explain the court's decision. Was the outcome efficient? Was the outcome equitable?
4. RE *Pennsylvania Coal Co. v. Mahon* (1922). Pennsylvania Coal buys subsurface rights to Mahon's property, while Mahon retains surface rights. Some settling of the surface occurs in places where Pennsylvania Coal has mined the coal underground. Mahon claims a threat to safety and health, and says that his house will be rendered uninhabitable if the rest of the coal is mined. Pennsylvania Coal claims that some settling of the ground is natural with underground mining and that Mahon should just have to live with it. They also point out that a considerable amount of valuable coal lies underneath the disputed property. The dispute goes to trial. Will the coal under Mahon's property ultimately be mined? Does it depend on whether the court decides in favor of Mahon or in favor of Pennsylvania Coal?
5. Suppose one party or parties sue(s) another party or parties over an alleged nuisance. As judge, you find yourself in agreement that a nuisance does exist, and so you decide for the plaintiff. Now you must decide whether the appropriate remedy is legal relief (payment of compensatory damages) or equitable relief (issuance of an injunction to enjoin the defendant from doing the act). What things would you take into account in deciding between damages or injunction?
6. Explain the difference between public goods and private goods. Give examples of a public good, a private good, and a good that has attributes of both.

Five questions, 20 points each.

1. The marginal rate of substitution common to all consumers between guns and butter is 3 guns : 2 butter. The marginal rate of transformation between guns and butter is 2 guns : 1 butter. Is this allocation of resources Pareto optimal? Explain why or why not.
2. TRUE or FALSE and EXPLAIN your answer. Markets will over-allocate resources (i.e., an inefficiently large amount of the good will be produced) to the production of goods when external costs are present as well as when external benefits are present.
3. Two different disputes arise over property. One involves two people living side by side. The other involves a large number of geographically dispersed strangers. As judge, would you use damages or injunctions as a remedy for the disputes. Explain the rationale for your choice of remedy in each case.
4. You are hired as a consultant to the newly formed government of Kazakhstan, which is trying to make the transition from a centrally planned economy with no private property to a market economy with private property. You are asked, "What things can be privately owned, and what things inherently must be publicly or commonly owned?" What guidance can you, an economist, offer? Specific examples of types of goods might be useful to include in your answer.
5. RE Pennsylvania Coal Co. v. Mahon (1922). PA Coal buys subsurface rights to Mahon's property, while Mahon retains surface rights. Some settling of the surface occurs in places where PA Coal has mined the coal underground. Mahon claims a threat to safety and health, while PA Coal claims that some settling of the ground is natural with underground mining and that Mahon should just have to live with it. The dispute goes to trial. Will the coal under Mahon's property ultimately be mined? Does it depend on whether the court decides in favor of Mahon or in favor of PA Coal?

ECO 400: Seminar in Law and Economics  
 Midterm Exam  
 Spring 1993

1. (10 pts.) Three goals for any legal system are stability, uniformity, and flexibility. How does a common law system of judge-made law achieve uniformity and stability?
2. (20 pts.) Define Pareto optimality. Why do competitive markets lead to Pareto optimality (i.e. efficiency) in exchange?
3. (20 pts.) What is moral hazard? Give an example of moral hazard in the area of medical insurance. What steps might be taken to reduce moral hazard problems?
4. (20 pts.) One rule for establishing property rights is the rule of first possession. Suppose the U.S. government, instead of auctioning off drilling rights to specific parcels of the seabed, decides to open up offshore oil deposits to whoever can get the oil out of the ground first. What problems do you see with this approach and what inefficiencies might arise?
5. (30 pts.) The E Electric Company emits smoke, which dirties the wash at the L Laundry. No one else is affected because E and L are near to each other and far from anyone else. E can abate this external cost by installing scrubbers on its stacks, or L can reduce the damage by installing filters on its ventilation system. The installation of scrubbers by E (at a cost of \$500) or filters by L (at a cost of \$100) completely eliminates the pollution problem. The presence of pollution (i.e. no scrubber and no filters) reduces L's profits from \$300 to \$100. The following table shows the profits of each company depending on what action is taken:

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- (a) Suppose that you own both companies. What course of action would you take? In what sense is your decision efficient?
- (b) Suppose that the companies are independently owned, and the laundry sues the electric company for the nuisance they have created. The court decides in favor of the electric company. Will an efficient outcome result?
- (c) Suppose instead that the court decides in favor of the laundry, and grants an injunction forbidding E from polluting. Will an efficient outcome result from this court decision?

BONUS: 10 points

- (d) Suppose that the court decides in favor of the laundry, and awards damages. That is, E must pay L the amount by which its pollution reduces L's profits, or \$200. Will an efficient outcome be reached in this case?