

## Making Economics Fun

Every year, the people who grade the economics AP exam get together for a week to do it. In 2015 they invited me to be their guest speaker. Since the audience consisted almost entirely of people who taught economics at either the high school or college level, I gave a [talk](#) on how to make economics fun. This is a text version, somewhat edited to allow for the different audience and the difference between spoken and written English.

### Market Failures

It is a thousand years ago, somewhere in Europe; you are one of a line of ten thousand men with spears. Coming at you are another ten thousand men, with spears, on horseback. You do a very fast cost-benefit calculation.

“If all of us plant our spears and hold them steady, with luck we can break their charge; some of us will die but most of us will live. If we run, horses run faster than we do. I should stand.”

I made a mistake; I said “we.” I don't control the other men. If everybody else stands and I run, I won't be the one of the ones who gets killed; with 10,000 men in the line, whether I run has very little effect on whether we stop their charge. If everybody else runs, I had better run too, since otherwise I'm dead.

Everybody makes the same calculation. We all run, most of us die. Welcome to the dark side of rationality.

This is one example of what economists call market failure — a situation where individual rationality does not lead to group rationality. Each person correctly calculates how it is in his interest to act and everyone is worse off as a result.

Market failure does not only happen in markets.

For a modern version of the same logic, fast forward to Korea. You are a soldier in a foxhole. You are supposed to watch for enemies and, if you see one, shoot him. Sticking your head up to do that is quite likely to get you killed, so instead you keep your head down and fire a shot blindly from time to time in the direction of the enemy. With luck that persuades them to keep their heads down too while persuading your officer that you are doing your job.

There is real world evidence for this story. For the US Army in World War II, about 25,000 bullets were fired for each enemy killed. Many of those killed were by bombs or artillery, so the ratio of bullets fired to enemies killed by bullets was close to a hundred thousand.

Apply the same logic to democracy to see why it does not work the way we like to imagine, what I think of as the civics class model of democracy: Politicians do good things because if they don't we vote them out. For that to happen, voters have to know both what the politician is doing and what he should be doing. Both are hard; politicians almost never campaign on the theme “I'm the bad guy.” So far as I know, nobody has ever introduced legislation to congress with the title “A Bill to Make Farmers Richer and City Folk Poorer,” although legislation designed to do that has been introduced to Congress, and passed, every year of my lifetime.

In order for the civics class model to work, the individual voter has to spend a lot of time and effort keeping himself well informed about what the politicians he will vote on are doing and what they should be doing, what policies are good or bad. In a U.S. presidential election, the chance that one vote will be decisive is perhaps one in 10 million — more in some states, much less in others. If your vote does result in getting the better candidate elected there is a large benefit, but you share it with three hundred and thirty million other Americans, just as the soldier in my first story shared the benefit of standing instead of running with ten thousand other soldiers. So if you ask yourself whether to spend your time and energy doing your job better, educating your kid better or reading a good book, or spend it trying to understand what politicians are doing and what they should be doing, the answer for most voters is pretty clear. Better to vote for whichever candidate looks nicer, or gives prettier sounding speeches, or the one your friends all like, and spend your time and energy doing something that produces a benefit for you with odds of better than one in ten million.

Public choice economists, economists who use economics to try to understand politics, call the result rational ignorance, rational because it is rational not to acquire something, in this case information, if its cost is greater than its value.

## **Engineering Incentives**

Sometimes you can engineer around market failure, tweak the situation to eliminate it. My favorite example is a story and a puzzle.

Two Bedouins are riding their camels through the desert with the oasis two miles away. One of them starts complaining:

“This camel, this snail masquerading as a camel, has got to be the slowest beast in all the deserts of Arabia.”

“You think your camel is slow? This rock I am riding on ...”

The argument about which camel is slower continues; they eventually agree on a bet. The owner of whichever camel gets to the oasis last wins the bet and collects a golden dinar.

One of them goes slowly, the other goes more slowly, and an hour later there are two bedouins sitting their camels stock still in the blazing sun in the middle of the Arabian desert, with the Oasis still a mile away.

At this point a wise man comes walking along:

“Why are you two idiots sitting your camels stock still in the blazing sun in the middle of the desert, with the oasis only a mile off?”

They get off their camels and explain the situation to him. He thinks a moment, then whispers two words to them. They leap back on the camels and ride off for the oasis as fast as they can.

Puzzle: What are the two words?

“Switch camels.”

The bet was on the camels, not the riders, so if each is riding the other’s camels the incentives reverse. He now wants to go as fast as possible, not as slowly as possible.

For another example of engineering incentives, consider the legal system of Periclean Athens;<sup>1</sup> I like to describe it as the legal system of a mad economist, full of clever ideas that might or might not work. One is their solution to the problem of paying for public goods. If you were one of the richest Athenians you had to pay to pay the cost of producing a public good every other year.

“You have heard that we’re sending a team to the Olympics this year? Congratulations, you’re the sponsor.”

Or

“Look at that beautiful trireme down by the dock. Guess who is paying for it this year.”<sup>2</sup>

There were two ways of getting out of the obligation. One was to show that you had already produced a public good this year or last. The other was to show that there was another Athenian who had not done it last year, was not doing it this year, and was richer than you.

Which raises a puzzle:

*How, in a world without accountants or the IRS, where wealth largely consists of land and slaves, neither of which has a publicly known value, do I prove that you are richer than I am?*

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<sup>1</sup> For details, see the chapter on Athens in my *Legal Systems Very Different from Ours*.

<sup>2</sup> A trireme was a war ship, so called because it had three banks of rowers and oars, one above the other. The cost was actually divided between two wealthy men; part of their job was either captaining the ship or hiring someone else to do so.

Answer:

*I offer to trade everything I own for everything you own. If you turn me down you have admitted you are richer than I am.*

It's an economist's answer, not an accountant's.

For a modern example of the same approach, consider the problem of how to set up a horse race where all the horses are about equally good. The solution is a claims race. By entering your horse you are agreeing to sell it for a fixed price, how much depending on the race. You could enter a hundred thousand dollar horse in a ten thousand dollar claims race and be almost certain to win, but it would be the last race you entered it in.

My friend Ami Glaser, an economist at UC Irvine, has a strategy for buying a used car, always a risky proposition. When he finds one he likes, he asks whether, if he pays a little more, the dealer will give him a one year warranty. The dealer declines the offer, so Ami keeps looking.

Eventually he finds a car whose seller agrees, for an extra five hundred dollars, to provide a one year warranty. Ami buys the car — without the warranty.

Ami also had a proposal for how the antitrust division of the Justice Department should decide whether to allow two companies in the same industry to merge. The argument for a merger is that the two companies can do a better job of producing their products by working together, produce better products or produce them at lower cost. The argument against is that the two companies want to merge so that they can jointly hold production down and the price up.

Ami's rule was simple:

If the other companies in the industry oppose the merger, you permit it. If the other companies support it, you don't.

The same approach can be useful in teaching. For example...

Halfway through my lecture I pause to ask my students if everyone has followed me so far. Nobody replies. I keep going — and discover my mistake when I grade the final.

This again is a conflict between individual and group rationality. The students as a group would learn more if someone had the courage to give the honest answer: They are totally lost; if I keep going I will be wasting both my time and theirs. But each individual student is afraid of making himself look stupid.

I have a simple solution. Put on the floor in front of each seat a button which a student can unobtrusively push with his foot, at the back of the classroom a large sign showing how many buttons are being pushed. When I notice the eyes of my audience beginning to glaze I pause and ask everyone who has followed me so far to push his button. The number two appears on the screen. I go back and start over.<sup>3</sup>

A student is taking an exam; the only question left is one he does not know the answer to. Since he has nothing else to do with the final ten minutes, he spends them writing something sufficiently unclear so that,

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<sup>3</sup> I have never actually done it — I am by nature a theorist, not an experimentalist — but feedback systems along these lines have been set up by others using wireless devices, garage door openers or, more recently, cell phones.

with luck, the professor will think he knows part of the answer and give him partial credit. Doing that wastes his time, wastes the time of the professor grading the exam, and makes grading less accurate.

My solution to this problem starts from Greek antiquity. The Delphic oracle had told one of Socrates' friends that Socrates was the wisest man in Athens. Socrates responded that he couldn't be, since he did not know anything. After interrogating other Athenians as to what they knew, he concluded that they did not know anything either — but thought they did. Which made him the wisest man in Athens.

On my exams, you get credit for knowing that you don't know something. If you try to answer a question and fail, you get no credit for that question. If you leave it blank or write "I don't know," you get 20%. Unless you know enough of the answer to get more than that, you are better off leaving it blank. That saves me time, saves you time, makes my grading a little more accurate.

Incentives are relevant to me as well as to my students. A very long time ago I wrote a price theory textbook. Many years later I decided to rewrite it as a book aimed at the intelligent layman. My model was *The Selfish Gene*, a book on evolutionary theory that I had read for the fun of it.

It occurred to me that this book, unlike a textbook, was one that nobody was going to be forced to read. If at any point the reader lost interest he would stop. To deal with that problem I started every chapter with a hook, a puzzle, that would get resolved by the end of the chapter.

Consider in contrast the incentives for a textbook author. His incentive is to write a book that professors will assign. The professor's interest is not the same as the student's.

## Marginal vs Average: Three Stories

### Fantasy: How to Escape the Bad Guys

You are a hero with a broken sword, Conan or Boromir or your favorite Dungeon & Dragons character. You are being chased by a troop of bad guys, bandits or orcs. Fortunately you are on a horse and they are not. Unfortunately your horse is tired and they will eventually run you down. Fortunately you have a bow. Unfortunately you have only ten arrows. Fortunately, being a hero, you never miss. Unfortunately, there are forty bad guys.

They are strung out behind you as shown with the fastest in front, close enough to count your arrows.



economics to get away?<sup>4</sup>

How do you use

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<sup>4</sup> The story, puzzle, and picture are from my *Price Theory: An Intermediate Text*.

*First you shoot the bad guy in front. Then you shoot the bad guy in front. Then you shoot the bad guy in front. Then they all run slowly.*

You can only impose an average cost of one chance in four of dying; that is not enough to discourage them, since they can count your arrows and are still coming. But you can impose a marginal cost of one chance in one on whoever runs fastest.

### **Taxes:How not to Collect Them**

You locate the 90th percentile of the income distribution, say \$150,000. People at the 89<sup>th</sup> percentile are doing pretty well for themselves; nobody needs more money than that and the government can certainly find something useful to do with the excess. You announce that for next year the tax rate on everything above \$150,000 is a hundred percent.

Very shortly you discover that now nobody is earning more than a hundred and fifty thousand, at least in any form visible to the IRS, so the final bracket of your tax is not producing any revenue. Something must be done; the government still needs money. The 90<sup>th</sup> percentile is now at \$130,000, so you start your 100% tax there. Pretty soon ...

First you shoot the dollar in front, then you shoot the dollar in front, then you shoot the dollar in front, then nobody earns any dollars.

### **History: The Raven Banner**

Clontarf was a battle fought in Ireland in 1014 between an army of Vikings led by Sigurd, the Jarl of the Orkney Islands, and an Irish Army commanded by Brian Boru, high king of Ireland.<sup>5</sup>

Sigurd, the jarl of the Orkney Isles, has called to his banner a viking band,  
And sailed to Dublin to make himself King of the Irish land.  
But crowns are never so quickly won, the Norns, they well know - -  
The king of the Irish blocks our way. We must to battle go.

The raven banner of the Orkney jarl brings luck in battle, but its bearer dies.  
Two men have fallen 'neath its wings today, but still the raven flies.  
The jarl tells a third to take it up. The third man answers no.  
"The devil's your own, take it up yourself, and back to battle go."

"'Tis fitting the beggar should bear the bag," replies the jarl, "And I'll do so here."  
He fought with the banner tied round his waist and fell to an Irish spear.  
He died and the Irish broke our line. We had no chance but flight.  
But I'm not hurried - - it's a long way home; I won't get there tonight.

The Norns have woven a bloody web, tapestry woven of guts and bone,  
And parcelled it out to the Orkney host - - our day in Ireland's done.  
The grey wolf howls and the ravens soar above the arrow's flight,  
And Odin is waiting beyond the fray for some of us tonight.

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<sup>5</sup> The poem is "The Raven Banner" by Malkin Grey (Debra Doyle). The account it is based on is from *Njal Saga*. I am simplifying a little — there were multiple leaders on the Norse side and they had Irish allies.

By keeping the banner flying, Sigurd's army can win the battle at a cost of a few extra lives; perhaps one or two more out of a thousand will die. But for whoever carries the banner, it is a marginal cost of one life out of one.

The same economic logic applies across a wide range of human behavior.

Critics of the broad application of the economic approach to behavior object that people in the distant past were not like that; barbarian heroes fought for glory and damn the consequences. According to this account, out of a whole Army of Vikings only three men, including the Jarl, were willing to die in order to win the battle.

Our source is one of the Icelandic sagas. We do not know if the story is true, but medieval Icelanders, who knew a great deal more than we do about what real Vikings were like, believed it.

## **Rent Seeking**

Economists are supposed to be objective social scientists, not preachers; we have no expertise in questions of right and wrong, good and bad. The closest we come is to be in favor of economic efficiency, maximizing the size of the pie, the total value of all goods and services available for people to consume. It is not obvious, from that standpoint, what is wrong with theft. You steal a hundred dollars from me, making you a hundred dollars better off, me a hundred dollars worse off. Judged in terms of economic efficiency, don't they cancel?

The answer is that the logic of market competition applies to illegal markets as well as legal ones. If you can easily get \$100 by stealing, other people will enter the stealing business. As more and more people become thieves, the return to being a thief goes down. Potential victims are more likely to conceal their money, put bars on their windows. You try to pick a pocket and discover that one of your competitors has gotten to it first. The mechanism by which increasing the number of thieves reduces the return to theft is not quite the same as the mechanism by which increasing the number of economists reduces their wages, but the underlying logic is the same.

As long as theft is more profitable than alternative professions, more people become thieves. The process stops when the marginal thief can make just about as much stealing as he could make working at McDonald's. If all thieves are equally good both at stealing and alternative professions, none of them is better off as a result of theft; the entire amount stolen is being consumed by the diversion of labor out of productive activity into stealing.

In a more realistic picture, there will be some inframarginal thieves, people either very bad at flipping hamburgers or very good at stealing; they will make a positive return. But there are also costs paid by potential victims in their efforts to avoid being victims; if we include those, the net cost of theft could easily be more than the amount stolen. Whether or not that is the case, there is a net cost, not merely a transfer. From the standpoint of economics, that is a reason to be against theft.

Next consider some American history with the same economic logic. Terry Anderson and P.J. Hill have argued that the homesteading act under which large parts of the US became a private property was the largest mistake the US government has ever made, that it wiped out most of the land value of the US.

To see the logic of their argument, consider a piece of land beyond the current frontier of settlement as of 1870. There are no markets, no railroads, probably no roads, maybe hostile Indians. Someone who tries to

farm it will lose \$10,000 a year. As the frontier moves out, however, the situation improves. By 1890 the loss is down to zero and the value of the land, based on the income stream it is expected to generate thereafter, will be up to \$50,000.

Under the homesteading act of 1862, whoever settles on the land and farms it for five years will own it. You wait until 1890, when the land will finally be worth farming, go out to it, only to discover that someone else has already staked his claim. Owning the land as of 1890 was worth \$50,000, and it was worth losing money for a few years to get that.

I could have come a year earlier — but I would have had the same problem. As long as someone is going to settle the land at a date at which the money lost to establish his claim is less than the value the land will have once his claim is established, it pays someone else to come a year earlier. Running through the logic we just worked out for theft, we see that the land will get settled early enough so that the amount lost in premature farming just balances the eventual value of the land. Hill and Anderson concluded that the land should instead have been auctioned off. That way its value, instead of being dissipated by premature farming, would have been available to reduce taxes or pay for the government to do things.

This story has a sequel, because I got sufficiently interested to read up on the history of the conversion of public land to private property prior to the Homesteading Act. It turns out that attempts to auction off the public lands did not work very well.

It is announced that a parcel of land in the far West, somewhere around what is now Ohio, is about to be opened up for settlement. You are the representative of a consortium of entrepreneurs in Boston with the job of picking some good pieces of land and bidding on them. You arrive at the local courthouse where the auction is being held to discover that it is full of rough tough frontiersman with bowie knives in their in their boots and guns leaning up against the wall. They explain to you, very politely, that however it may be back East, around here, stranger, people don't bid against a settler for his land.

Although the land has not yet been opened for settlement, there are already settlers living on it. You conclude that it might be risky to bid for pieces of legally unowned land against the people who think they own them. All of the good land ends up being bought at auction for the minimum legal bid.

There is also the political option. The illegal settlers argue that although they agree in principle with the idea of auctioning off the public lands, there should be room for exceptions. They, after all, are brave American frontiersmen helping to expand the country so Congress should let each man buy his bit of land for a nominal price. Settlers are also voters, so Congress is quite likely to agree.

As these examples suggest, there are problem in auctioning off an inhomogeneous resource belonging to a political institution. That may help to explain why homesteading was eventually set up the way it was.

## **The Equimarginal Principle**

You are in the supermarket with an armfull of groceries, ready to check out. Should you search for the shortest line or go to the closest one?

You should go to the closest one. If another was significantly shorter, everybody who came in between that and a longer line would choose the shorter, bringing its length back up. So the first approximation — you can create exceptions if you add some additional details — is that all the lines will be about the same length.



Driving along a busy highway you observe that the lane next to yours is moving a little faster, so you switch lanes. Five minutes later you notice that the red pick-up truck that was behind you when you switched over is now just about even with you. The logic is the same on the highway as in the supermarket. If one lane is moving faster people switch over to it and keep doing so until it is no longer faster. There will again be exceptions, such as a lane that is slower because people are shifting into it in order to exit, in which case you may want to shift out. But as a general rule, switching lanes doesn't pay; everything is equal at the margin.

Just as in the case of theft, equality is only at the margin. You might be an unusually alert driver, one who spots differences in lane speed faster than most and switches back and forth accordingly, getting home two minutes faster — at some risk.

Which reminds me of a different story, one on engineering other people's incentives. A friend of mine told me that she never had dents taken out of her car because driving a dented car made other drivers more careful.

The same logic gives us the efficient-markets hypothesis. By the time you can predict that the price of a particular stock is going to go up, it already has gone up — because lots of other people, including potential sellers, can predict it too. Unless you have some special expertise that lets you predict things other people cannot, you might as well save the time and effort of studying stocks and pick your investments by throwing darts at the listing page of the *Wall Street Journal*.

The same logic applies to jobs. Doctors make more than engineers, but that does not mean you should choose to be a doctor. There are always other people choosing careers; if being a doctor was unambiguously better they would become doctors instead of engineers, driving down the pay of doctors and driving up the pay of engineers. It follows that if being a doctor is better in terms of pay, it must be enough worse in other ways so that some of the people making the choice decide to be engineers.

Perhaps doctors have to work harder. Perhaps becoming a doctor takes more time, money, and effort. Even if you do not know what the disadvantages are, your first guess should be that all the options equally available to you and many other people are on net equally attractive. The next step is to figure out where you are inframarginal, to look for a profession that is for some reason better for you than for most others choosing among the same alternatives.

Starting with the equimarginal principle as your first approximation works better than starting with the assumption that all you have to do is to look at wages. That, unlike most of what a student will find in an economics textbook, is an application of economics that is actually useful to him.

### **Leveraging Your Enemy's Rationality**

I have a very small collection of jokes that teach economics. Here is one that I got from Dennis Hanseman, the editor of my *Price Theory* text.

An economist and a businessman were walking in the woods when they encountered a large and hungry bear. The economist turned to run.

Businessman: "Don't be stupid, you can't outrun a bear."

Economist: "No. But I might be able to outrun you."

When someone does something that will hurt you, the reason is not usually that he wants to hurt you; what the bear wants is dinner. If you run fast enough, the easiest way for him to get dinner is to eat the businessman instead. Generalizing the principle, to keep someone from doing something you don't want done you do not have to make it impossible, just unprofitable. You can leverage his rationality.

For another example of the same principle, consider the question of what happens if private citizens are allowed to carry handguns. An argument against is that criminals are professionals in the violence business, so in a fight between an armed mugger and an armed victim the mugger will usually win.

That is probably true, but it does not answer the relevant question. To see why, imagine that one little old lady out of ten carries a pistol in her purse. When a mugger tries to mug a little old lady, nine times out of ten she drops the pistol or shoots herself in the foot. One time out of ten she kills the mugger; on average, she is losing. But little old ladies rarely carry enough money to be worth one chance in a hundred of getting killed, so muggers switch to doing something else. Mugging is still possible but no longer profitable.

My favorite demonstration of the principle is a science fiction story, *Margin of Profit* by Poul Anderson. The protagonist is Nicholas Van Rijn, wealthy head of Solar Spice & Liquors, a big Interstellar trading firm. A small and rather unpleasant empire, Borthu, sitting on a trade route between two clusters of stars, has been expanding its navy by seizing passing merchant ships and brainwashing their crew into its service. Van Rijn consults with his peers, the heads of the other major trading firms, about what they can do. The trading firms are rich; if they were willing to put enough money into it they could fight a war with Borthu and win, but that war would cost more than the profits on that trading route would be worth, so they are not going to do it. They could arm all of their ships. But a warship cannot carry enough cargo to pay for itself, so they are not going to do that either.

Van Rijn gets the others to agree that if one of them solves the problem, the others will pay him a fraction of their profits on the route as a reward. He then arms one ship out of five. Merchant ships have small crews, Borthu warships have large crews. Four times out of five, Borthu captures a merchant ship and impresses its crew of four. One time out of five the merchant ship seizes the Borthu ship and its crew of a hundred. On average, Borthu is losing.

As Von Rijn explains to his fellows, "not being stupid heads, they will realize this and stop attacking us, and then maybe we can do business."

Again it is the same point, made three times over, twice in what the merchants could do but don't, once in what Van Rijn can do and does. The objective is not to make what the other side is doing impossible, just unprofitable, no longer in their interest to do.

## **Commitment Strategies**

The plot of *Doctor Strangelove*, a popular movie from the nineteen sixties, hinges on a doomsday machine. The idea is due to Herman Kahn, a man who tried to think rationally about the implications of nuclear and thermonuclear weapons; Dr. Strangelove, the mad scientist the movie is named after, was probably intended as a parody of Kahn. Kahn's idea was a simple one: Instead of maintaining a large military, the U.S. builds a lot of hydrogen bombs designed to create as much fallout as possible, enough so that if they all go off

they will end all life on Earth,<sup>6</sup> and buries them in the Rocky Mountains with a trigger that will set them off if the Soviets ever launch a nuclear attack on the US. We tell the Soviets what we have done. The Soviets now know that if they attack us the world will end, so they don't. Kahn invented the doomsday machine not as a serious proposal but as a simplified version of what both we and the Soviets had actually done: Mutually assured destruction was a doomsday machine with human triggers.

There was one problem with Kahn's idea that I don't think he considered — it might not be incentive compatible. If you are the last engineer coming out of the cave full of hydrogen bombs, what is the last thing you do?

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<sup>6</sup> My guess is that this was and is impossible, that although nuclear weapons are very powerful they are not as powerful as many people at the time imagined, but that is irrelevant to the economic point and including it would make both *Doctor Strangelove* and *Red Alert*, the novel it was based on, into less powerful, stories.

You cut the wire to the detonator.

That problem aside, the Doomsday Machine nicely illustrates the idea of a commitment strategy. Sometimes the best way of achieving your objective is to set things up in a way that limits your future choices, to tie your hands.

That brings me to a talk I heard when I was a professor at UCLA. The subject was the limits of deterrence. The speaker told the following story:

Two guys in a bar get in an argument over which football team is better. The argument gets louder and louder; when it is over one of them is dead on the floor and the other is standing there with a broken beer bottle in his hand and a dazed expression on his face.

His point was that the killer could not be deterred by the threat of punishment because the killing is not rational behavior; the man regrets it as soon as it has happened. Crimes of passion cannot be deterred.

I got up at one end of the room and Earl Thompson<sup>7</sup> got up at the other end, and we both responded, more or less simultaneously,<sup>8</sup> that of course it was the result of rational behavior. It was a Doomsday Machine going off

You are a big tough guy who likes getting his own way — as most of us do. You train yourself into an aggressive personality: You are a he-man, and he-men don't back down. You make it clear that if people cross you you beat them up. Your definition of crossing you comes to include things such as dating the girl you are trying to date or disrespecting your favorite football team. Most of the time your reputation as a bully pays off; people back down in order not to get beaten up.

One day you sit down in a bar. Another big tough guy sits down next to you. You order a beer and start explaining to him why your favorite football team is much better than any other football team — and he has the nerve to disagree with you. By the time the argument is over one of you is dead on the floor and the other is standing there with a broken beer bottle in his hand.

That quarrel is the human equivalent of a Doomsday Machine going off. Each of the two has programmed himself with a commitment strategy: If you cross me I beat you up. Most of the time it pays — people don't cross him and he doesn't have to actually beat anyone up. Until he runs into somebody else with the same strategy.

Evolutionary biologists call it the hawk/dove game. In their version, hawks and doves are identical birds save for one difference: When two birds see a piece of food and both try for it, doves back down and hawks fight. A fight, on average, costs more than the food is worth, but as long as most of the other birds are doves a hawk usually doesn't have to fight. If hawks, on average, do better than doves, hawks succeed in raising more chicks. The more hawks there are, the lower the payoff to being a hawk, so the ratio of hawks to doves adjusts until the payoff of both strategies is the same; the gain to a hawk from getting the food when the other bird is a dove just balances, on average, the loss from having to fight if the other bird is a hawk. It follows that if the cost of a fight goes up, the equilibrium number of hawks goes down.

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<sup>7</sup> Earl Thompson, one of my favorite economists, was the person who persuaded me that commitment strategies are a useful way of thinking about the world. You can see the result in Chapter XXX. He also features in Chapter XXX.

<sup>8</sup> The scene may have improved over time in my memory.

Similarly for the bar room brawl. Punishing the guy who did the killing raises the cost to him of running into another hawk, which lowers the average benefit from committing to the bully strategy; the equilibrium number of bullies goes down. You have reduced the number of killings not by deterring bullies from getting into fights but by deterring people from becoming bullies.

### **Sex, Marriage, Barter**

If a psychologist wants to get his audience's attention, he talks about sex. Economists are more likely to talk about the income distribution, but sex works for us too. I like to use the marriage/dating/sex market to explain the problem with barter.

If I am sleeping with you, you are sleeping with me. If I am married to you, you are married to me. On an ordinary market all you have to do is find someone who wants to buy what you want to sell and someone else who wants to sell what you want to buy. On a barter market you have to find one person who both has what you want and wants what you have, which is much harder. That explains why so many people are lonely, frustrated, and single.

Putting it that way not only gets the students' attention, it also helps them see the advantage of money over barter.

Your problem as teachers is how to persuade your students that economics is not boring, not just about money, may even be relevant to their lives. One way is by talking about the economics of why armies run away, why it's easier to find a dentist than a girl friend, why marriages are less stable than they used to be.<sup>9</sup> Armies running away are more interesting than prices going up or down, dating and marriage more important to students, or almost anyone else, than how the GNP or inflation rate is defined. How to choose a profession is important to students. So is how not to be fooled by people who tell you to invest in fuel oil because winter is coming and the price will go up. The explanations of both come out of the same economics as the efficient markets hypothesis.

The same principles apply to teaching economics outside the classroom. Probably the writing of mine that has done most to spread economic understanding is my explanation of how to grow Hondas<sup>10</sup>:

We have two technologies for producing automobiles: We can build them in Detroit or we can grow them in Iowa. Everyone knows how automobiles are built. To grow them, you grow the raw material they are made out of, which is called "wheat," you load it on a ship, you send the ship into the Pacific and it comes back with Hondas on it.

That way of looking at trade tells you that an auto tariff is protecting American auto workers from the competition not of Japanese autoworkers but of American farm workers, that it is a tax on one of two alternative technologies in order to favor the less efficient.

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<sup>9</sup> The economic explanation for the last, in case you wondered, is less relationship-specific sunk cost due to greater division of labor in household production and much lower infant mortality. Being the wife of a particular husband is no longer a full time job to which a woman is fully specialized.

<sup>10</sup> David Friedman, *Hidden Order*, Chapter 6. Also *Price Theory*, Chapter 6.

I eventually discovered that, twenty years before I published my version of argument, James Ingram had published a longer and more elaborate form of it. Mine is a paragraph, his is most of two pages.<sup>11</sup> In his, “A Fable of Trade and Technologies,” a mysterious entrepreneur, Mr. X, announces he has made a great invention, a way of producing practically everything. To keep it secret he sets up his factory on the coast surrounded by a twelve-foot-high electrified fence, hires workers sworn to secrecy. He buys a wide variety of inputs, sells high-quality low-cost finished goods, “including textiles, cameras, watches, chemicals, and TV sets.”

He is a hero, a wonderful example of American progress, until “a small boy, vacationing with his family at a nearby seaside resort, tried out his new skin-diving equipment, penetrated Mr. X’s underwater screen, and observed that Consolidated Alchemy’s ‘factories’ were nothing but warehouses and that its ‘secret technical process’ was nothing but trade.” Now he is denounced as a fraud and his business shut down — although what he is doing, converting inputs to outputs, has exactly the same effect as what he pretended to be doing.

Ingram tells a better story than I do but also a much longer one, hence harder to remember and repeat, which is probably why my short version has spread and I only discovered the long one when my friend Steve Landsburg pointed me at it. That is relevant to anyone trying to present ideas, in this case the principle of comparative advantage, in a way that will spread.

### **Teaching Economics: The Problem**

Economics seems to be about the world the students are living in, things they are familiar with. It uses words whose meaning they think they know such as “efficiency” or “competition.” That makes it tempting to listen with half an ear in the belief that the professor is just droning on in unnecessary detail about things you already understand. You only discover when your exam gets graded that you were wrong.

One solution to this problem is to find things where the economics gives the opposite of the answer your students expect. Consider, for example, the economics of polygyny, one man marrying two or more women. The natural assumption is that that is good for men, since they get to have multiple wives, bad for the women who have to share a husband

If you think about it a little more you realize that that doesn’t work; wanting a wife isn’t enough to get you one. Would-be husbands are competing on the marriage market for a limited number of wives. If polygyny is illegal, one man can only bid for one wife, offering whatever characteristics make him a desirable husband and the explicit or implicit terms on which he is offering to marry her. Legalize it, and now everybody can bid for one wife and some men can bid for two. That shifts out the demand curve for wives so their price goes up. In order for a man to get a second wife he has to offer her terms attractive enough so she prefers being his second wife to being the first wife of an alternative suitor. Men who want two wives may be able to get them, but only at a higher price than before, terms biased more in the wife’s favor, so may or may not benefit by the change. Men who end up with only one wife are worse off because they have to offer her more favorable terms due to the competition of the polygynists. Some men may be better off, some worse off. All women are better off.

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<sup>11</sup> It took me quite a while to find the source, through three different people plus a google source. It is James C. Ingram, *International Economic Problems*, J. Wiley 1966. P. 44.

That is not a perfect model of the marriage market — there are problems not existing on ordinary markets, such as the difficulty of enforcing the implicit terms of a marriage contract — but it is enough to suggest why the economics imply the opposite of the result people expect.<sup>12</sup>

For another example of the conflict between what students expect and what economics implies, imagine that you want to help poor people. You know that many live in slums where some of the apartments may not have hot water, so you pass a law making it illegal to rent out an apartment that does not have hot water.<sup>13</sup>

If you think about it as an economist, you realize that if the tenant was willing to offer the landlord at least as much more rent as it costs the landlord to provide hot water, it would be in their mutual interest to agree to include hot water in the rental terms, just as car dealers include four tires when they sell a car. If hot water is not included, that is evidence that the cost of providing it to the landlord is greater than the value to the tenant. If you work out how the demand and supply curves for a good shift when you change its characteristics in a way that makes it both more valuable and more costly to produce, you can show that the shift will raise rent by more than the value of hot water to the tenant but less than the cost of providing it to the landlord.<sup>14</sup> What looks like a legal change that benefits one group at the expense of another actually makes both worse off.

For a final example, consider the question of who pays for Social Security. What we are told, what many people believe, is that it is paid half by the employer, half by the employee. Every economist knows is that this is window dressing. It does not matter whether some of the dollar bills that my employer pays me are handed over to the IRS by him just before I get them or by me just after; in either case the tax is the difference between what he pays and what I receive, which is what really matters. How much worse off each of us is as a result of the tax depends on the elasticity of supply and demand; the formal division of the tax between employer and employee is irrelevant.

Presenting your students with situations where the economic analysis implies the opposite of what they expect may not convince them but at least they will have to think about it, whether to persuade themselves that you are right or to find a reason why you are wrong. If you tell them something they already believe, they do not have to think about it and very likely won't.

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<sup>12</sup> The analysis is worked out, both for that model and for one where there is no way of offering anything beyond your characteristics, in [Chapter 21](#) of my *Price Theory*.

<sup>13</sup> Sometimes done by courts under the label of “implied warranty of habitability.”

<sup>14</sup> For the details of the argument, applied to a different restriction on rental terms, see [Chapter 7](#) of my *Price Theory*.

Prose version:

Sigurd had a battle flag, a raven banner, of which it was believed that as long as the banner flew, his army would advance, but whoever carried the banner would die. The battle started, the banner carrier died. Another man took it up, the army advanced, he died.

Then Earl Sigurd called on Thorstein Hallsson to bear the banner. Thorstein was just about to take it when Asmund the white said -

"Don't bear the banner! for all they who bear it get their death."

"Hrafn the red!" called out Earl Sigurd, "bear thou the banner."

"Bear thine own devil thyself," answered Hrafn.

Then the Earl said: "A beggar should carry his own bundle," cut the banner from the staff and put it under his cloak.

He too was slain, and nobody took the banner from his body.