

# UC Berkeley

## Law and Economics Workshop

### Title

Maturing into Normal Science: Empirical Legal Studies' Effect on Law & Economics

### Permalink

<https://escholarship.org/uc/item/5v98w61s>

### Author

Cooter, Robert D.

### Publication Date

2010-11-24

# **Maturing Into Normal Science: Empirical Legal Studies' Effect on Law and Economics**

by

Robert Cooter

24 November 2010

[rcooter@law.berkeley.edu](mailto:rcooter@law.berkeley.edu)

**Paper presented at a conference in honor of Tom Ulen, Law School, University of Illinois, 19-20 November 2010.**

**Maturing Into Normal Science:  
Empirical Legal Studies' Effect on Law and Economics**

**Robert Cooter\***

**Introduction**

After man domesticated fire and before he invented the wheel, I met Tom Ulen. It was on a desert island in the Atlantic Ocean off the coast of Florida in late June of 1979. The sun scorched the sand each day, until the afternoon thundershowers awoke the mosquitoes. In these difficult conditions, we seldom left our air-conditioned hotel. (After citation counts, the best measure of academic influence is the number of resorts a professor has visited in the offseason.) We were marooned there with a small group of professors in Henry Manne's Legal Institute for Economists. All day, drillmasters from Ivy League law faculties taught us to march. After two and a half weeks, our legal education was complete, so Tom and I decided to write a textbook on law and economics. Neither of us had ever taken a class in the subject – none were offered at the universities that we had attended, including Harvard and Stanford. However, ignorance is no obstacle to writing a textbook on a subject that does not exist yet. It was exhilarating, like trying to describe the flight of eagles while living in the age of dinosaurs.

I could go on reminiscing like this and tell you about playing on Tom's softball team, "The Invisible Hands." Or I could tell you about the time when, unable to catch up with Tom for a couple of years, I encountered him waiting ahead of me in line to ascend the Temple Mount in Jerusalem. (To meet Tom face-to-face, I suggest that you go to the airport and fly somewhere, anywhere.) If I go on reminiscing, I'll resolve your doubt that I am descending into senility. Instead, I'm going to discuss the subject of this panel – the future of empirical law and economics – and I'll try to be fair by offending everyone equally.

---

\* Herman Selvin Professor of Law, Berkeley Law School. Paper was presented at a conference in honor of Tom Ulen, Law School, University of Illinois, and 19-20 November 2010.

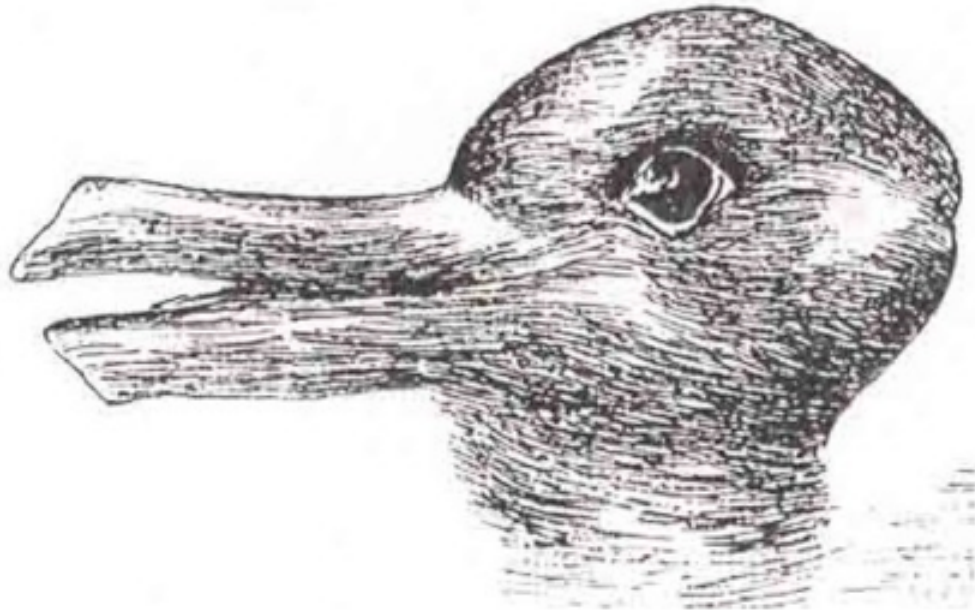
## I. Normal Science

In his classic The Structure of Scientific Revolutions (1962), Thomas Kuhn distinguished between normal and revolutionary science. Normal science proceeds by incremental improvements. Hypotheses are deduced from current theory and then tested empirically. Confirmation or disconfirmation prompts small adjustments in the theory. Sequencing a gene is an example.

Alternatively, revolutionary science proceeds by abrupt jumps. Assumptions in the core theory are re-arranged and integrated into an unfamiliar, new pattern. A scientific revolution occurs because normal science accumulates unexplained anomalies, whose explanation requires new theory at the core of the science. Postulating the double helix is an example. Normal science swims in the stream like a fish, whereas revolutionary science jumps through the trees like a lemur.

Kuhn illustrated the scientific revolution by the duck-rabbit image in Figure 1. The viewer can see the image as a duck or a rabbit, depending on whether she sees the projections on the left as the duck's beak or the rabbit's ears. (With a little effort, you can reverse your perception of it.) Kuhn described a scientific revolution as a "paradigm shift," analogous to switching from seeing the image as a duck to seeing it as a rabbit.

# Figure 1. Duck-Rabbit Illusion



People have always wondered about the law's consequences. The Romans must have asked, "If we increase the sanction, will fewer chariots speed down the Via del Corso?" just as Americans ask, "If we increase the sanction, will fewer cars speed down the interstate?" Most of the answers have come from intuition: "If I were a speeder, how would I respond to the sanction?" In the 20<sup>th</sup> century, social science began to supplement intuition with empirical evidence from social science. The studies sought evidence that confirmed hypotheses at accepted levels of statistical significance. The hypotheses, however, were seldom derived explicitly from a deductive body of scientific theory -- until the injection of economics into legal scholarship. Beginning with studies in regulated industries, anti-trust, and taxation in the 1950s, applied economics spread throughout the law, bring with it the testing of hypotheses derived from microeconomics.

The market proposition that the demand curve slopes down, which is sometimes given the august title of the “First Law of Demand,” corresponds to the legal proposition that sanctions deter, which is often given the modest title of the “deterrence hypothesis.” Economics have a precise mathematical theory that explains why the demand curve slopes down and predicts how abrupt the slope will be in different circumstances (the “elasticity of demand”<sup>1</sup>). Furthermore, economics has a sophisticated statistical branch – econometrics – for estimating demand elasticities. With this insight, economists could use scientific reasoning to replace several thousand years of intuition about law’s effects on behavior.

In Mechelen, Belgium, tourists admire an ancient clock tower whose three faces enabled merchants to know the time at home and also in two neighboring towns (each town had its own time). Centuries of technical progress shrunk the wheels inside clock towers until they could fit comfortably on your wrist. No amount of technical progress among clockmakers, however, would have discovered how to keep time by a quartz crystal. That technology had to come from outside the tradition of clock making. Similarly, no refinement of intuitive and humanistic reasoning by legal scholars could have produced the economic analysis of law. The economic apparatus for making and testing hypotheses had to come into law from outside its traditions. This was an abrupt jump, a revolution in thought, a paradigm shift, a reversal from duck to rabbit, a new research agenda with new tools. Few American law professors would deny this fact, including the many critics of law and economics.

Law and economics is an intellectual revolution in law. Has an intellectual revolution ever occurred within law and economics? One candidate is the introduction of game theory, which made behavioral predictions fully strategic. While this change is large, I do not think that it is large enough to count as a revolution. Another candidate is evolutionary economics, which seeks to explain (“endogenize”) preferences. Economists appreciate the incompleteness of their models that take preferences as given exogenously. A satisfactory theory to

---

<sup>1</sup> The elasticity is the downward slope expressed as a percentage and multiplied by -1. See any microeconomics textbook in the world.

explain preferences would probably count as a scientific revolution in economics. While evolutionary theory provides a useful approach to explaining preference formation, it leaves unexplained much about people and culture, which is probably why its influence on law and economics is modest. Evolutionary law and economics is no scientific revolution. I have some hope that law and growth economics – a subject of my current research – might someday provoke a paradigm shift, but so far its influence is far less than evolutionary economics.

The most promising candidate for a scientific revolution inside law and economics is law and behavioral economics. Just as law and economics came from outside the legal tradition, so the theories and methods of behavioral economics came from the outside economics, specifically from cognitive psychology. Behavioral economics replaces the economic assumption of heroic rationality with the more modest assumption of diminished rationality. The change affects many predictions. Testing them often requires experimental methods that are novel for economists. While I think that law and behavioral economics comes closest to a paradigm shift inside law and economics, my view is that it still falls short. Instead of defending this view, however, I must return to this essay's main subject – empirical legal studies.

There is a reason why empirical research improves social science by small increments, not large jumps. Some scientific propositions are universals. The accumulation of confirming observations increases our confidence in a universal proposition. However, a single counter-example can refute universal propositions, like discovering the Australian black swan disproved the proposition, "All swans are white."<sup>2</sup> Instead of a single counter example, Kuhn thought that anomalies (false predictions) accumulate and weigh against a theory, until a scientific revolution accommodates the anomalies by shifting the paradigm. Regardless of what happens in natural science, we can be sure that a single observation never refutes a proposition in economic theory. In economics as in other social sciences, predictions concern probabilities, not universals.

---

<sup>2</sup> Karl Popper made much of the asymmetry between confirmation and disproof in his philosophy of science.

Econometric tests of hypotheses require a lot of observations to achieve statistical significance, and economists lack confidence in a statistical generalization until several studies by independent researchers confirm it. Disconfirmations of statistical predictions in economics change its theories slowly.

The fact that the demand curve slopes down gives the sign of the response to a change in the price. In general, economic theory can often predict the direction of a response to law, but theory cannot predict the response's magnitude. Estimating elasticities in law and economics is necessary for the progress of science, like sequencing genes is necessary in biology. Everyone in law and economics agreed about the need for such empirical research. When Tom Ulen and I wrote the first edition of our textbook,<sup>3</sup> we regarded the paucity of empirical studies in the field as a gaping hole in our book.

Over the years, the time and effort required to do empirical research diminished sharply through the development of statistical packages for personal computers, the accumulation of new data sets, and the diffusion of improved econometric methods. As empirical research proceeded, there was no abrupt jump in theory, no revolution in thought, no shift in the paradigm shift, no reversal from duck to rabbit. The emergence of empirical legal studies changed law and economics, but it is not a candidate for a Kuhnian scientific revolution. Earlier I described normal science as deducing hypotheses from current theory and testing them empirically, as when sequencing a gene. Instead of a paradigm shift, empirical legal studies matured law and economics revolution into a normal science.

The maturation of law and economics into normal science has sociological consequences for legal scholarship. Law and economics has always been an elite activity like playing polo. Proceeding down the ranking of law schools, law and economics scholarship diminishes, like ownership of ponies diminishes when proceeding down the income scale. This decline is apparent even within the top

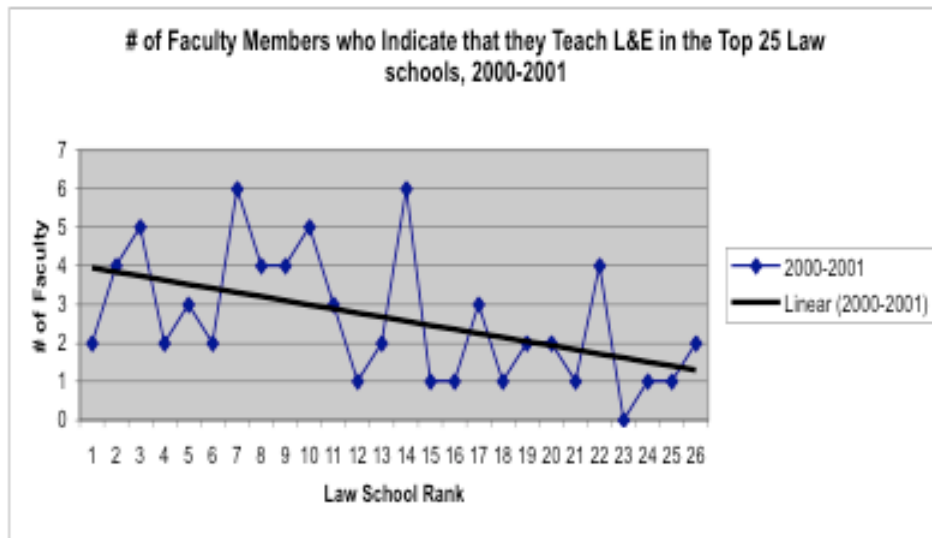
---

<sup>3</sup> Law and Economics (Harper Collins, 1988).

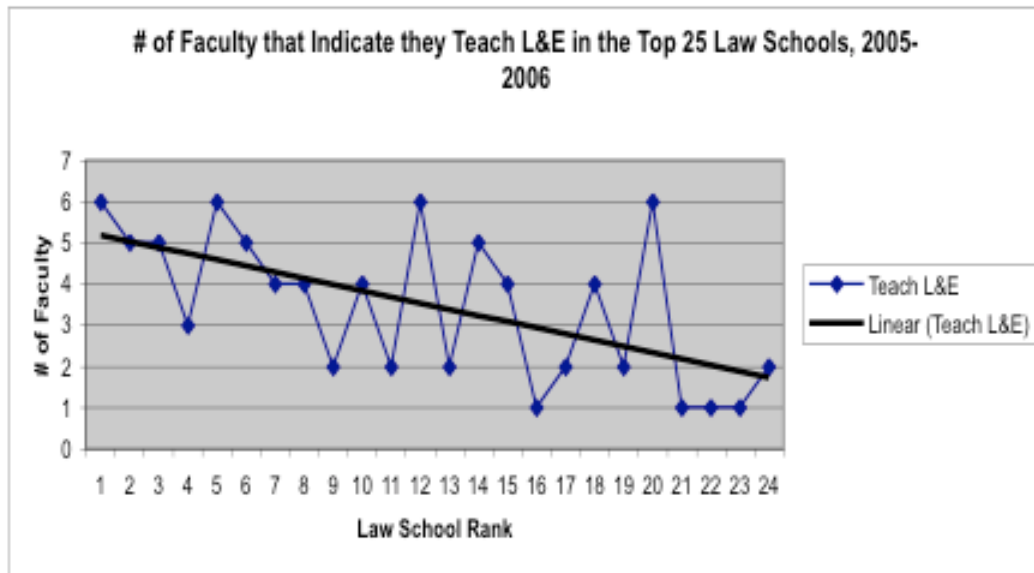


25 law schools, as indicated in Figures 2 and 3. (The ranking on the horizontal axis are from U.S. News and World Reports, the vertical axis is data taken from the AALS annual survey, and the line sloping down is an OLS regression.)

Figure 2. Number of Law Professors with Advanced Degrees in Economics and Top 25 Law Schools



### Figure 3. Professors Teaching Law and Economics and Law School's Ranking



In the future, empirical legal studies may change this fact. In general, normal science provides algorithms that many people can use to advance science. Sequencing genes does not require brilliance. A good education, scientific instruments, effort, and time will suffice. The same is true of estimating elasticities. Progress in empirical legal studies increases the feasibility of contributing to law and economics by faculty in lower ranked law schools. In the U.S. more than 200 law schools maintain research libraries, but no one on the faculty in the vast majority of these law schools does research on law and economics. Law and economics has many polo players and few teamsters.

The most important sociological effect of empirical legal studies might turn out to be the diffusion of law and economics into lower ranked law schools. Empirical legal studies gets easier and easier to do, but will the faculty in lower ranked law schools have an incentive to do it? Specialized databases and empirical findings are increasingly relevant to particular bodies of law. This fact

creates opportunities for faculty members with specific empirical knowledge. The opportunities are increasing for law faculty sell their knowledge of empirical legal studies to the courtroom and administrative bodies.

The bar exam limits how far this process can go. The lowest ranked law schools mostly teach for the bar exam. Questions on the bar exam have little or nothing to do with law and economics. Unless law and economics training helps students to answer questions on the bar exam, most students in lower ranked law schools will not want to learn it and few faculty will get paid to do it.

Jody Kraus and I have distinguished two enterprises in legal scholarship.<sup>4</sup> The first is the “content enterprise,” which asks questions such as:

- What does the law require of people?
- What are the legal duties, rights, and powers of people?
- What is the correct interpretation of a legal text?
- What is in the law a given jurisdiction?

These questions are the central concerns of the humanistic tradition in legal scholarship. For example, the content enterprise tries to distinguish between tortuous accidents subject to the rule of strict liability as opposed to the rule of negligence.

The second is the “cause enterprise,” which asks questions such as:

- What are the effects of a given law?
- How does a law affect economic efficiency?
- How does a law affect the distribution of income?
- Who benefits from a law and who is harmed by it?
- What causes some states to adopt a particular law and not others?

These questions are the central concerns of law and social science, including law and economics, and empirical legal studies. Quantitative techniques are

---

<sup>4</sup> “The Measure of Law and Economics” (unpublished; revised August 2010).

important to answering them. For example, the cause enterprise tries to the difference in the effects of the rules of strict liability and negligence. The effects at issue might be the number of accidents or economic efficiency.

Law and economics mostly concerns the cause enterprise, not the content enterprise. However, law and economics scholars sometimes make claims about the law's content. For example, some economic scholarship claims that tort law evolves towards efficiency, and that the distinction between efficient and inefficient rules reveals what the law really is. If the correct interpretation of the law in a particular context is the rule that results in economic efficiency, then a lawyer must know the effects of alternative rules in order to know which one is the law. In these circumstances, the content enterprise collapses into the cause enterprise.

Many law professors think that they teach students legal rules and reasoning. The lower ranked law schools especially teach legal rules, and the higher ranked law schools especially teach legal reasoning. As taught in the higher ranked schools, legal reasoning increasingly encompasses the cause enterprise, but, in lower ranked law schools, the content enterprise remains distinct and all absorbing. Law and economics, or empirical legal studies, cannot dominate lower ranked law schools unless social science becomes legal reasoning's content. The fact that a student can pass the bar exam without knowing much about the cause enterprise suggests that the content enterprise remains mostly distinct from the cause enterprise. The persistence of this distinctiveness limits the extent to which the cause enterprise – including law and economics, as well as empirical legal studies – can penetrate the lower ranked law schools.

A popular bumper sticker reads, "Are we having fun yet?" Many law and economics scholars wonder, "Are we a science yet?" Because of empirical legal studies, the answer is "Yes." The maturation of law and economics into normal science is intoxicating, but its peripheral influence on the law's content is sobering.