

The Role of Science in Law

By Robin Feldman

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- I believe that a scientist looking at nonscientific problems is just as dumb as the next guy¹ -

Lawyers look to science to rescue them from uncertainty and the discomfort of difficult legal decisions. However, when lawyer's rely on science and defer the answers to expert witnesses, they lose sight. No matter how organized and thorough scientific theories reach, they simply cannot foresee and solve every case or legal problem. We are constantly seduced into believing that some new science will provide the answers to laws dilemmas, and we are constantly disappointed. A perfect example is trial attorneys and the art of persuading a jury. Trial attorneys yearn for hardcore, scientific evidence. Jurors accept science, jurors like scientific evidence, and often times, scientific evidence may tip the scales of justice in an attorney's favor.

In no area of law is there a greater temptation to use science than patent law.² Lawyers tend to fixate and accept scientific theories, forgetting that the scientific line itself is an artificial construct that may or may not be appropriate for the legal issue involved.³ Science is not always a tangible object that transfers easily to other areas. Even the notion of a gene is an artificial construct that has wide-reaching legal complications. Cells contain strands of DNA, and genes

¹ Richard P. Feynman, The Value Of Science, November 3, 1955. "The Value Of Science" was given as a public address at the 1955 Autumn meeting of the National Academy of Sciences, held on the California Institute of Technology. Richard P. Feynman (May 11, 1918 – February 15, 1988) was an influential American physicist.

² See ROBIN FELDMAN, THE ROLE OF SCIENCE IN LAW (Oxford University Press 2009) at 27.

³ *Id.* at 10.

are simple locations on that strand. Effectively, the theory of a gene is a way to conceptualize a continuous strand of as if it were broken up into pieces. The truth of the matter is that DNA is not an organized, laid-out strand with easily assignable gene locations. Nevertheless, the legal system is assigning rights to those pieces. Another legal fiction is that patent law grants rights in new inventions, so how can scientists claim rights to genes they did not invent? The scientist certainly did not invent the gene, and it already exists in the human body. Yet patent law allows scientists to claim rights over genes that have been isolated.⁴ If we lose sight of the artificial constructs and assumptions involved in creating scientific theory, we lose the ability to ask whether these scientific theories fir the legal issues properly as they unfold in cases.

In *The Role of Science in Law*, U.C. Hastings professor Robin Feldman delves into specific areas of law where science and law intersect.⁵ Feldman explores where science can sometime answer legal conundrums, and more importantly, where science's influence on legal decision-making should be limited. A key theme that Feldman explores throughout her book is the major disconnect between applying science to legal questions, and the inherent difference between science and law. Science is filled with doctrinal frameworks and answer-based theories where the purpose is to answer the ultimate questions.⁶ Science seeks to answer the ultimate questions: why? However, in law doctrinal structures are not enduring. There are no ultimate doctrinal structures because there are no ultimate questions. New cases, individual cases will naturally emerge within the spaces of whatever structure or doctrine exists in law, rendering that structure insufficient for resolving the new case or question. Feldman argues that due to this

⁴ See *Parke-Davis & Co. v. H.K. Mulford Co.*, 189 F.95, 103 (S.D.N.Y. 1911), *aff'd* 196 F. 496 (2d Cir. 1912).

⁵ See Robin Feldman CV, available at <http://www.robinfeldman.com/cv.htm>. Professor Robin Feldman received a bachelor's degree from Stanford University graduating Phi Beta Kappa, and a J.D. from Stanford Law School. She received the Urban A. Sontheimer Award for graduating second in her class, and graduated the Order of the Coif. She also served in the Articles Department of the Stanford Law Review, and after graduation, clerked for The Honorable Joseph Sneed of the U.S. Court of Appeals for the Ninth Circuit.

⁶ See FELDMAN, *surpa* note 2, at 3.

inherent dichotomy between law and science, that it is impossible for science to answer all of law's questions.

The Role of Science in Law argues that core problems at the intersection of law and science flow not from the changing nature of science but from the changing nature of law.⁷ Moreover, science could be as complicated as a patent covering a gene sequence or as simple as a formula used to calculate jail sentences. However, regardless of the inherent differences between law and science and rejected attempts to outsource legal queries to science, time and time again we see it happen. A more extreme version of outsourcing legal dilemmas to science would be allowing a computer system to determine what sentence is proper in a certain criminal case.⁸ A classic example is the Federal Sentencing Guidelines that utilized a scientific formula to govern judges in determining sentences in criminal cases. In 2006, the *China Daily* newspaper reported the adoption of a software program in China that recommended criminal sentencing to judges in individual cases.⁹ This program was used in the case of a farmer who attacked someone with a knife, injuring his victim slightly in the arm and face.¹⁰ The judge in the case entered the type of crime, nature of the injury, and the fact that the assailant surrendered to the police and paid compensation on his own initiative.¹¹ After a few minutes of calculation, the program recommended a 5.4 month prison sentence, yet under the circumstances, the judge imposed a 6-month sentence instead.¹² It's hard to see how a computer could digest a few input calculations and adequately dispense justice. However, this China-software example is not far-

⁷ See FELDMAN, *surpa* note 2, at 4.

⁸ FELDMAN, *surpa* note 2, at 73; see Nate Anderson, *China Tests Computer-Aided Sentencing*, ARS TECHNICA (September 14, 2006), <http://arstechnica.com/software/news/2006/09/7745.ars>.

⁹ FELDMAN, *surpa* note 2, at 74.

¹⁰ FELDMAN, *surpa* note 2, at 74.

¹¹ FELDMAN, *surpa* note 2, at 74.

¹² FELDMAN, *surpa* note 2, at 74.

removed from the Federal Sentencing Guidelines that were in place in America¹³, since the formulas used by federal judges are analogous to those used by the software in China.¹⁴

Robin Feldman is the Director of the Hastings Law & Bioscience Project (LAB Project), and sits on the Executive Committee of the Antitrust Section of the American Association of Law Schools. Due to her expertise in this area, Feldman devotes a section of her book to the modern debates on the application of economics to antitrust law. Antitrust law is so deeply enmeshed with economic theory because it is almost impossible to examine a firm's behavior without applying sophisticated economic analysis.¹⁵ However, when law adopts economic theory, one pervasive, simple problem exists: courts cannot do it. According to Feldman and prominent law and economics scholars, courts are unable to apply even basic economic analysis to individual cases.¹⁶ Feldman posits that the problem is one of capacity.¹⁷ Judges, juries, lawyers, and even most staff attorneys at the Federal Trade Commission and the Department of Justice are not economists. Antitrust rules require in-depth, difficult economic analysis of business models, market conditions and effects of competitive measures on the market. It's not surprising then that judges often get it wrong when applying sophisticated economic tests which they are unfamiliar. So where should we turn? Feldman suggests that, no matter where we turn, we must avoid our fixation with measurements.¹⁸ Through economic analysis, we may be able to measure with precision, but law is not necessarily about measurement. Law is about justice. A judge need not have statistics and numerous expert witnesses to know where an anti-

¹³ See *United States v. Booker* and *United States v. FanFan*, 543 U.S. 220 (2005) (holding that the Federal Sentencing Guidelines are unconstitutional and not mandatory).

¹⁴ FELDMAN, *surpa* note 2, at 74.

¹⁵ See Richard A. Epstein, *Law and Economics: Its Glorious Past and Cloudy Future*, 54 C CHICAGO L. REV. 1167, 1173 (1997).

¹⁶ See FELDMAN, *surpa* note 2, at 42.

¹⁷ FELDMAN, *surpa* note 2, at 43.

¹⁸ FELDMAN, *surpa* note 2, at 47.

competitive force has been implemented by a business. An overreliance on measurements and experts leads jurists astray of common sense and legal intuition.

Feldman's book is a must-read for lawyers who specialize in intellectual property, antitrust, and other areas where law and technology intersect. Her examples are practical and her points are well-reasoned, and while intuitive upon reading, are not evidence in practice. Additionally, since *The Role of Science in Law* was just released in 2009, its examples and analysis is relevant to current and future litigation in areas of law that heavily rely on technology. This book is well-written; an easy read for the busy practicing attorney, and most importantly, makes the reader think about cases apart from the science that may be involved in them. Feldman points out our over-reliance on science, and how realizing science's limitations may actually be necessary for an attorney to provide his best legal advice.

Intellectual property law is a booming area and there is nothing to suggest that in the future, science will not continue to have an important impact on the law. Moving forward, Feldman suggests that if scientific insight and discoveries are going to play a supportive role in the legal process, they must be expressed in language that legal actors can understand.¹⁹ However, even this suggestion has its limits. Plain language patents will not, by any stretch of the imagination, solve all the problems of patent interpretation.²⁰ Many patent holders find themselves in the difficult position of trying to use existing language to describe something that didn't exist when the language developed.²¹ When the legal system relies on science for crafting rules, those rules lack the flexibility and dexterity necessary for effective application in the ever-evolving legal landscape. Feldman develops this thesis through in-depth examples and interesting anecdotes.

¹⁹ See FELDMAN, *surpa* note 2, at 175.

²⁰ FELDMAN, *surpa* note 2, at 183.

²¹ FELDMAN, *surpa* note 2, at 183.

As science develops and grows, law may struggle to keep up but not with the same goal. Law has the weight of policy concerns and human beings behind it, where the answers usually fall in the gray area, not the black and white areas that govern scientific processes. Law is sometimes messy, constantly shifting as new cases arise, new laws are passed, and the current state of any legal doctrine is only an appellate-court decision away from being altered.²² Nevertheless, as Feldman warns, it is critical to understand that science itself lacks the capacity to answer the questions that law must address.²³ Law is not a process to be replaced by science, but the two independent fields must meet in the middle, and law should be embraced for what it is, not stifled by science.

²² FELDMAN, *surpa* note 2, at 197.

²³ FELDMAN, *surpa* note 2, at 197.