

## VERY LIKE A LAW PROFESSOR: AN ESSAY IN HONOR OF TOM ULEN

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*This Essay explores the future of law and economics. The author begins by reviewing Tom Ulen's attempts at predicting the field's future in 1997 at his lecture "Very Like a Whale." He then follows Tom Ulen's idea that law and economics scholars might do well to engage in more "controlled experiments" to make his own set of predictions. His first prediction is that law and economics scholars during the next decade will exploit regression discontinuity to tease out the causal impact of legal rules. Next, he predicts that law and economics scholars will exploit unintended experiments to tease out causal impacts of the law. Finally, the author predicts that law and economics scholars will, with the help of government officials, conduct intentional experiments to tease out causal impacts of the law.*

Tom Ulen is one of the great pioneers of law and economics. He, along with William Landes, Mitch Polinsky, Al Klevorick, and Steve Shavell represent the first wave of PhD economists teaching in law schools and publishing in law reviews. Tom has contributed to a wide swath of subject matters and methodologies.<sup>1</sup> He is also one of the great expositors of law and economics. Through multiple editions of their seminal textbook, *Law and Economics*, Robert Cooter and Tom Ulen have indoctrinated thousands of law students (and undergraduates) in the ways of the rational actor model. Their textbook is that rare publication that clearly recasts the seminal findings of the field, while adding to the field with additional contributions of their own. For example, in analyzing disclosure law, Tony Kronman is responsible for making the distinction between deliberately and casually acquired information in his deservedly famous *Laidlaw* article.<sup>2</sup> But it is the Cooter and Ulen text-

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1. Two of my favorite Tom Ulen ideas concern comparative negligence: Robert D. Cooter & Thomas S. Ulen, *An Economic Case for Comparative Negligence*, 61 N.Y.U. L. REV. 1067 (1986); and behavioral economics: Russell B. Korobkin & Thomas S. Ulen, *Law and Behavioral Science: Removing the Rationality Assumption from Law and Economics*, 88 CALIF. L. REV. 1051 (2000).

2. Anthony T. Kronman, *Mistake, Disclosure, Information, and the Law of Contracts*, 7 J. LEGAL STUD. 1, 9-14 (1978).

book that makes the equally important distinction between information that is socially productive (in that it increases the gains of trade) and information that is merely redistributive (in that it redistributes the gains from one party in a contract to another).<sup>3</sup>

Yet Tom means more to me and to his colleagues at the University of Illinois as well as those throughout the academy than what he has put down on paper. It was Tom who taught me that part of his job was actually spending time socializing with his colleagues. When I visited at the University of Illinois for one year, Tom and I—under the pretext of preparing for a law and economics class we were coteaching—spent loads of time together. Our out of class interactions were often centered around food or sports. It was Tom who first took me to the Champaign breakfast tradition that is Carmon's (some lingering grease in my bowels turned when I learned it had been turned into a crêperie). It was Tom who one day whisked me away to bustling Philo, Illinois to enjoy the equally healthful offerings of the Philo Tavern. And, it was Tom who repeatedly treated me to Jarling's Custard Cup.

On the sports side, beyond negotiating several aleatory agreements, Tom and I regularly played racquetball together—that is, until Tom saw me blow out my knee while we were teammates on the faculty's Old 'N Slow basketball team. (A note to young scholars: when playing on the faculty team as a visiting professor, the number of times you are fed the ball is a signal of how heavily you are being recruited.) Tom and his son Tim are witnesses to the closest thing I'll ever have to a dunk—on a slightly depressed rim at the Doctor Howard school court across from his house. Tim was more surprised to see me show up unannounced at the Ulen home with a six pack of beer to watch the defeat of some woe-begotten Indiana team. At the beginning of my visiting year, Tom picked me up at my house at 4 AM to partake in one of the weirdest and most wonderful Illinois traditions (going back almost as long as the Morrow Plots) of waiting in line for prime locker space at the IMPE sports center. I remember Tom not only brought coffee, but he brought his characteristic bonhomie and turned what would have been drudgery into a wonderful memory of communing with Tom, Russell Korobkin, and Tom Mengler. Tom thought that we should see the early morning event as law and economics in action. After all, when an institution decides to allocate a scarce entitlement on a nonprice basis, it is only natural that we should expect to see people substitute queuing costs for out of pocket costs.

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3. ROBERT COOTER & THOMAS ULEN, *LAW AND ECONOMICS* 246–48 (2d ed. 1997).

## I. TESTING ULEN'S PAST PREDICTIONS OF LAW AND ECONOMICS' FUTURE

I've been asked today to speak about the future of law and economics. But before attempting my own prognostication, I thought I would go back to 1997 to review Tom's own attempts at predicting the field's future. I was sitting in the audience here at the University of Illinois College of Law when Tom delivered "Very Like a Whale," an inaugural lecture on the occasion of his receiving a chair as one of Illinois's Alumni Distinguished Professors of Law.<sup>4</sup> The third section of those remarks expressly "speculate[d] on the future of law and economics."<sup>5</sup> My goal here is to look back and assess whether Tom got it right. I read Tom's speech as having made four predictions, which I will now describe and try to score for accuracy.

### A. *Declining Impact*

As a preliminary matter, Tom predicted that the low-hanging fruit had already been picked:

The easy work in law and economics has been done. The field has now settled into a comfortable middle age; its hair is graying nicely at the temples. The work that lies in the future is likely to be far more complex and to have a much smaller payoff than the earlier work. . . . I doubt that there will be similar significant impacts of law and economics in the near future . . . .<sup>6</sup>

This is not the rosier of predictions, but the past thirteen years have not proven him wrong. The field is thriving, but to my knowledge no line of recent scholarship has had the impact of say, the Chicago school's transformation of antitrust analysis. Oh, to have had virgin lands to plow for the very first time!

### B. *More Econometrics*

Tom looked to the expanded use of econometrics as an important source of discovering the underlying impact of the law:

I think that the next large leaps are likely to come from empirical work. By this I mean the sort of sophisticated econometrics and statistical hypothesis-testing that [a few scholars] in law and economics have engaged in. To do this work and to evaluate it, will demand of those in the field that they become adept in skills that are not now part of the common toolkit of the legal scholar. Significantly, it will also require of law and economics that it quit acting

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4. See generally Thomas S. Ulen, *Very Like a Whale: Inaugural Lecture for the Alumni Distinguished Professor of Law* (Oct. 15, 1997), <http://igpa.uillinois.edu/system/files/WP62-whale.pdf>.

5. *Id.* at 10.

6. *Id.* (footnote omitted).

like a religion and more like a science. Practitioners will have to leave the cathedral and get to the microscope.<sup>7</sup>

There are, I am well aware, significant inherent problems in doing empirical work in the law. To give you one example, anyone eager to measure the deterrent effect of tort law must be able to demonstrate the accidents that did *not* happen because of fear of tort liability and that the accidents that did occur were less severe than they otherwise would have been. These are very demanding things to demonstrate.

One possibility for broadening the scope of empirical work in law and economics is to rely more on controlled experiments. These have proved to be extremely revealing in psychology and, as Russell Korobkin has shown, in law, too.<sup>8</sup> Once again, Ulen was prescient. There has been a marked uptick in legal number crunching. There was a time when the law and society conference was the home of the best legal empiricism. Today, law and economics conferences (ALEA, CELS, or the NBER summer workshop) are the dominant purveyors of quantitative analysis. And, as I will suggest, Tom's prediction about the opportunity "to rely more on controlled experiments" is still true today and a central part of my current predictions.

### C. *More Complex Models*

Tom also predicted increasingly nuanced and high-powered mathematical models:

[W]e are likely to find ourselves using ever-more sophisticated models. For instance, chaos theory may come to play an important role in the law. Let me explain why. In 1812 Pierre Simon de Laplace argued that if we knew enough, we could predict the future exactly. One way of putting this is to say that, if we knew the initial conditions of a system perfectly and if we knew the laws of motion of the system, then we should be able to predict its state at any future point in time. This Laplacian determinism is correct only if we can measure the initial conditions with infinite precision. But, of course, we cannot and the effects of this imprecision can be dramatic.<sup>9</sup>

Suppose that you were able to measure the initial condition of a system to ten decimal places. That sounds fairly accurate, but clearly it is a long way from complete accuracy. If we make predictions about the future states of the system on the basis of our ten-decimal-place initial condition, errors compound and compound fairly quickly. The result is that our predictions about the future may be wildly inaccurate or, put somewhat differently, this system of equations will be extremely sensitive to

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7. *Id.* at 11.

8. *Id.* at 10–11.

9. *Id.* at 11 (footnotes omitted).

initial conditions. A system with that property is said to be “chaotic.” But the term is slightly misleading. “Chaos” is *apparently* complicated, *apparently* patternless behavior that actually has a simple, deterministic explanation.

The discovery of chaos has revealed a fundamental misunderstanding in our views of the relation between rules and the behavior they produce—between cause and effect. “We used to think that deterministic causes must produce regular effects, but now we see that they can produce highly irregular effects that can easily be mistaken for randomness. We used to think that simple causes must produce simple effects (implying that complex effects must have complex causes), but now we know that simple causes can produce complex effects. We realize that knowing the rules is not the same as being able to predict future behavior.” For our purposes in predicting the effects of legal rules on behavior, we can see that we need terribly sophisticated models of human behavior that reconcile the unpredictability of behavior with simple, deterministic models.<sup>10</sup>

Here is (finally) a prediction that has not borne fruit. To be sure, dozens of articles with high-tech models of contracting and positive political theory have been written. Indeed, a journal I edited for seven years since Tom’s prognostication takes some pride in publishing some of the more sophisticated efforts.<sup>11</sup> But Tom’s suggestions about chaos theory have not materialized. SSRN tells me it has 374 abstracts that use the term,<sup>12</sup> but few law and economics scholars would identify anything close to chaos theory as having traction in the field.

I should disclose, however, that this assessment might be subject to an “anchoring” bias.<sup>13</sup> You see, in the question and answer after the 1997 lecture, I challenged Tom about the plausibility of this prediction. At the time, I viewed chaos as an analysis that couldn’t be used to go beyond the suggestion of perverse possibilities. I didn’t think it could be turned into a tool to make falsifiable real-world predictions. Tom pivoted to arguing that non-neoclassical models—such as those with increasing returns—would be increasingly prevalent. I was still skeptical, but Tom masterfully forced me to comment on a work in progress by Daria Roithmayr that argued how “lock-in” effects illuminate civil rights analysis. In fact, Tom somehow managed to orchestrate a bet between Daria

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10. *Id.* at 12 (footnotes omitted).

11. The journal that I am referring to is *The Journal of Law, Economics, and Organization*.

12. SSRN *eLibrary Database Search*, SOC. SCI. RES. NETWORK, <http://papers.ssrn.com/sol3/DisplayAbstractSearch.cfm> (accessed by running search for “chaos”) (last visited June 26, 2011).

13. See, e.g., Daniel Kahneman et al., *Would You Be Happier If You Were Richer? A Focusing Illusion*, 312 *SCIENCE* 1908, 1908 (2006) (“When people consider the impact of any single factor on their well-being . . . they are prone to exaggerate its importance. We refer to this tendency as the focusing illusion.”).

and me, which I lost when her analysis was subsequently published in the *Virginia Law Review*.<sup>14</sup>

#### D. *More Behavioral Economics*

Finally, Tom saw a future with increased attention to departures from the traditional rational actor model:

The . . . general direction in the future of law and economics will be a theory of human decision-making that is vastly more satisfying than rational choice theory. That theory must give us an account of the fallibility of human reason, something we know exists but about which we are only just beginning to have systematic learning. It is, I think, one of the truly astonishing things about law and economics that some of the most important theoretical innovations in economic theories of behavior are occurring among law-and-economics scholars, not among mainstream economists. Why did this happen? Because, I believe, the lawyers' very practical and sharp questions about human behavior have demanded a coherent response. Law and economics has been goaded into providing that response and, in the course of doing so, has significantly emended our understanding of human behavior.<sup>15</sup>

Tom's future vision is 20/20 here. The past decade has seen a flowering of behavioralism. Of course, it is a bit unfair to give Tom too much credit for this prediction, because his own ensuing scholarship made it come true.<sup>16</sup> In 1997, I recognized that behavioralism was at least a fad; but I would not have predicted the extent to which I would become a fellow traveler in some of my own writing.<sup>17</sup>

So in sum, I score Tom at an enviable 3.5 out of 4—taking off just a half point for his chaos prediction. Then again, knowing Tom, he may just be setting me up to lose another bet to Daria or some other budding chaos scholar. In 2023, if someone comes back and assesses the next section, I doubt if history will look as kindly on my three soothsayings.

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14. See generally Daria Roithmayr, *Barriers to Entry: A Market Lock-In Model of Discrimination*, 86 VA. L. REV. 727 (2000).

15. Ulen, *supra* note 4, at 12.

16. See, e.g., Korobkin & Ulen, *supra* note 1.

17. See, e.g., IAN AYRES, *CARROTS AND STICKS: UNLOCK THE POWER OF INCENTIVES TO GET THINGS DONE* (2010); Ian Ayres et al., *Evidence from Two Large Field Experiments that Peer Comparison Feedback Can Reduce Residential Energy Usage* (July 16, 2009) (unpublished manuscript), available at <http://ssrn.com/abstract=1434950>.

## II. THE RANDOMIZATION LENS

My predictions all follow from Tom's 1987 idea that law and economics scholars might do well to engage in more "controlled experiments." Since then, empirical economists have increasingly thought about empiricism in terms of randomized experiments.<sup>18</sup> This shift in thinking can be seen in the methodological shift of emphasis between the phenomenally successful *Freakonomics* which was published in 2005 and the 2009 sequel, *SuperFreakonomics*.

*Freakonomics* focused on the crunching of historical data. For example, a core story of the original book looked at data on crime and abortion.<sup>19</sup> In a truly inspired moment, John Donohue and Steve Levitt thought to link the impact of legalizing abortion to the incidence of crime—eighteen years later. Mining historic data can produce truly startling results.

But a higher proportion of *SuperFreakonomics* is devoted to studies that use randomized field experiments to find out what causes what. If you want to know whether offering donors a two-for-one matching grant produces more charitable donations than a one-for-one grant, you randomly assign potential donors to receive one of these two solicitations and then look to see whether the two groups give different amounts. One sign of the shift toward randomization is the prominence of John List and his rise to fame in the economics profession. John is one of the great field experimenters in economics today. He is the kind of guy who goes to baseball card shows and at random treats one set of card dealers differently from another and then sees whether they offer different prices.

*SuperFreakonomics* not only relates the results of more randomized experiments than *Freakonomics* did, it also explains how the idea of randomized experiments is leading statisticians to think more clearly about how to use regression analysis to test for causal effects with historic data. There is a new zeitgeist in the way economists think about running re-

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18. This section develops ideas that I first blogged about in 2009. Ian Ayres, *A New Method to the Freakonomics Madness*, FREAKONOMICS: THE HIDDEN SIDE OF EVERYTHING (Dec. 8, 2009, 2:30 PM), <http://freakonomics.com/2009/12/08/a-new-method-to-the-freakonomics-madness/>; Ian Ayres, *So Long and Thanks for All the F-Tests*, FREAKONOMICS (June 30, 2009, 12:22 PM), <http://freakonomics.com/2009/06/30/so-long-and-thanks-for-all-the-f-tests/>. Since delivering this paper at the live conference, Jim Greiner and Cassandra Pattanayak have circulated the initial results of a remarkable randomized experiment with evidence showing that offers for free legal representation from the Harvard Legal Aid Bureau (HLAB) ended up hurting unemployment claimants. D. James Greiner & Cassandra Wolos Pattanayak, *Randomized Evaluation in Legal Assistance: Report of a First Study, a Critical Review of the Literature, and Prospects for the Future*, 121 YALE L.J. (forthcoming 2011). See also Ian Ayres, *Iatrogenic Legal Assistance?*, FREAKONOMICS: THE HIDDEN SIDE OF EVERYTHING (Dec. 28, 2010, 1:30 PM), <http://www.freakonomics.com/2010/12/28/iatrogenic-legal-assistance/>.

19. STEVEN D. LEVITT & STEPHEN J. DUBNER, FREAKONOMICS: A ROGUE ECONOMIST EXPLORES THE HIDDEN SIDE OF EVERYTHING 115–44 (2005); see also John J. Donohue III & Steven D. Levitt, *The Impact of Legalized Abortion on Crime*, 116 Q.J. ECON. 379 (2001).

gressions. Today, statistical economists explicitly think of their regressions in terms of randomized experiments. They think of the variable of interest as the “treatment” and ask themselves what kind of assumptions they need to make or what kind of statistical procedures they need to run on the historic data to emulate a randomized study.

This new way of thinking is very much on display in the truly excellent (but technically demanding) book, *Mostly Harmless Econometrics: An Empiricist's Companion*, by Joshua Angrist and Jörn-Steffen Pischke.<sup>20</sup> Angrist and Pischke unabashedly claim that when properly specified, regression correlation estimates can provide evidence of the econometric Holy Grail, causation:

[Something that distinguishes] the discipline of econometrics from the older sister field of statistics . . . is a lack of shyness about causality. Causal inference has always been the name of the game in applied econometrics. Statistician Paul Holland (1986) cautions that there can be “no causation without manipulation,” a maxim that would seem to rule out causal inference from nonexperimental data. Less thoughtful observers fall back on the truism that “correlation is not causality.” Like most people who work with data for a living, we believe that correlation can sometimes provide pretty good evidence of a causal relation, even when the variable of interest has not been manipulated by a researcher or experimenter.<sup>21</sup>

The book backs up this assertion by teaching the reader to think carefully about what assumptions about the counterfactual are necessary to make a causal inference. The key condition that is necessary to infer cause from correlation is that the historical data must emulate the conditions of randomized data.

For example, Angrist and Pischke show that the regression discontinuity design provides causal inference from historic correlation because it emulates randomized assignment of a treatment to otherwise similar subjects.<sup>22</sup>

- 1) *I predict that law and economics scholars during the next decade will exploit regression discontinuity to tease out the causal impact of legal rules.*

To see how regression discontinuity works and why it is ripe for exploitation, let me sketch how it might be applied to assessing the impact of sentencing enhancements for drunk driving. In California, it is illegal to drive with a blood alcohol level above .08, but driving with a blood al-

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20. See generally JOSHUA D. ANGRIST & JÖRN-STEFFEN PISCHKE, *MOSTLY HARMLESS ECONOMETRICS: AN EMPIRICIST'S COMPANION* (2009).

21. See *id.* at 113 (footnote omitted).

22. *Id.* at 251–67 (regarding regression discontinuity).

cohol level above .15 may subject a driver to enhanced penalties.<sup>23</sup> A regression discontinuity can be used to tease out the causal impact of the penalty enhance on recidivism (or potentially a host of other outcomes, such as unemployment or suicide). The key to regression discontinuity is to restrict the sample to the arrestees who are arbitrarily close to the enhancement discontinuity. Arrestees whose blood alcohol level is .1499 and those whose level is .1501 should be nearly identical on every other dimension. We should expect that those above and below the cutoff would have the same proportion of felons and the same proportion of oboists. Seen through the “randomization lens,” it is largely random whether a particular person in this restricted sample will be measured as being above or below the enhancement cutoff. For this restricted sample, it is as if some arrestees were randomly selected for the enhancement treatment. And from there it is a short step to realizing that a regression discontinuity can test, again in the restricted sample, whether the enhancement reduces the risk of recidivism.

Discontinuity regressions are often not feasible. There needs to be a discontinuous treatment for people who are above or just below some cutoff. But the law abounds with such continuity (such as when parole boards produce a continuous risk assessment rating and then choose whether or not to parole). Even when there is a cutoff, the discontinuity design will not work if the subjects strategically react to the assessment. Discontinuity regressions are less appropriate to assess the causal impact of speeding laws because drivers strategically may choose to drive just below a speeding enhancement. In contrast, I find it less likely that drunk drivers are able to strategically manipulate their blood alcohol levels so that they are just below .14.

Keith Chen and Jesse Shapiro lead the way here with a wonderful discontinuity analysis of the effect of prison conditions on recidivism rates.<sup>24</sup> Additionally, Kenneth Y. Chay and Michael Greenstone utilize a discontinuity model in order to isolate the specific conditions within the housing market and their effect on air quality in certain communities.<sup>25</sup>

#### *What Economists Would Really Like to Do*

*SuperFreakonomics* very much reflects this new randomization lens as a way of thinking about data mining. Without off-putting jargon, Levitt and Dubner explain how regressions can give you quasi experimental results. Indeed, with help from my Kindle, I found three parallel

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23. CAL. VEH. CODE § 23578 (West 2011). Miguel Figueirdo is currently working on producing just such a discontinuity study analyzing a variety of states.

24. See generally M. Keith Chen & Jesse M. Shapiro, *Do Harsher Prison Conditions Reduce Recidivism? A Discontinuity-Based Approach*, 9 AM. L. ECON. REV. 1 (2007).

25. See generally Kenneth Y. Chay & Michael Greenstone, *Does Air Quality Matter? Evidence from the Housing Market*, 113 J. POL. ECON. 376 (2005).

descriptions that turn on making the randomization analogy. For example, listen to how they describe testing for sex discrimination on the job:

Economists do the best they can by assembling data and using complex statistical techniques to tease out the reasons why women earn less than men. The fundamental difficulty, however, is that men and women differ in so many ways. What an economist would *really* like to do is perform an experiment, something like this: take a bunch of women and clone male versions of them; do the reverse for a bunch of men; now sit back and watch. By measuring the labor outcomes of each gender group against their clones, you could likely gain some real insights.

Or, if cloning weren't an option, you could take a bunch of women, randomly select half of them, and magically switch their gender to male, leaving everything else about them the same, and do the opposite with a bunch of men.

Unfortunately, economists aren't allowed to conduct such experiments. (Yet.)<sup>26</sup>

They go on to describe how, in the absence of randomized data, some (limited) progress might be gleaned by looking at the historic experience of transgendered people—before and after sex reassignment surgery. They take a similar approach when tackling the question of testing physician quality:

What you'd *really* like to do is run a randomized, controlled trial so that when patients arrive they are randomly assigned to a doctor, even if that doctor is overwhelmed with other patients or not well equipped to handle a particular ailment.

But we are dealing with one set of real, live human beings who are trying to keep another set of real, live human beings from dying, so this kind of experiment isn't going to happen, and for good reason.

Since we can't do a true randomization, and if simply looking at patient outcomes in the raw data will be misleading, what's the best way to measure doctor skill?

Thanks to the nature of the emergency room, there is another sort of de facto, accidental randomization that can lead us to the truth.<sup>27</sup>

The "next in line" queue at some emergency rooms provides quasi random assignments and allows researchers to emulate the results on a randomized test. The magic "really like to do" words appear a third time when Levitt and Dubner talk about testing whether more incarceration would really lower the crime rate:

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26. STEVEN D. LEVITT & STEPHEN J. DUBNER, SUPERFREAKONOMICS: GLOBAL COOLING, PATRIOTIC PROSTITUTES AND WHY SUICIDE BOMBERS SHOULD BUY LIFE INSURANCE 47 (2009).

27. *Id.* at 78–79.

To answer this question with some kind of scientific certainty, what you'd really like to do is conduct an experiment. Pretend you could randomly select a group of states and command each of them to release 10,000 prisoners. At the same time, you could randomly select a different group of states and have them lock up 10,000 people, misdemeanor offenders perhaps, who otherwise wouldn't have gone to prison. Now sit back, wait a few years, and measure the crime rate in those two sets of states. Voilà! You've just run the kind of randomized, controlled experiment that lets you determine the relationship between variables.

Unfortunately, the governors of those random states probably wouldn't take too kindly to your experiment. Nor would the people you sent to prison in some states or the next-door neighbors of the prisoners you freed in others. So your chances of actually conducting this experiment are zero.

That's why researchers often rely on what is known as a *natural experiment*, a set of conditions that mimic the experiment you want to conduct but, for whatever reason, cannot. In this instance, what you want is a radical change in the prison population of various states for reasons that have nothing to do with the amount of crime in those states.

Happily, the American Civil Liberties Union was good enough to create just such an experiment.<sup>28</sup>

The methodological repetition across these examples is one of the book's strengths. This is really the way that many empirical economists talk to themselves about testing. Regardless of the problem, we often now start with the same basic question: Can we trick a regression to emulate the conditions of a randomized experiment? As the randomization zeitgeist of economics departments diffuses to law schools, we should expect an uptick in the way the randomization lens impacts the ways law and economics scholars construct and specify their regressions of historic data.

But randomization is more than just a metaphor.

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28. *Id.* at 100–01.

- 2) *I predict that law and economic scholars will exploit unintended experiments to tease out causal impacts of the law.*



*Circuit Selection is a Crap Shoot*

One of the juiciest pieces of low hanging fruit available for quantitative scholars to pick concerns data in which institutions used randomized procedures to promote fairness or other organizational objectives. Want to find out the impact of serving in the military on lifetime earnings? Scholars have exploited the simple fact that the Vietnam draft lottery randomly selected some young men for military service.<sup>29</sup> The United States didn't set up the lottery as an experiment to test for the impacts of military service. But nonetheless, researchers can come in after the fact and piggyback on the randomization procedure to estimate the causal impact.

Piggybacking studies have exploited the random assignment of roommates at Dartmouth and other schools to show that peers influence your GPA, your drinking, and whether you'll join a fraternity.<sup>30</sup> A recently published study of random class assignment at the U.S. Air Force Academy suggests being assigned to a female professor "has a powerful effect on female students' performance in math and science classes . . . ."<sup>31</sup>

Consideration of fairness and transparency often drive legal processes toward explicitly randomized (or quasi-randomized) queuing procedures and thus are a fertile ground for piggyback analyses. Donald Green and Daniel Winik have exploited the random assignment of

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29. Carlos Dobkin & Reza Shabani, *The Health Effects of Military Service: Evidence from the Vietnam Draft*, 47 *ECON. INQUIRY* 69 (2009).

30. Bruce Sacerdote, *Peer Effects with Random Assignment: Results for Dartmouth Roommates*, 116 *Q.J. ECON.* 681 (2001); Natalie J. Shook & Russell H. Fazio, *Roommate Relationships: A Comparison of Interracial and Same-Race Living Situations*, 11 *GRP. PROCESSES & INTERGROUP REL.* 425 (2008).

31. Scott E. Carrell et al., *Sex and Science: How Professor Gender Perpetuates the Gender Gap*, 125 *Q.J. ECON.* 1101, 1104 (2010).

judges to disputes to test whether a criminal judge impacts recidivism.<sup>32</sup> David Abrams and Albert Yoon have exploited the random assignment of public defenders in Clark County, Nevada, and found that veteran public defenders with more than ten years of experience reduce the average length of incarceration by seventeen percent compared to public defenders in their first year; additionally, Hispanic attorneys obtained sentences that were up to twenty-six percent shorter than those obtained by African American and white attorneys.<sup>33</sup> I hope to exploit the random assignment of cellmates to test whether bunking with a more serious felon impacts the types of crimes a parolee is likely to commit in the future. Dan Ho and Kosuke Imai have exploited California's randomized ballot alphabet to find that a candidate having his or her name appear first increases the expected vote share in primary elections (but not general elections where party cues are more important).<sup>34</sup>

There are still fine careers to be made simply by searching for and then analyzing preexisting randomization procedures. For example, you might be surprised to learn that 28 U.S.C. § 2112 provides for a randomized mechanism for resolving intercircuit conflicts arising from multiple appellate proceedings arising out of a single administrative proceeding.<sup>35</sup> The statute requires that agencies notify the Judicial Panel on Multidistrict Litigation (JPML) if multiple petitions for review of an agency action are filed in different judicial districts. If the JPML determines that it should consolidate the cases, the statute requires that it choose the venue from among the circuits where timely petitions were filed "by means of random selection."<sup>36</sup> The JPML has promulgated implementing rules requiring "the Clerk of the Panel or designated deputy [to] randomly select a circuit court of appeals from a drum containing an entry for each circuit wherein a constituent petition for review is pending. . . . This random selection shall be witnessed by the Clerk of the Panel or a designated deputy other than the random selector."<sup>37</sup> In fact, the picture above is the actual drum used by the JPML in making selections. Do circuits decide

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32. Donald P. Green & Daniel Winik, *Using Random Judge Assignments to Estimate the Effects of Incarceration and Probation on Recidivism Among Drug Offenders*, 48 *CRIMINOLOGY* 357 (2010). See also IAN AYRES, *SUPER CRUNCHERS: WHY THINKING-BY-NUMBERS IS THE NEW WAY TO BE SMART* 72 (2007).

33. David S. Abrams & Albert H. Yoon, *The Luck of the Draw: Using Random Case Assignment to Investigate Attorney Ability*, 74 *U. CHI. L. REV.* 1145, 1145 (2007).

34. Daniel E. Ho & Kosuke Imai, *Randomization Inference with Natural Experiments: An Analysis of Ballot Effects in the 2003 California Recall Election*, 101 *J. AM. STAT. ASS'N* 888 (2006).

35. DAVID F. HERR, *MULTIDISTRICT LITIGATION MANUAL* § 1:1 (Thomson Reuters/West, 2009).

36. 28 U.S.C. § 2112(a)(3) (2006). The discussion of this procedure is derived from Paul R. Rodriguez, *Seeding the Courts: Strategic Appeals in Complex Litigation an Empirical Look at the Randomization Procedures of the Judicial Panel on Multidistrict Litigation* (2009) (unpublished manuscript) (on file with author).

37. RULES OF PROCEDURE OF THE JUDICIAL PANEL ON MULTIDISTRICT LITIGATION R. 17.1, at 14 (Apr. 2, 2001), <http://www.classactionlitigation.com/mdl/MDLR.PDF>.

cases differently? Thanks to this drum, we may one day have at least the beginnings of an answer.

- 3) *I predict that law and economics scholars will, with the help of government officials, conduct intentional experiments to tease out causal impacts of the law.*

Of course, a researcher can only piggyback if there is preexisting randomization to analyze. In the more common circumstance, the researcher needs to secure the cooperation of the organization to randomly treat similar cases differently. Randomized treatment is neither arbitrary nor capricious because it is not driven by whim or animus but as an attempt to resolve uncertainty about what works best. In many ways, the governments and nongovernmental organizations (NGOs) in developing nations have shown a greater willingness than those in so-called developed nations to undertake rigorous randomized testing. I highlight many examples of such field studies of public policy in my book, *Super Crunchers*.<sup>38</sup> I've never mentioned it before, but it strikes me that an Oxbridge connection is often behind these studies. Young executives and administrators in the participating organizations often attended elite research universities such as Oxford, Cambridge, Harvard, or MIT and come home with zeal to put randomization into practice.

And in spreading the randomization revolution, it may help that we are living in an era of substantial methodological advances. It is an unusual and heartening sign that in 2006 a law professor, Anup Malani, published a lead article in the *Journal of Political Economy* unveiling a powerful new procedure for estimating the size of Placebo and Nocebo effects.<sup>39</sup> Malani's wickedly smart idea was to vary the probability of treatment for different groups of subjects and *tell* the subjects about these different probabilities.<sup>40</sup> For example, imagine that one group of patients is (honestly) told they have a ninety percent chance of receiving a statin pill and ten percent chance of receiving a placebo pill. Another group of patients might be told (honestly) that they have a twenty percent chance of a statin. After the experiment is completed for both groups, it is then possible to compare the reported side effects of those patients in both groups that happened to receive statins. The only difference between these two groups is that one group thought it had a much higher probability of receiving a statin. This is the kind of methodological breakthrough that gives lie to any strong form idea that all the big ideas are part of an earlier age. The randomization lens is still relatively

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38. AYRES, *supra* note 32, at 73–80.

39. Anup Malani, *Identifying Placebo Effects with Data from Clinical Trials*, 114 J. POL. ECON. 236 (2006).

40. *See id.* at 238–39.

new and may drive further methodological breakthroughs even with regard to nonrandomized regression analysis.

There is a natural tendency for a scholar in prognosticating about the future of his or her field to say that the next big thing is whatever it happens to be that the scholar is about to publish. But let me play a bit against type and predict that lawmakers will not rush to take up the suggestion of Abramowitz, Ayres, and Listokin to randomize statutes, regulations and judge-made legal rules.<sup>41</sup>

In a recent article, Michael Abramowicz, Yair Listokin, and I argue: Governments should embrace randomized trials to estimate the efficacy of different laws and regulations. Just as random assignment of treatments is the most powerful method of testing for the causal impact of pharmaceuticals, randomly assigning individuals or firms to different legal rules can help resolve uncertainty about the consequential impacts of law. . . . Randomization will not be useful for all policies, but once government gains better experience with randomization, administrative agencies should presumptively issue randomization impact statements justifying decisions to implement particular policies. Making the content of law partially contingent on the results of randomized trials will promote ex ante bipartisan agreements, as politicians with different empirical predictions will tend to think that the experiments will support their position.<sup>42</sup>

I am not recanting the normative claims of this Article. I am only suggesting that as a positive matter the obstacles to embracing the randomization tool are nontrivial.

#### *Ceding Control to the Flip of a Coin*

For the last few years, I have pitched the advantage of the randomization tool to literally of hundreds of private and public organizations. I have had only limited success. In vain, I have pointed out to a major overnight shipper that it does not have a data driven apology policy. I have unsuccessfully proselytized to coaches that they might use randomization to test which strategies work.<sup>43</sup>

I have increasingly come to believe that many decision makers resist testing, not simply because they do not want to have their decisions statistically second guessed, but independently because they have trouble allowing particular decisions to be governed by random assignment, by the flip of the coin. We may never know whether twelve-step programs

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41. Michael Abramowicz et al., *Randomizing Law*, 159 U. PA. L. REV. 929 (2011).

42. *Id.* at 929–30.

43. See Ian Ayres, *Why Don't Sports Teams Use Randomization?*, FREAKONOMICS: THE HIDDEN SIDE OF EVERYTHING (Dec. 11, 2007, 11:34 AM), <http://freakonomics.com/2007/12/11/why-dont-sports-teams-use-randomization-a-guest-post/>.

actually work, in part, because program administrators are rarely willing to cede control to the “higher power” of randomization.<sup>44</sup>

But the rest is still unwritten. Even our outlandish call for “randomizing law” has some basis in experience. In 2004, Securities and Exchange Commission (SEC) Rule 202T allowed the SEC to implement a “pilot program to examine the efficacy” of certain short sale restrictions,<sup>45</sup> and pursuant to this rule the SEC devised a pilot experiment which used a quasi randomizing procedure to exempt one-third of the stocks in the Russell 3000 from the short sale restrictions.<sup>46</sup> The exempted and unexempted stocks operated under different trading regimes from May 2005 to August 2007, providing a significant period for observing the effects of the short sale restrictions relative to eliminating the restrictions. Because the SEC was willing to randomize the regulation, we now for the first time have causal evidence that eliminating short sale restrictions would impact some outcome variables (such as short selling volumes, which are approximately eight percent less with the restrictions than without), but would likely have no effect on bid-ask spreads.<sup>47</sup>

If the SEC can successfully experiment on short sale restrictions, maybe other lawmakers will one day see their way to running randomized control trials to test the impact of other laws. For my part, I intend to do what I can to make these three predictions come to fruition. Just as Tom predicted an upswing in the application of behavioral economics to law and then made sure it happened by publishing some himself,<sup>48</sup> I hope to publish works focusing on discontinuity regressions, and piggyback analyses. And I will continue to preach the randomized control trail gospel to decision makers and lawmakers.

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44. MARCIA FERRI ET AL., *THE COCHRANE COLLABORATION, ALCOHOLICS ANONYMOUS AND OTHER 12-STEP PROGRAMMES FOR ALCOHOL DEPENDENCE 2* (2009); Banokle A. Johnson, *We're Addicted to Rehab. It Doesn't Even Work*, WASH. POST, Aug. 8, 2010, <http://www.washingtonpost.com/wp-dyn/content/article/2010/08/06/AR2010080602660.html>.

45. OFF. OF ECON. ANALYSIS, U.S. SEC. & EXCH. COMM'N, *ECONOMIC ANALYSIS OF THE SHORT SALE PRICE RESTRICTIONS UNDER THE REGULATION SHO PILOT 3-4 (2007)* [hereinafter SEC REPORT], <http://www.sec.gov/news/studies/2007/regshopilot020607.pdf> (describing the restrictions).

46. As we explain more fully in *Randomizing Law*:

The exempted stocks were chosen “by sorting the 2004 Russell 3000 first by listing market [e.g., NYSE, NASDAQ] and then by average daily dollar volume from June 2003 through May 2004, and then within each listing market selecting every third company starting with the second. This is an example of stratified sampling. So long as it is effectively random which of the three companies with similar daily trading volumes happens to get exempted from the restrictions, the selection mechanism is equivalent to a stratified randomized experiment. Note that the SEC’s experimental design in this case did not seek volunteer companies for different regimes. Instead, the SEC simply chose some companies that would be exempted from the current short-sale restrictions.

Abramowicz et al., *supra* note 41, at 989 (footnotes omitted).

47. SEC REPORT, *supra* note 45, at 55–56.

48. Korobkin & Ulen, *supra* note 1.

## III. CONCLUSION

HAMLET: Do you see yonder cloud that's almost in shape of a camel?

POLONIUS: By the Mass and 'tis, like a camel indeed.

HAMLET: Methinks it is like a weasel.

POLONIUS: It is backed like a weasel.

HAMLET: Or like a whale?

POLONIUS: Very like a whale.<sup>49</sup>

Tom Ulen ended his inaugural lecture in 1997 by explaining why he took the title from this bid of dialogue between Hamlet and Polonius:

[A]n economist teaching in a law school is “very like a whale.”

She takes on the skills that she needs in order to be valuable to her masters and mistresses. I would extend this trope to subject matter areas, too. Economics is malleable and suitable to the task of studying almost any topic within the law.

... In the end, I hope that law and economics will have achieved such a position with legal education that when presented with a piece of economic analysis of law, the typical response will be “Very like the law.” And that upon observing an economist toiling in legal education, you will say, “Very like a law professor.”<sup>50</sup>

One hears in these words some of the obstacles that Tom must have encountered in those early years when he had to explain to skeptical colleagues and alumni that, even though he lacked a law degree, he was a law professor. Tom's hopes for the future are, in a sense, two final predictions that have come true. Economic analysis has secured an almost hegemonic position in the legal academy.<sup>51</sup> You are not a top-tier law school if you do not have a PhD economist on your faculty. And Tom Ulen is very like a law professor.

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49. WILLIAM SHAKESPEARE, *HAMLET, PRINCE OF DENMARK* act 3, sc. 2.

50. Ulen, *supra* note 4, at 16.

51. See Ian Ayres, *Never Confuse Efficiency with a Liver Complaint*, 1997 WIS. L. REV. 503, 508 (describing the hegemony of law and economics as a death star gobbling up the results of other methodologies).

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