

On Game Theory and the Law

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Douglas Baird, Robert Gertner, & Randall Picker, *Game Theory and the Law*. Cambridge, MA: Harvard University Press, 1994. xii + 330 pages. \$45.00.

On 18 January 1996 the Indiana University Law and Economics Lunch Bunch¹ met to discuss the book *Game Theory and the Law* by Douglas Baird, Robert Gertner, and Randall Picker. Professor Dau-Schmidt wanted to review the book and, being rather a strong believer in social cooperation, thought a group effort would be a good idea. The rest of us, being eager to express our opinions, agreed.

Dau-Schmidt: I want to read a section from the preface of the book that sets forth the purposes the authors had in mind, and then ask your responses.

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¹ The Indiana University Law and Economics Lunch Bunch is a group of scholars at Indiana University who meet each Thursday to enjoy each other's company and discuss problems in the economic analysis of law. Dau-Schmidt, Heidt, and Stake are law professors. Dau-Schmidt's research centers on labor and employment law, Heidt's on tort law, and Stake's on property and family law. Alexeev is in the economics department, and specializes in transitional economies. Rasmusen is in the business school, and writes on a bit of everything, but is best known for his own game theory book. All participants have broad interests, which is why the lunch group is successful. One might describe Dau-Schmidt as liberal law-and-econ, Alexeev as standard if Moscow-born economist, Heidt as ex-Marxist diehard Chicagoan, Rasmusen as MIT-Chicago fusion middlebrow economic theorist, and Stake as extreme middle-of-the-roader. Everybody is tenured and in mid-career. You must imagine Alexeev with a rich Russian accent.

This book rests on the premise that game theory can offer insights to those who want to understand how laws affect the way people behave. . . . First we wanted to introduce the formal tools of modern game theory to a wide audience. . . . Second, and as important, we wanted to show how modern game theory allows us to sharpen our intuitions and provides us with new ways of looking at familiar problems. In short, we have tried to write a book that offers those interested in law a new way of thinking about legal rules, and a book that shows those interested in game theory a fertile and largely unexplored domain in which its tools have many applications. (P. xi).

The book goes on to describe a variety of game-theoretic tools, including the normal form of a game, the extensive form of a game, modeling imperfect information, signaling, screening, reputation, repeated games, collective action problems, noncooperative bargaining, and bargaining and information problems; and then it applies these game-theoretic tools to a variety of legal problems, among them tort theory, contract law, antitrust law, bankruptcy law, employment law, and labor law.

Have the authors succeeded in their purposes? Mike?

Alexeev: To some extent they did, and to some extent they did not. My impression was that the book was written mostly for lawyers. I think that the authors succeeded in demonstrating the usefulness of game theory to people who do not have any previous exposure to game theory. The authors present a number of simple, but useful, applications to legal doctrine including tort law, antitrust, and labor and employment law. But the book does not really show a “fertile and largely unexplored domain” of applications to game theorists and economists. Most of the book’s material comes from economics articles, and even the trial cases are mostly the cases that have already been discussed in the economics literature, so the book is much less useful for the economists or game theorists in particular. But I enjoyed reading it, and I think it will be useful for lawyers.

Dau-Schmidt: Eric?

Rasmusen: I agree that it may be most useful for people in law who would like to see applications of game theory to particular areas of law. A tort expert might want to read the chapter on torts for its descriptions and numerical examples demonstrating how particular game theory models can be applied to tort law. The book is weaker as a general reference for somebody who’s in a hurry to find something. Although the index and glossary² are good, the structure isn’t convenient for ref-

² The book has an 18-page glossary to assist initiates in the technical language of game theory.

erence. This isn't a mathematical book, but it is a dense one which requires careful reading.³

Stake: The authors are quite successful in showing how game theory can provide marvelous counterintuitive insights. But I'm not confident that my law students could slog through the material without some help. I found the book challenging to read, for two opposing reasons. There are portions that are overexplained, even for lawyers. On the other hand, there were places where the explanation seemed thin. For example, it was not immediately obvious to me where the authors got the two sides of the inequality on page 169. It turns out that the same formula was used for both sides, but one side had already been simplified. One more sentence in the text would have saved me some time and effort. However, the examples are so illuminating it is worth the reader's time to work through them.

Dau-Schmidt: Bob, what did you think?

Heidt: Ken, consider the authors' first goal—"to introduce the formal tools of modern game theory to a wide audience." I'm thinking, How wide? The book is very kind to people who are paralyzed by charts, because throughout the authors take the reader's hand in explaining how one should interpret a chart. And they end up explaining what the chart shows. But, on the other hand, the book isn't written with the muscularity that a lot of legal writing displays and that legal scholars expect. The book also presents traps for the sophisticated reader. If I were to give this to someone who was going to teach law and economics, I would need to warn them, say, on the torts section. I brought with me Steve Shavell's *Economic Analysis of Accident Law* (1989), which not only is more thorough in its analysis of tort law but, more significantly, reaches different conclusions, and challenges what the authors have to say in this text.

Just how wide an audience? Not as wide, I bet, as the authors hoped.

Alexeev: To some extent, I would have to disagree with Bob. The ostensible goal of the book is to introduce game-theoretic reasoning and thinking to a certain audience. I think they succeeded in this, even in torts. They did present the main problems, but they had to omit quite a few things.

Dau-Schmidt: I would agree with Michael that the authors have been successful in introducing the formal tools of modern game theory but primarily to a legal audience, for example, law professors who have some introduction to law and economics and who are interested in finding out about game

³ The reader should perhaps know that Rasmusen has also written a book on game theory, though without a focus on law: see Rasmusen 1994.

theory. The legal doctrine is fairly rudimentary, so if you're a game theorist interested in legal problems, there's not as much for you in this book.

Jeff raised the question of whether or not you could use this book in a course. I am planning to use it in my law and economics seminar not because it is a particularly good course book, but because I think it is currently the best book of its kind.

My primary criticism is that the authors do not go far enough in advocating a game-theoretic analysis of the law. There were a lot of opportunities—for example, when they discussed applications of game theory to antitrust law—where they could have talked about how game theory provides a superior model to traditional neoclassical economic analysis. Under traditional analysis, you have a variety of basic assumptions: people act rationally, perfect information, zero transaction costs. Under game theory, you can relax some of those assumptions. In fact, the point of game theory is to examine problems of imperfect information, strategic behavior, or transaction costs. Where transaction costs and strategic behavior are important, game theory can provide a superior model. Game theory isn't just loosey-goosey law and economics where the numbers are all integers and none of them are over ten. It's a very useful method of addressing the real modeling problems of imperfect information and strategic behavior. I would also argue that game theory can provide insights for discourses with other disciplines about the analysis of the law.⁴

Do others agree?

Alexeev: I think the authors should have provided a detailed discussion of the limitations of game theory much earlier in the book than they actually did. They should have stressed the fact that the outcomes or solutions to games depend so much on the assumptions about information—who knows what and when, and who moves when. Two modelers can model the same problem differently and obtain very different results. Game theory is most useful in providing the framework for thinking about the issues rather than being able to predict exact outcomes.

This brings me to another point the authors did not emphasize enough, although they did mention it a couple of times: game-theoretic solutions often do not provide an answer about what will happen in real-world situations. It might have been a good idea to present some experimental results about which game-theoretic solutions are actually followed by

⁴ For further reading, see "Other Readings on Game Theory" at the end of this article. Readings on the list provide links to anthropology, political science, and philosophy.

people playing these games. This is particularly true about refinements of Nash equilibria.⁵ On several occasions, the authors simply introduced a refinement without stressing enough that there might be other refinements, different solutions, and different real-world outcomes.

Dau-Schmidt: I'd have to agree. The authors did talk about the problems, so we can't fault them too much. But with game theory, once you start relaxing the assumption of perfect information, once you start taking account of strategic behavior, it does become possible to model to achieve almost any result you want.

Empirical work becomes even more crucial. Since you can derive a model that reaches almost any conclusion, it becomes very important to sort out empirically which models are useful and which aren't.

Rasmusen: Mike said a lot of interesting things, but I disagree with his claim that game theory doesn't make predictions. It does—.

Alexeev: Oh, it does. But are they correct?

Stake: Despite all I've learned about game theory from this book, I don't have much confidence that when I return to my areas of law I will be able to generate the models myself. What does one look for first when making a model? The authors start with the model and ask what numbers would make it work out one way or another. They haven't shown me how to begin with a legal problem and develop an appropriate model.

Rasmusen: How to set up a model is perhaps the hardest thing to teach in game theory—not the math or the technical details, but discerning which assumptions to make in the first place. A similar problem comes up in learning how to think like a lawyer, in learning to brief a case. You need to limit your description to just the important details. A student may start off by saying, "An American woman walked down the street and was hit by a car." The listener is led to expect that the case will turn on the nationality of the pedestrian, and if it does not, the student has misled him. On the other hand, the description says nothing about the circumstances of the crash, and so has omitted important details.

Similarly in game theory, some things matter and some don't, but it is hard to teach students the difference. I find this particularly true with numbers, because M.B.A. students, at least, do not realize that numbers do not have to be exact to be useful. If I set up a model in which Joe gets a profit of \$100,000 if his business succeeds, they say, "Why \$100,000 rather than \$110,000? They're very bothered by where the

⁵ A Nash equilibrium is a set of strategic choices in which no party can improve his payoff by varying his strategy, given the strategies the other players are choosing (Rasmusen 1994:23).

numbers come from, even though any value between \$50,000 and \$150,000 may lead to the same prediction. So some of this is the problem in setting up the game, which I don't think the authors here really make much attempt to teach. Maybe that can't be taught from a book.

This is important for Jeff's point about sometimes missing the bigger-picture game, because there are three things they tend to leave out—three things very surprising for people from Chicago: market forces, government failure, and private institutions for dealing with market failure.⁶

An example in this book is a model in which workers have good or bad backs, and the employer has to decide whether to train each worker or not without knowing about his individual health status (pp. 125–46). The authors describe the market wonderfully well and do a good job of explaining the complicated things that happen in the analysis, which leads ultimately to the conclusion that the government may need to compel the employer to provide training.⁷ A crucial assumption, though, is that the payoffs are set up at the start so that the workers get a lot more benefit from training than employers do. If those assumptions do not hold, a different outcome would result.

Stake: Related to that, I would have liked to have seen a few more—and I think Ken hinted at this—comparisons to the conclusions classical economics would reach. How does game theory add to what has been done in law and economics for 30 years? The reader who doesn't know much about law, and the reader who doesn't know much about game theory, might also not know too much about traditional law and economics and might benefit from a comparison.

Heidt: Am I hearing a consensus that the authors have been too modest about the policy implications of game theory? Michael said something that almost suggests that he thought they were too ambitious, but . . .

Alexeev: . . . It's not always clear, because often they did not forcefully present the real-world policy implications.

Dau-Schmidt: I'd agree with that. As you said, Bob, the writing is not very muscular in comparison with other legal writing. It's couched in terms of "may" a lot of times. I saw "may" all through this book.

The height of this problem is when they discuss the *Du Pont* case⁸—the case in which Du Pont built enough capacity to produce titanium dioxide to supply all current and future

⁶ All three authors are faculty members at the University of Chicago; Baird and Picker are in the Law School, where Baird is now Dean, and Gertner is a professor in the Graduate School of Business.

⁷ For further discussion of the bad back example, see Prof. Stake's comments below.

⁸ *E. I. Du Pont de Nemours & Co. v. FTC* (1980).

anticipated demand for the compound. The court found that such expansion was not an “unfair method of competition” under the Federal Trade Commission Act. The authors discuss how this case might be an example of a company expanding in order to preclude others from entering the market. They go through a fairly long and interesting discussion about how this case could be an example of preclusive growth, and then when they get to the end, they hedge their bets and say, “Well this growth could well have occurred anyway because of economies of scale” (p. 175).⁹ I suppose they need to point out that there are other possible views of this case, but I would have liked to have seen them take a stronger position, that: “Yes, this is an example of preclusive growth; here’s a model of this phenomenon; the Court was wrong. Other people may disagree with us on this point, they may think the company’s growth was due to economies of scale, but this is why we think that’s wrong.”

Heidt: I would have been bothered if they were more ambitious about policy implications.

Stake: Indeed, I like the hesitation to come to any conclusion. One of the great lessons in the book is that there are a lot of things that you didn’t understand when you thought you understood the problem. (*Laughter*)

Heidt: Part of this difference, I think, is that Ken really believes in this strategic stuff as a guide to policymaking in antitrust, and I don’t. I think the idea of strategic behavior is like a 600-foot home run. You can imagine it, but it happens so rarely that one would be foolish to give it any policy implications.¹⁰

My sense reading this, with its very watered-down and modest tone, was that the authors may have been reacting against Richard Posner’s (1973) style, which was unbelievably ambitious. Still, Posner’s ambitious, if not arrogant, style kept the reader with him, and made his work very appealing, even though he was faulted for years for being unduly ambitious in his policy implications.

Dau-Schmidt: Are there particular technical or substantive issues that you’d like to discuss?

Alexeev: I would like to add one comment to Jeff’s first remark. It is true that some material in this book is fairly difficult and perhaps the authors did not always provide enough information to understand it properly. However, some of the game-theoretic concepts, especially various refinements of equilibria, are indeed quite difficult, and I think the authors should be commended for explaining some of these very difficult

⁹ The words in the text are not a literal quote, only a summary of the authors’ sentiment.

¹⁰ Extending this baseball metaphor, Ken and Jeff think this example shows that Bob’s position is in deep right field.

concepts without resorting to mathematics beyond algebra. The explanations did often require quite intricate and sophisticated reasoning, but I would think that this is the kind of reasoning at which lawyers are actually good.

Rasmusen: Mike is absolutely right. The book's hard, but lawyers think this way anyway. They are used to hypotheticals, so they're going to accept the style of "Here are our assumptions. What do they imply?" They are also willing to read slowly. Students will have more of a problem, because they read too fast, and because there aren't problem sets. Anyone teaching out of this book should realize that students have to work out numerical problems, so the teacher should change some of the numbers in the book's examples and have the students work out what happens in the model that results. That would force the student to be thorough.

Dau-Schmidt: Bob, what do you think?

Heidt: I kept finding that the sections of the book on subject areas I am most familiar with—for example, torts—left me most unsatisfied but the sections on areas I knew nothing about—for example, bankruptcy—were just wonderful.¹¹ For instance on pages 18–23 the book claims that the three tort liability approaches of strict liability with a defense of contributory negligence, negligence with a defense of contributory negligence, and comparative negligence all work equally well because they induce the cheapest precaution-taker to take care. But since at least the late 1980s, tort scholars have convincingly agreed that these approaches only work equally well in the alternative care situation—that is, the situation where the ideal solution is for only one party to take care. The approaches do not work equally well, by a long shot, in the joint care situation, where the ideal solution requires that both parties take care (Shavell 1987). That misstatement ought to raise an eyebrow or two.

Dau-Schmidt: What about the areas of the book that you appreciated?

Heidt: As I said, I liked the bankruptcy part. I wasn't aware of game theory's contribution to bankruptcy law or its use with respect to plant closings or some of the signaling materials. So when I read that, I was very impressed. When I got to an area I know, like antitrust, and read the discussion on oligopoly, I thought it very standard. I thought that they just, flat out, applied the standard oligopoly model to antitrust that has been around at least 25 years.

My different reactions to the parts where I know the subject matter and the parts where I don't remind me of the

¹¹ It is worth noting that Baird and Picker are most celebrated for their work on bankruptcy. See Baird & Picker (1991).

story about the anarchist, Proudhon, who was famous in the 19th century in Germany and in France for being a philosopher and economist.¹² But as my history professor at Wisconsin, Harvey Goldberg, used to tell me, if you looked closer, you noticed that in Germany, where they had a great tradition of philosophy and were very conversant with it, he was famous as an economist. Everyone dismissed him as a philosopher. In France, where a long logical tradition left academics at least conversant with economics, at least as it existed in the 19th century, they thought Proudhon a very impressive philosopher but they knew he was worthless as an economist. Now that's an overstatement, but that story about Proudhon came to mind when I was reading this.

Dau-Schmidt: Did other people have a similar reaction?

Alexeev: Perhaps that's why I liked the book quite a bit. I am neither a lawyer nor a game theorist.

Rasmusen: I liked best the things I knew best, not because I thought they were always right, but because I found them stimulating, even the flaws.

Dau-Schmidt: Why did you find them stimulating?

Rasmusen: Oh, because I saw blind spots and realized, "Ah, here's something crucial I hadn't realized was so important."

Stake: I think I can use something I learned from the book to criticize the book. Pages 177 and 178 discuss the Federal Trade Commission case against Du Pont and the three other producers of lead antiknock compounds, a discussion which I was pleased to see because I was the associate on Du Pont's briefs when the case went to the Second Circuit.¹³ The Court overturned the FTC's finding of illegal behavior.

The authors' game theory model shows nicely that these industry practices may lead to an anticompetitive or inefficient result, from which the authors suggest the court reached the wrong conclusion. What the book doesn't say is that the Court was not asked to decide whether the practices were anticompetitive or inefficient. The statutory issue was whether the practices were "unfair methods of competition." The Court decided, partly on precedent and partly on the legislative history (see Federal Trade Commission 1949), that they weren't *unfair* under the Act, although they might reduce competition. In 1948, the FTC had attempted in *Triangle Conduit* (1948) to establish that consciously parallel pricing could violate section 5 without any collusion between the producers. The FTC argued that the economic effect of identical prices achieved through consciously parallel action is the same as that of similar prices achieved through overt col-

¹² For an example of Proudhon's work, see Proudhon 1849. For a discussion of Proudhon's significance in academic history, see Ehrenberg 1996.

¹³ *E. I. Du Pont de Nemours & Co. V. FTC* (1984).

lusion. The Seventh Circuit bought the FTC position. Congress then reacted with a great deal of activity, and that activity indicated that Congress did not approve the FTC position. So the Second Circuit in the subsequent *Du Pont* case may have done the right thing in the game it's playing, which is the larger game of following precedent and congressional intent. The book describes the embedded game but not the larger context.

Heidt: Well, I guess I disagree with you, Jeff. I'm familiar with the case too. I was in the Antitrust Division when it was decided. (*Laughter*) The first paragraph on page 178 described the case adequately. Yes, the Court said the basis for defendants' victory was that no agreement had been reached. I thought that was a very unsatisfactory result, because it showed a failure to appreciate how, in light of game theory, oligopolistic coordination could yield the very same bad result that an explicit price fixing agreement would yield.

Stake: But that's the point I started with. Congress did *not* prohibit all practices yielding bad results. Congress did *not* consider parallel pricing without collusion unfair, whatever its economic effect.

Heidt: For these authors to make that last point sends the message that game theory might be fine for academics, but it's not going to influence courts because courts are going to do some arbitrary legal thing, like follow a stupid legislative history. And, therefore, learning about game theory won't really empower you as a lawyer, because the judge won't listen to your arguments. The judge isn't interested in what's pro or anticompetitive, the judge is just this brainless automaton following pretty brainless legislation. This point doesn't enhance the value of game theory.

Dau-Schmidt: Listening to you two, I wonder if I'm the one who should be teaching antitrust. (*Laughter*)

I guess my reaction wasn't quite as negative as Bob's. I agree with him that the book was perhaps more interesting in the areas that I didn't know as much about. I, too, was taken with the section on bankruptcy law. In the section on labor law, I have some qualifications. They correctly state that one of the primary purposes of the National Labor Relations Act¹⁴ is to avoid strikes, but then they go on and present a model in which strikes never happen, obviously unrealistic on its face. On the other hand, I appreciated their attempt to apply Rubinstein's (1982) bargaining theory to labor law. That's something you don't see every day. This was not just some traditional application of the monopoly theory of unions; they attempted to apply Rubinstein's bargaining theory

¹⁴ 29 U.S.C.S. § 151 et seq.

to both the *Burns* case¹⁵ and the *MacKay* doctrine¹⁶—the problems of employer successorship and the permanent replacement of strikers—from this perspective. Even though I think it's an early step in the application of game theory to labor law, I appreciated it.

Dau-Schmidt: Are there other perspectives on the policy implications of the book or game theory in general?

Rasmusen: I think the authors present game theory models which, given their assumptions, are logically correct, but the reader can easily make too much of these models for policy purposes. A good example is their discussion, on page 134, of mandatory parental leave laws—laws that require employers to grant parental leave to employees rather than leaving it open as a subject for mutual negotiation. They build a good model, and conclude that maybe the law can be justified. They say “maybe” rather than “is,” but readers may not notice. The problem is that although their technical argument is correct, almost the same model but with one different parameter value can lead to the opposite conclusion—that no employer should be allowed to grant parental leave.

I'll go through this in some detail to show what I mean. As the authors explain, if parental leave is a clear benefit to all workers, the government does not have to require it, because employers will include it voluntarily as a fringe benefit. The problem is that if parental leave reduces productivity, then if it is included as a fringe benefit, wages must be reduced correspondingly, and some or all workers may not like that tradeoff. Moreover—and this is what the book focuses on—if the employer allows workers to tailor their own employment contracts, so any worker who wishes can accept a lower wage in exchange for a parental leave clause, the employer can see who accepts the lower wage and harm that worker's future prospects with the company. This would happen if workers who intend to have families and care for them are less productive on the job. Foreseeing that their promotion chances will be harmed, it may happen that no worker will dare accept the parental leave clause, even if a majority of them want it, and the employer is no wiser than before as to which workers are less productive. This is inefficient, and it would be better for the government simply to mandate that all workers accept the lower wage and the parental leave clause (pp. 142–47).

Now change one assumption. Assume that workers who intend to have families and care for them are *more* productive on the job, not less. In that case, workers who reject the fam-

¹⁵ *NLRB v. Burns International Security Services* (1972).

¹⁶ *NLRB v. MacKay Radio & Telegraph Co.* (1938).

ily leave clause are the ones who reveal something about themselves and harm their promotion chances. It may happen that every worker accepts the parental leave clause, even though very few want it, because no worker wants to reveal his low productivity via his distaste for children. This is inefficient, and it would be better for the government simply to mandate that *no* worker be allowed to accept the parental leave clause.

Both stories are logically consistent, but they differ in one starting assumption. Perhaps even more important, they both neglect the bigger game of public policy, the game in which pressure groups lobby the government to take wealth away from one person and give it to another. In view of that larger game, the best policy might be to oppose government action in the area of labor contracts altogether, from fear that any government action is going to be motivated by selfish special interests.

Heidt: Eric, your discussion of the family leave law upsets me because you game theorists are too quick to conclude that a strategic or information problem will lead to market failure. If family leave is an efficient term because it benefits workers more than it costs employers, it's likely to shoulder its way into the employment contract somehow even though employees, fearful of signaling something bad about themselves, are unwilling to ask for it.

One way would be for some employer sooner or later to adopt the term for some reason, say, because a union asked for it or because the employer thought it would be a nice idea or a neat experiment. Whatever the reason, the employer would then discover that the term more than pays for itself in employee happiness. Word will get around about how worthwhile the term is. Rival employers will then offer the term rather than suffer the employee unrest resulting from them not doing so. And the term will become customary.

As the chaos theory scientist played by Jeff Goldblum in *Jurassic Park* said, "Efficient terms will find a way." I know he said "life," but I'm sure he meant "efficient terms." (*Laughter*) Efficient terms will find some way to manifest themselves, to show their efficiency. The problems of private nonverifiable information offer a plausible explanation for why efficient terms may not always be embraced. But that's all. No policy-maker should rely on markets failing so easily.

Stake: Bob, that's the whole point of game theory: efficient terms don't always find a way.

Rasmusen: It's easy to say that efficiency always wins out, but that doesn't happen automatically. Maybe Bob's right that employers would offer the term instead of employees asking for

it, but I'd need a formal model to be sure it would work. Adding realistic twists to the model is how game theory makes progress.

Dau-Schmidt: If strategic behavior is a 600-foot home run, then I guess it follows that market perfection is two female dinosaurs successfully procreating. (*Laughter*) Although the market is often a marvelous instrument for coordinating production and consumption, it is just that—an instrument of man's creation and imperfect like all such devices. Market failure is a very real phenomenon, for precisely the reasons illuminated by game theory. For example, why didn't the market develop workers' compensation. It seems pretty obvious that the employer is both the cheapest cost avoider for most industrial accidents and the most efficient insurer for a modest level of compensation. Why didn't employers voluntarily assume this responsibility as a means of attracting employees? Probably because employees don't adequately assess the risk of harm from industrial accidents and so don't ask for sufficient compensatory wages to give their employers adequate incentive to offer such insurance.

Similarly, why don't employees negotiate contracts limiting the amount of hazardous chemicals, for example, benzene, that they're exposed to. Surely it's important to them. Such chemicals cause cancer and shorten your life. The problem, of course, is information and transaction costs combined with a public good problem. It's impossible for individual workers to discover and evaluate all the chemicals they are exposed to and then negotiate and enforce contract terms with respect to those chemicals. As a result it is necessary to evaluate and regulate such chemical exposure at a societal level rather than through individual bargaining. Indeed the traditional explanation for the existence of contract law in law and economics is to "fill gaps" in contracts left by individual bargaining due to transaction costs. Your blind faith in this market deity seems to me quite naive.

Heidt: In any event, don't you think it's fair to say the authors most display their rather liberal, prodemocratic, progovernment bias in their choice of examples? I think they're really trying to signal liberal law professors that game theory can be a nice device for them to support their liberal biases.

Rasmusen: That's an interesting point, but I think you don't have it quite right. It isn't that the authors are liberal, though they may be, but that game theory itself has an activist bias. The conclusion of basic economics is usually that government action is not useful, so it is thrilling to find exceptions to that in game theory. Game theorists are a little like judges. Even a conservative judge is tempted to be an activist, because that's where the most fun is. In the same way, academics want to

change things, propose laws, make a name for themselves. Game theory is wonderful because it provides all kinds of arguments for policy . . .

Alexeev: . . . sometimes contradictory arguments . . .

Rasmusen: . . . and it may be even better that they're contradictory, because you can rationalize what you wanted to do anyway. That's the danger here. There's a kind of a pro-activist bias here, but one more academic than political.

Dau-Schmidt: I didn't find this book a liberal book at all. I guess it's just one's perspective.

Heidt: Is it fair to say that, compared to neoclassical economics, the book's much more activist?

Dau-Schmidt: I think any time you relax the assumptions of neoclassical model, as you do with game theory, you increase the prospects for useful government intervention.

Rasmusen: I think it's a good thing to have this kind of law and economics presented now, because law and economics in the older style of Posner and Chicago generally leads to *laissez faire*. A lot of people then just stop listening because they don't like conservative policies, and they can't distinguish between conservatism and law and economics. Such people should like game theory because it leads to more activist conclusions. I hope that when they like that part of law and economics, they'll come to see the value of the older style too.

Dau-Schmidt: I think this is an appropriate place to conclude our discussion by addressing one final question. What do you think this book has to contribute to the game-theoretic analysis of law, and what is the future of the game-theoretic analysis of law? Bob, do you want go first?

Heidt: Well, I think it's going to be a transition book because, although game theory might have a lot to offer as an advanced law and economics course in law schools, this book isn't going to be the one that starts opening up those courses. It's not quite readable enough. I say the book's a transition book because it's going to help somebody to come along and write a book that's a counterpart for game theory to what Posner's *Economic Analysis of Law* (1973) was for introductory courses in law and economics. It's going to be a very readable tour de force of all the arguments game theory allows in different fields. Once that book is written, I think game theory will assume a more secure place in the law school curriculum.

Stake: The beauty of the book was its ability to show that legal issues are complicated and that models we've worked out to understand the effects of law might be wrong. The book's models should make us hesitate to criticize judicial decisions without investigation of empirical facts. What really will happen if the law says *X* or the law says *Y*? How will people respond to changes in the law? Too much in the past, legal

analysis ignored behavioral consequences. Then law and economics came along and said, "If you have that law, the results may be something you didn't want." Game theory pushes it one step further saying, "Price theory predicts these behavioral effects, but game theory predicts a different set of results."

Rasmusen: Game theory and law has a big future, and this book came out at exactly the right time. Just this winter I've been asked by two different editors of surveys to write sections on game theory and law, so it's attracting a lot of interest in the scholarly world.¹⁷ This book will be very useful, not so much for students to read in class as for professors to read before class.

Alexeev: Application of game theory to law has become a really hot area, and presumably game theory will acquire much wider application in legal analysis. But I would like to stress again the point I made before. I don't think it's likely that game theory will present us with striking new results. Rather I think it will change the form of discussion and make it more precise. Overall, I enjoyed reading the book very much. I am glad it has appeared.

Stake: I would like to conclude by returning to the book's example of a law that requires employers to train all employees, even those with bad backs for whom the training would not adequately benefit the employers (see above p. 618).

Through this superb example, the authors show both (1) that such a law might make no difference to who gets training because, without the law, workers would hide their bad backs to get the training and (2) that the law might efficiently allow employees with bad backs to signal their condition and obtain more appropriate office chairs.

The authors set up—but leave to the reader the delight of discovering—further implications of these points. For example, the employer bound by the law would probably criticize as absurdly inefficient a law forcing him to train workers with bad backs. With the law in place, the employer would know who had the bad backs but would be unaware that he would not know that without the law. He does not realize that the law requiring him to train all workers does not change the world a bit, and he bristles at what appears to be a constraint placed on his business decisions. The very people who might, supposedly, give a first-hand description of the effects of the law on them, in reality, have no idea what the effects are.

¹⁷ Eric declined both these entreaties. Jeff, on the other hand, foolishly accepted assignments from both these same editors.

Think of how we search for areas needing legislation. Law reformers have long looked for bad behaviors to change. The example makes a perverse suggestion: We should look at universal behaviors we do not want to change and see if there might be any reasons to mandate those already universal behaviors.

Dau-Schmidt: I'd have to agree with a lot what's been said. First of all, I agree with Bob that I think that this book is a transition book. I can't remember a time when Bob and I have agreed so much on a subject as this book. (*Laughter*) But I would agree with him on that point. I think it's an important book, as Mike and Eric and Jeff have established. I think that game theory is a growing area of interest. You might even call it the future of economic analysis of law, because it allows one to relax the assumption that there isn't strategic behavior. There's tremendous potential for the use of game theory in analyzing legal problems, and I'm hopeful that Baird et al.'s book will facilitate further work in this area, but I think the breakthrough book that really ignites interest in this subject is yet to be written.

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