

Review Dialog

GAME THEORY AND THE LAW

Kenneth Dau-Schmidt, Michael Alexeev, Eric Rasmusen, Jeff Stake and Bob Heidt

Douglas Baird, Robert Gertner & Randall Picker, *GAME THEORY AND THE LAW*. Cambridge, MA: Harvard University Press, 1994. xii + 330 pages. \$45 cloth.

On January 18, 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 lefty, thought a group effort would be a good idea. The rest of us, being quite willing to express our opinions if a well-meaning lefty would do most of the work, 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.

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... 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.²

¹ The Indiana University Law and Economics Lunch Bunch is group of scholars at Indiana University that 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 school professors. Dau-Schmidt's research centers on labor 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.

² Douglas Baird, Robert Gertner & Randall Picker, *GAME THEORY AND THE LAW* at xi (1994).

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, non-cooperative bargaining, and bargaining and information problems; and then applies these game theoretic tools to a variety of legal problems including tort theory, contract law, antitrust law, bankruptcy law, employment law, and labor law.

Now, what do you think about the book? 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. 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's very useful for the lawyers.

Dau-Schmidt: Eric?

Rasmusen: Well, I think it may be most useful for people in law who'd like to see applications of game theory to particular areas of law. For example, 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 glossary³ are good, the structure is not

³ The book contains an 18 page glossary to assist initiates in the technical language of game theory.

convenient for reference. This is not a mathematical book, but it is a dense one, which requires careful reading.⁴

Dau-Schmidt: Jeff?

Stake: Coming from the law perspective instead of economics, I can comment a bit on how useful the book really is to these lawyers to whom you are suggesting it will be useful. I found it, as Eric did, difficult. It is difficult for two reasons. For one, there are portions that are over-explained, even for lawyers. Too often the authors repeated what had been said earlier. I found myself working hard to figure out the point, and then realizing that I had already figured it out in a previous example or paragraph.

On the other hand, there were places where the explanation seemed a little too thin. This is a minor nit-pick, I think, but on page 169 one has to use a little bit of algebra. Solving the inequality set out in the text was not a problem⁵, but it was not immediately obvious to me where the authors got the two sides of the inequality. It turned out that the same formula was used but one side had already been simplified. One more sentence would have saved me some time and effort.

⁴ The reader should perhaps know that Rasmusen has also written a book on game theory, though without a focus on law: Eric Rasmusen GAMES AND INFORMATION (1st ed. 1989. 2nd ed. 1994.)

⁵ $10/(1-\delta) > (16+5\delta)/(1-\delta)$

Rasmusen: Jeff, let me interject. Your page 169 example brings up one of my small peeves with this and many other books: Endnotes instead of footnotes. Endnote 5-2⁶ does help with the algebra, but it is at the end of the book, so you didn't notice it. If it were a footnote, you wouldn't have this objection. There is just no excuse for endnotes!

Stake: The book is interesting enough to justify working through these examples. Indeed, the new insights made reading delightful. But, I'm not confident that my law students could slug through the material without more help.

Overall, I think the authors are quite successful in showing how game theory can provide counter-intuitive insights. The book teaches that what you thought was true may be wrong, and does so with lots of different examples.

Dau-Schmidt: Bob, what did you think?

Heidt: Ken, in the sentence you read, underscore the word, "wide." "First we wanted to introduce the formal tools of modern game theory to a wide audience." Well, 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 ended up explaining what the chart shows. But, on the other hand, the book doesn't grab the reader. I teach law and economics, and could not justify assigning this to my students, for fear that their conclusion would be, "Game theory doesn't add much", or at least, "Game theory doesn't add much that's exciting and fun." Boredom is a serious factor with this book, and I think that's partly due to the writing. The book's just not written with the muscularity that a lot of legal writing displays.

⁶ GAME THEORY AND THE LAW at 282.

The book also presents traps for the sophisticated reader. If I were to give this to somebody who was going to teach law and economics, I would need to warn them a lot. 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, Ken, but, more significantly, reaches different conclusions, and challenges what the authors here have to say.

So: just how wide an audience? Not as wide, I bet, as the authors hoped.

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 law professors who have some introduction to law and economics and who are interested in finding out about game theory. The legal doctrine is fairly rudimentary, so if you're a game theorist interested in legal problems, there's not as much in this book for you.

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, but because I think it's currently the best book of its kind - not because it's a particularly good course book. There are no problem sets or discussion questions, and the book is not really structured to be used in courses.

Finally, I guess my primary criticism is that the authors fail a bit in being advocates for game theoretic analysis of the law. There were a lot of opportunities - for example where they discussed applications of game theory to antitrust law - where they could have talked about how game theory provides a superior model to traditional neo-classical 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 round and none of them are over ten. I would also argue that game theory can provide insights for discourses with other disciplines about the analysis of the law.⁷

Stake: I appreciated the progression of the book. I think it did a good job of starting out with easier problems and then moving on to more complicated ones. The overall organization of illustrations has to be applauded. I have seen a fair number of introductory law and economic materials that don't lead readers progressively through the material. The topics are often organized by area of law, which is useful for reference but not optimal for instruction. The book is very good at teaching those initiated enough to work hard.

Alexeev: I would like to add one comment to Jeff's. 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 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.

Dau-Schmidt: Other comments?

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 this book should

⁷ See the references for further reading at the end of this article for links to anthropology, political science, and philosophy.

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.

Stake: Even that would not make the book a perfect teaching tool. Although I've learned a lot 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 haven't offered examples that say, "here is the legal problem - what are we going to look for first to set it up?" The book starts with the model and asks what numbers would make it work out one way or another.

Heidt: I agree: the book's trying to familiarize us with game theory, not teach us how to use it ourselves. But that's OK - that's just their choice. The other goal would yield a very different book.

Alexeev: I want to expand on Bob's comment that the book is not particularly exciting reading. I think the authors could have made it more exciting if they pointed out that lawyers use game theoretic thinking and operate in strategic situations all the time, especially trial lawyers. Litigation is a bona fide strategic situation. Examples of how lawyers actually play games without knowing that they are using game theoretic concepts, would have been useful.

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

Heidt: Well, sure. 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.⁸ I teach torts, so, when I got to pages 18-33,

⁸ It is worth noting that Baird and Picker are most celebrated for their work on bankruptcy. See Douglas G. Baird & Randal C. Picker, *A Simple Noncooperative Bargaining Model of Corporate Reorganizations*, 20 J. Legal Stud. (1991) and xxx.

I saw the book making a point that has been well known since at least the late 80's, with Shavell's book, that the rule combinations of strict liability with contributory negligence, negligence and the contributory negligence absolute defense, and comparative negligence, all work equally well because they induce both parties to take care.⁹

⁹ Steve Shavell ECONOMIC ANALYSIS OF ACCIDENT LAW (1989).

Now the book never qualifies this by saying that this result obtains only in what's called the joint care case, where the best result, or the result that minimizes the sum of accident costs and accident avoidance costs, is reached when both parties take care. So in a way, the authors' have set up a problem for which all these legal rules work fine. They mention, but skip over, that there are other kinds of accidents, like the unilateral care case, where only one party has a cost-justified precaution to take. They completely ignore the bilateral care case where both parties, or all parties, have cost justified precautions to take. Now in these instances, the optimum behavior is often for one and only one party to take a precaution - the cheaper precaution-taker. And so the desirable rule depends on which party is the cheaper precaution-taker. For such accidents, the authors' rules, which always involve the contributory negligence defense so both parties have incentive to act, can be wasteful and not optimal.¹⁰ Now that's one reason that I could not hand this to somebody teaching law and economics, and say, "the tort treatment is fine." Really, the tort treatment, with such an oversight, isn't fine.

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

¹⁰ For a general discussion of this subject see: Calabresi THE COST OF ACCIDENTS.

Heidt: Oh, I liked the bankruptcy part, very much. 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 - which I used to - and read the discussion on oligopoly, I thought it very standard. I thought that was just, flat out, the standard oligopoly model applied to antitrust that has been around - gee, for how long, Ken? At least 25 years; I remember at least 1976. So when I listened to you guys and heard you all having more or less the same reaction, I was reminded of the famous story about the anarchist, Proudhon, who was big in the 19th century in Germany and in France, and famous for being a philosopher and economist.¹¹ But as my history professor at Wisconsin¹² 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 all thought Proudhon a very impressive philosopher but they knew he was worthless as an economist. Now a great overstatement, but I admit that story about Proudhon came to mind when I was reading this.¹³

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.

¹¹ For an example of Proudhon's work, see Pierre-Joseph Proudhon, *LES CONFESSIONS D'UN REVOLUTIONNAIRE: POUR SEVOIR A L'HISTOIRE DE LA REVOLUTION DE FEVRIER* (1849). For a discussion of Proudhon's significance in academic history, see John Ehrenberg, *PROUDHON AND HIS AGE* (1996).

¹² Prof. Heidt's undergraduate degree is in Economics, from the University of Wisconsin at Madison.

¹³ Being thought deficient by specialists is probably inevitable in a synthesizing book like this one. Baird, Gertner, and Picker all first made their reputations in specialized fields writing for specialists. Now that they are trying to cover law in general, it is natural that we found we learned more about other areas of the law than about our own specialties. But we didn't think of that till later.

Dau-Schmidt: So it's all new to you?

Alexeev: It's not new. But I'm not intimately familiar with either side. I know enough game theory to find virtually no new game theoretic ideas in the book, but at the same time I'm not a game theorist. I am interested in law and economics but law is not my specialty either.

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 want to pick up on Bob's antitrust point. 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 anti-knock compounds, which I was delighted to see because I was the associate on Du Pont's briefs when the case went to the Second Circuit.¹⁴ The Court overturned the FTC's finding of illegal behavior.

The authors mildly criticize that result. Their game-theory model shows that these industry practices may lead to an anticompetitive or inefficient result. What they don't say is that the Court was not asked to decide whether the practices were anticompetitive or inefficient. The issue was whether they were "unfair." The Court decided, partly on precedent and partly on the legislative history¹⁵, that they weren't *unfair* under the Act, although they might reduce competition. The FTC had tried at that earlier time (about 30 years before the lead anti-knocks case) to establish that it could find a violation of section 5 (on the basis of parallel pricing) without alleging any agreement at all. Congress had reacted with a great deal of activity to the earlier Seventh Circuit's decision in the case and had indicated that it didn't want the FTC to go that far. So the Second Circuit may have done the right thing in the context of the game it's playing, which is the larger game of following precedent and congressional intent. It was an embedded game: Doing the right thing might provoke an unwanted response by Congress.

Heidr: Well, I guess I disagree with you, Jeff. On page 178, I thought that explanatory paragraph adequate, and I'm familiar with the case too. I was in the Antitrust Division when it was decided. (Laughter) The first paragraph was quite adequate. Yes, the Court said the basis for

¹⁴ E.I. Du Pont De Nemours & Co. V. FTC, 729 F.2d 128 (2nd Circ. 1984).

¹⁵ See INTERIM REPORT ON THE STUDY OF THE FEDERAL TRADE COMMISSION PRICING POLICIES, S. DOC. No. 27, 81st Cong., 1st Sess. (1949).

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 explicit price fixing would yield.

Stake: But that's the point I started with. Congress did not prohibit all practices yielding anticompetitive results. That was made clear by the legislative history from 1948. The FTC had said that parallel pricing is anticompetitive, and Congress had said, "No, we're looking for more than that, at least an allegation of tacit agreement."

Heidt: Well for these authors to make that 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. Still, the point doesn't enhance the value of the discipline.

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 him in that I thought 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 Act¹⁶ 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 bargaining theory to

¹⁶ 29 USCS ' 151 et seq.

labor law.¹⁷ 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 to both the Burns case¹⁸ and the MacKay doctrine¹⁹ -- the problems of employer successorship and employee of permanent replacement -- from this perspective. Even though I think it's an early step in the application of game theory to labor law, I appreciated it.

Alexeev: To some extent, I would have to disagree with Bob too. The ostensible goal of the book was 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.

What I think they should have done much earlier in the book than they actually did, is to provide a detailed discussion of the limitations of game theory, stressing 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.

¹⁷ Ariel Rubinstein, *Perfect Equilibrium in a Bargaining Model*, 50 *Econometrica*. 97-109 (January 1982).

¹⁸ *NLRB v. Burns International Security Services Inc.*, 406 U.S. 272 (1972).

¹⁹ *NLRB v. MacKay Radio & Telegraph Co.*, 304 U.S. 333 (1938).

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 people playing these games. This is particularly true about refinements of Nash equilibria.²⁰ 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 assumptions 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.

Alexeev: Game theory is most useful in providing the framework for thinking about the issues rather than being able to predict exact outcomes. And another point I wanted to make: They did omit, of course, quite a number of game-theoretic concepts. That is very understandable. But sometimes they mention a concept and then never elaborate. It can be somewhat confusing. In particular, they mentioned, in a couple of places, "cheap talk" models, i.e. models that show usefulness of costless, non-binding and non-verifiable information. But they never really explained how this is possible. To a reader who has never seen any of those models it really is unclear how

²⁰ A Nash equilibrium is a set of strategic choices in which no party can improve his pay off by varying his strategy, given the strategies the other players are choosing. Eric Rasmusen, *GAMES AND INFORMATION* 23 (1994).

costless, nonbinding, nonverifiable information could matter at all. It can, but they did not explain this.

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?

Rasmusen: I'd like to go back to the first point, because it relates to something Jeff said. 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 dollars if his business succeeds, they say, "Why 100,000 rather than 110,000? They're very bothered by where the 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 this 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 that 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.²¹

An example 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.²² They describe their 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. 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.²³

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: Now, 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...

²¹ All three authors are faculty members at the University of Chicago, Baird and Picker are in the School of Law, where Baird is now Dean, and Gertner is a professor in the School of Business.

²² GAME THEORY AND THE LAW at 125-146.

²³ For further discussion of the bad back example, see Prof. Stake's comments *Infra*.

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 case.²⁴ They talk about how this case might be an example of where a company expands in order to preclude other people 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 end, they hedge their bets and say, "Well this growth could well have occurred anyway because of economies of scale."²⁵ I suppose they need to point out that there are other possible views of the 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.

²⁴ See n14 *Supra*.

²⁵ GAME THEORY AND THE LAW at 175. The words in the text are not a literal quote, only a summary of the authors' sentiment.

Stake: 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 policy making in antitrust, and I don't. I think the idea of strategic behavior is like the 600 foot home run. You can imagine it, but it happens so rarely that it'd be foolish to base any policy judgment.

My sense reading this, with its very watered down and modest tone, was that the authors may have been reacting against Posner's style, which was unbelievably ambitious. I see their hedging as a reaction against the early law and economics people. 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 and years for being unduly ambitious in his policy implications.²⁶

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

Rasmusen: I think the authors are correct in what they say, but the reader can easily get the wrong impression for policy purposes. A good example, on page 134, is their discussion 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

²⁶ Richard Posner, *ECONOMIC ANALYSIS OF THE LAW* (3rd ed. 1986).

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 hurt 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 hurt, 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.²⁷ 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 family leave clause are the ones who reveal something about themselves and hurt 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.

²⁷ GAME THEORY AND THE LAW at 142-147.

Both stories are logically consistent, but they differ in one starting assumption. Perhaps even more importantly, 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, in the fear that any government action is going to be motivated by selfish special interests.

Heidt: Don't you think it's fair to generalize from your example and 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.

Alexeev: This reminds me of international trade theory, where most of the modern developments work against free trade. But at the same time, the same economists - Paul Krugman in particular - who develop those ostensibly anti-free trade models say that they are for free trade.²⁸

Rasmusen: International trade theorists have some of the same fears I expressed when I talked about parental leave laws. Governments are more likely to be motivated by special interest pressures than by advanced academic theories, and it is dangerous to give them clean rationalizations for policies with ignoble motivations.

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 theoretic analysis of law? Bob, do you want go first?

²⁸ Paul Krugman, THE AGE OF DIMINISHED EXPECTATIONS (1994), Paul Krugman, *What Do Undergraduates Need to Know About Trade?*, 1993 Am. Econ. Rev. Papers & Proc. 23.

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 was for introductory courses in law and economics.²⁹ It's going to be a very readable *tour de force* of all the policy implications 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 book taught me a lot. The beauty of the book was its ability to show that these legal issues are complicated and that models we've worked out to understand the effects of the law might be wrong. The real results may be counterintuitive. 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, then the results may be something else that 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."

²⁹ See n28 *Supra*.

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.³⁰ This book will be very useful, not so much for students to read in class as for professors to read before class.

³⁰ Rasmusen turned down both editors.

I do think that this book undersells itself. The concluding section, for example, is boring - which it doesn't have to be. It says for example, "We've shown legal rules often affect parties in ways that are largely invisible", and, later, "The models that we have set out, show how the forces that determine outcomes when parties interact strategically, often work beneath the surface by attaching consequences to actions that are not taken before or after the legal rule is put in place."³¹ This is a dynamite lesson, but written out like that it won't mean much to readers, except to those who know the lesson already. I wish they'd added a concrete example in two sentences and reminded the reader how they'd reached astounding policy conclusion X in Chapter Y.

Alexeev: I'm not sure I agree with this specific example that Eric has just made because after all, this very point came out loud and clear a long time ago in the work of Mnookin and Kornhauser on bargaining in the shadow of the law.³² It's an old point.

Rasmusen: How old is that?

Alexeev: More than ten years old.

Rasmusen: That's the academic speaking! For an idea to get from article to book in ten years is fine progress.

Alexeev: Maybe. Anyway, 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

³¹ GAME THEORY AND THE LAW at 268.

³² Lewis A. Kornhauser & Robert H. Mnookin, *Bargaining in the Shadow of the Law: The Case of Divorce*, 88 Yale Law Journal (1979).

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.³³

Through this superb example, the authors show both (1) that such a law might make no difference to who gets training because workers would hide their bad backs to get the training and (2) that the law can be efficient by allowing 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 have 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 upon 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.

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.

³³ See n24 *Supra*.

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.

Other Readings on Game Theory

Ayers, Ian (1990) "Playing Games with the Law", *Stanford Law Review*, May 1990, 43: 1291-1317. This is an essay/review of Rasmusen's *Games and Information*, showing how game theory can be applied to law.

Ayres and Gertner (1992) "Strategic Contractual Inefficiency and the Optimal Choice of Legal Rules," 101 *Yale L.J.* 729. A recent example of the use of game theory in a law review article.

Binmore, Kenneth G. (1992) *Fun and Games: A Text on Game Theory*. Lexington, Mass.: D.C. Heath, 1992. A fun introduction.

Boyd, Robert D. & Peter J. Richerson (1985) *Culture and the Evolutionary Process*. Chicago: University of Chicago Press, 1985. An anthropological application of game theory.

Brams, Steven J. (1980) *Biblical Games: A Strategic Analysis of Stories in the Old Testament*. Cambridge, Mass.: MIT Press, 1980. Just what it says.

Campbell, Richard & Lanning Sowden (1985) *Paradoxes of Rationality and Cooperation: Prisoner's Dilemma and Newcomb's Problem*. Vancouver: University of British Columbia Press, 1985. A collection of essays in philosophy.

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Dawkins, Richard (1985) *The Blind Watchmaker*. New York: Norton, 1985. Socio-Biological applications of game theory. Excellent examples.

Dixit, Avinash K. & Barry Nalebuff (1991) *Thinking Strategically: The Competitive Edge in Business, Politics, and Everyday Live*. New York: Norton, 1991. This is a popular science book on game theory by two top researchers.

McMillan, John (1992) *Games, Strategies, and Managers: How Managers can use Game Theory to Make Better Business Decisions*. Oxford, Oxford University Press, 1992. Designed for master's level students in government and business administration.

Ordeshook, Peter C. (1986) *Game Theory and Political Theory; An Introduction*. Cambridge: Cambridge University Press, 1986. For how political scientists use game theory.

Rasmusen, Eric *Games and Information*, Oxford: Blackwell Publishers. First edition, 1989. Second edition, 1994. Somewhat mathematical, but less so than most books on game theory for economists.

Tirole, Jean and Drew Fudenberg (1991) *Game Theory*, Cambridge, Mass: MIT Press, 1991. The premier graduate economics text on game theory. Sophisticated math skills required.

THE END