ECONOMIC analyses of adjudication and positive political theories of adjudication share common methodologies. Each applies the methods of microeconomic theory and game theory to the study of adjudicatory institutions and then tests these theories econometrically. As a consequence, many analyses of courts within economic analysis of law are indistinguishable from those produced by positive political theorists; they consider how judges control, exploit, or resolve conflicts of interest among judges.

This survey emphasizes three contributions by economic analysts of law outside this common, positive, political theoretic model but which still exploit the tools of rational-choice theory. These contributions either integrate appellate decision making within a more comprehensive model of litigant and trial behavior; assume that judges constitute a team with shared preferences; or assume that judges decide cases rather than announce or implement policies. These three elements yield a substantially different understanding of courts than the standard model of positive political theory. The assumption of shared preferences explicitly rejects the principal–agent model that is standard in PPT. The integration of appellate decision making with other aspects of the disputing process and the shift from policies to cases are
consistent with, but potentially transformative of, the standard principal—agent models of adjudication.

1 An Integrated Model of Adjudication

The process of adjudication begins with an injury that may yield a grievance that evolves into a dispute which itself may be settled or tried, and an appealed. Political scientists have largely concentrated on judicial decision making and while scholars in law and society have concentrated on the transformation from harm to injury to grievance. Economic analysts of law, by contrast, have investigated virtually every stage of the adjudicatory process.

I focus on the literature on the influence of litigant selection on cases to be tried and appealed on the development of the law. Interest in this issue arose in part to buttress Posner’s early claim (in e.g. Posner 1972) that common law legal rules were, in some sense, efficient. Rubin (1977) and Priest (1977) developed the first evolutionary models of the common law, which studied how litigant choices could drive the development of the law regardless of the preferences of the judges. Rubin1 asserted that efficient rules will never be litigated while parties with a long-term interest in the activity will litigate inefficient rules because there is a social gain to the announcement of an efficient rule. This differential in litigation clearly implies that, over time, efficient rules, and only efficient rules, will prevail. Priest noted that a similar result would follow from less extreme assumptions: Priest noted that a similar, though weaker, result would follow from less extreme assumptions on litigation behavior: if there are only two rules, judges announce the efficient rule \( p \) percent of the time, and the inefficient rule is litigated more often than the efficient one, the efficient rule will govern more often than \( p \) percent of the time.

These articles suggested the power of litigant selection of cases to determine the path of the law. Some subsequent articles suggested other mechanisms through which such selection might occur such as the possibilities that parties would invest more in advocated efficient legal rules and thereby make their adoption more likely (Goodman 1978) and that judges would, under reasonable assumptions, eventually announce an efficient rule as a result of learning from litigation.

1 In an interesting precursor, Galanter (1974) observed that, when one party had a continuing interest in a dispute but the other party did not, the rule favored by the interested party would eventually prevail.
The models, however, are, and were, subject to two types of criticism. First, neither argument rests on an adequate model of the choice between settlement and litigation. The early date of these contributions makes this inadequacy unsurprising. Rubin’s assumption that efficient rules are never litigated is nevertheless highly implausible; often more than one legal rule is efficient and they will differ in distributional consequences. Priest’s assumption therefore seems more plausible though it is not well motivated. He notes only that the frequency of litigation should rise with the surplus to be gained. On the other hand, Priest’s conclusion rests critically on the assumption that there are only two rules.

The second class of objections concerns the logic of the selection pressures. Rubin and Priest assume selection pressure that is independent of the aims of the judges. They do not however model it explicitly. By placing Priest’s model in its natural mathematical context, Cooter and Kornhauser (1980) show by counterexample that differential litigation does not imply greater efficiency.² Hadfield (1992), by contrast, argued against the model of judicial learning. She showed that judges who pursue efficiency and learn from the resolution of the cases before them will still fail to announce efficient rules because the set of cases they hear represents a biased sample of the transactions governed or potentially governed by a legal rule.

The importance of these evolutionary models of the common law to the study of adjudication does not depend on the truth of the claim that the common law evolves towards efficiency. Rather, it highlighted the importance of the decisions of litigants on the movement of the law. Priest and Klein (1984) provided an early and influential insight into the importance of selection pressures. They argued that only ‘hard’ cases would be appealed.

## 2 Team Models of Adjudication

Models of adjudication vary along several dimensions. First, they differ in the preferences they ascribe to judges. Most positive political theory studies offer principal agent models of adjudication in which each judge has preferences over policies and these preferences may differ. Team models, first introduced in Kornhauser (1992a, 1992b, and 1995), assume that judges share a preference but differ in their information or their tasks.

Second, models of adjudication consider different judicial functions. Scholars generally ascribe two distinct functions to courts: dispute resolution and rule

creation. Political science models in which judges choose policies or rules generally consider rule creation but ignore dispute resolution. Team models of adjudication, by contrast, have more often focused on the judicial function of dispute resolution. They have sought to explain judicial hierarchy in terms of error correction.

Third, the economic analysis of law has produced both structural and behavioral models of adjudication by a team. A structural model of adjudication considers the interrelation of various systemic variables such as the aggregate likelihood that a case will be appealed or, if appealed reversed. A behavioral team model, by contrast, derives these structural parameters from the decisions of rational agents.

Analysts have used both structural and behavioral models of adjudication to understand the hierarchical organization of courts. Court systems rarely have more than three tiers of courts—a trial court and two appellate courts—though some have only one or two. What explains this uniformity? Why not have more than three tiers? Why should courts be organized hierarchically at all? Several models have combined litigant selection with a team perspective to provide some insight into the hierarchical structure of courts.

Shavell (1995) offered the first formal model of error correction. It is a hybrid structural and behavioral model from a team perspective. A policymaker must design a court structure that minimizes social costs understood as the sum of the costs of operating the judicial system and the costs of errors. Shavell considers three design choices: (1) a flat vs. two-tiered hierarchy; (2) the structure of fees and subsidies to litigants; and (3) random review of trial judgments vs. litigant-initiated review. He identifies conditions under which an appropriate set of fees and subsidies to litigants seeking to appeal insures that only incorrectly decided cases are appealed. From this conclusion, it follows almost immediately that litigant selection of appeals is superior to an appellate court randomly selecting cases for review.

Cameron and Kornhauser (forthcoming) refine Shavell’s analysis and connect the design of a court system more closely to litigant selection. In their structural model, the policymaker must allocate judges among tiers in order to minimize error. They consider two questions: First, ignoring resource constraints, under what circumstances would a policymaker want to add an additional tier? Second, given a fixed number of judges, when would the policymaker want to reorganize the allocation of \( n \) judges among \( T \) tiers to add a \( T+1 \)st tier? The answers to these questions highlight the importance of litigant selection.

The model is algebraically messy but conceptually clear. Cameron and Kornhauser show that an additional tier is desirable if the additional tier is sufficiently selective—i.e. if the ratio of the probability a wrongly decided case is appealed to the probability a correctly decided case is appealed—is sufficiently large or if the ratio of the probability that, conditional on its being appealed a rightly decided case will be reversed to the rate of error in the court below is sufficiently small. This result extends Shavell’s analysis as he assumes that the appellate court more often
reverses wrongly decided cases than correctly decided cases. If the process is sufficiently selective—i.e. if primarily wrongly decided cases are appealed—this assumption is not necessary. Cameron and Kornhauser further show that a similar condition is sufficient to insure that N judges in T tiers should be reorganized to add a \( T+1 \)st tier.

Cameron and Kornhauser (2005a, forthcoming) also offer a behavioral team model of error correction in a judicial hierarchy to motivate and illuminate their structural model. They consider a judicial system with N judges and ask what hierarchical arrangement is best. They assume that judicial accuracy is a function of the amount of resources allocated per case. Prior to trial, the litigants are asymmetrically informed so that litigation rather than settlement can occur. Trial produces both a public and a private signal that may inform the trial court or the other litigant of the true state of responsibility of the defendant. They prove that, if the highest court is sufficiently accurate, then one never needs more than three tiers to insure that all cases are correctly decided. The accuracy of the highest court insures that only losing litigants in wrongly decided cases appeal. An interesting feature of some of the equilibria is that lower courts do not resolve cases in a Bayesian way; they do not always rule on their beliefs about the responsibility of the defendant. Rather, the lower courts hold against the informed litigant in order to exploit the power of litigant selection. This non-Bayesian procedure might be interpreted as judges adhering to the legal rule of decision.

3 Modeling Adjudication: Deciding Cases Rather than Choosing Policies

Rational-choice models in political science have largely ignored institutional detail of courts and adjudication. The models ascribe preferences over policies to judges; although judges may face constraints in acting on their preferences, the constraints derive from the presence of other political actors—either the other branches of government or judges on other courts. One might say that the rational-choice theorists in political science have treated courts like legislatures, a tactic that has facilitated the transfer of methods developed for the study of Congress in particular and legislatures in general to adjudication.

Economic analysts of law, by contrast, have been more attentive to the institutional structures specific to courts. This attention has led some economic analysts to begin their analyses not with policies but with the rendering of judgments in cases or the announcement of rules. Adjudication is not equivalent to the
announcement or implementation of policies. Rather, adjudication maps cases into outcomes for or against plaintiff. Specifically, adjudication is a function from a case-space to a two-element set \{0,1\} that one might interpret as ‘judgment for defendant’ and ‘judgment for plaintiff.’ The model represents a case as an n-dimensional vector; each element of the vector represents some ‘fact’ in the case.

In this section, I develop some of the ideas and consequences of starting from case-spaces rather than policies. I begin with a discussion of doctrine because it permits a clear exposition of some of the key ideas and provides a useful contrast to approaches to doctrine in positive political theory. I then turn to models of collegiality.

3.1 Modeling Doctrine

Doctrine pervades common-law adjudication. It structures the pleadings of the parties and the decisions of lower courts. Its articulation and discussion constitutes the primary subject-matter of legal education in the United States and other common law countries. Indeed, its analysis still dominates law reviews that fifty years ago would have been devoted almost exclusively to its articulation and critique.

Within the positive political theory of adjudication, however, doctrine is nearly invisible. When it does appear, it assumes a very spare, abstract character that is divorced from its actual functioning in courts. One common approach assumes that the Supreme Court has preferences over a two-dimensional space (Schwartz 1992; Cohen and Spitzer 1994; and McNollgast 1995). One dimension remains the policy space over which, in the standard PPT model, the judges have preferences. The second dimension, variously called ‘deference’ or ‘precedent’, explicitly measures the judge’s level of tolerance for deviation from her optimal policy choice. Similarly, Spiller and Spitzer (1992) model doctrine in terms of the dimensionality of the permissible policy space with the Supreme Court potentially using constitutional rulings to restrict future lower court decisions to a one-dimensional subspace.

These abstract characterizations facilitate understanding some aspects of the politics of adjudication. The approach, however, is inherently ‘political’ and non-legal; it makes no reference to the facts of a case or features of legal discourse that appear in an opinion. The model, and even its interpretation, are quite distant from the realities of day-to-day case adjudication and the practicalities of doctrine. An account of doctrine that began from these concrete practices might help to integrate legal understandings of adjudication with political ones.

3 Doctrine also exists in civilian legal systems but it has a somewhat different structure and implication.
Kornhauser (1992a, 1992b), in the context of a study of aggregation of judgment on a collegial court, offered a more concrete model of doctrine. The analysis begins with the identification of a case space. Each case is represented by a long vector of characteristics: all relevant (or potentially relevant) facts concerning the disputed events, including possibly legal actions. A(n) (extended) legal rule simply maps the case space into a two-element set \{0,1\} that we might interpret as \{plaintiff prevails, defendant prevails\}. Doctrine imposes structure on this global mapping. The framework in Kornhauser (1992b) considers a doctrine that has multiple causes of action. For expository purposes, however, it is clearer to consider a single cause of action. A cause of action consists of a set of issues. For plaintiff to prevail on a cause of action, she must prevail on each issue. An issue is simply a map from the case space that depends only a portion (or subspace) of the case-space to the set \{0,1\} which we may interpret as \{defendant prevails on the issue, plaintiff prevails on the issue\}.

Consider a simple negligence cause of action. To prevail, the plaintiff must prove that the defendant had a duty to her, that an act of the defendant caused her harm, and that the defendant acted without due care. The determination of each of these issues depends on a limited number of facts of the case. The question of duty depends on the relation of plaintiff to defendant. The question of causation depends in part on physical facts about the world. The question of negligence depends in part on the value of the activity in which defendant was engaged and the manner in which undertook that activity. For plaintiff to prevail, the court must resolve each of these issues in her favor.

This framework ties the empirical methods of fact pattern analysis to a theoretical model of judicial decision making. Much of the empirical literature relies on a statistical conception of fact pattern analysis—see Kort (1957), Kort and Mars (1957), Segal (1984), Segal and Spaeth (199), Kritzer and Richards (2002, 2003, 2005). But the analytic framework fits more naturally with a Boolean interpretation of fact pattern analysis—see Kort (1963). This interpretation can be empirically implemented by categorization and regression trees as suggested by Kastellec (2005).

Cameron (1993) suggested that positive political theory adopt the set of cases or the case space rather than the policy space as the domain of study. Lax (forthcoming) has taken up the suggestion. He argues that focus on the case space better connects decisions in specific cases to rules and rules to policies than a more abstract model that assumes that judges choose directly in a multidimensional policy space. After all, policies are represented by points in the policy space and rules by manifolds in case space. Lax does not, however, make the connection between rules and policies clear. Indeed it seems to me that the idea of a policy

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4 A fuller discussion of the relation between fact pattern analysis in political science and this doctrinal framework, see Cameron and Kornhauser (2005).
space, even in the legislative context, is a convenient simplification. Statutes are legal rules that also sit in case spaces and it seems reasonable to assume that legislators have basic (or primitive) preferences over these rules rather than over some ill-defined policy (and much reduced) space.

### 3.2 Collegiality

In most legal systems, appellate decisions are rendered by panels of more than one judge. In the federal system in the United States for example, the first appeal is heard by a panel of three judges chosen from a larger bench while appeals to the Supreme Court of the United States are heard by the entire bench of nine Justices. This inverted pyramid is typical of judicial systems throughout the world: as one moves up the judicial hierarchy, a greater number of judges resolves each case.

Collegiality raises several questions generally ignored in the legal, philosophical, and economic literature. First, why are cases decided collegially rather than by a single judge? Why, moreover, does the number of decision makers generally increase as a case moves up the hierarchy? Second, what consequences does collegiality have for the development of the law? Does it produce a consistent body of decisions? Does it produce a coherent body of decisions? Third, how are the decisions of each judge on a panel aggregated into a decision of the court? Easterbrook (1982) raised and addressed this second set of questions. His article then spurred further research into each of the three sets of questions.

#### 3.2.1 Why do we have Collegiality?

Posner (1985, 12) offered several reasons for collegiality: (a) multiple judges reduces the costs of poor appointments; (b) multiple judges reduces the power of any single judge on a court; (c) multiple judges permits deliberation; and (d) multiple judges increases productivity by dividing the labor of opinion drafting.

Kornhauser and Sager (1986) offer a more systematic analysis of the reasons for collegiality. First, they distinguished two conceptions of adjudication: the rendering of judgment and the rendition of preferences. They then suggested three different models of collegial adjudication, each of which identified a distinct standard against which to measure judicial performance. (1) If collegial courts aggregate the preferences of the judges, then *authenticity*, the extent to which the court’s judgment correctly reflects the preferences of the judges, measures the quality of adjudication. (2) If collegial courts aggregate judgments, then *accuracy*, i.e. their ability to ‘get the right answer’ however one defines the right outcome, is the appropriate criterion. (3) If collegial courts are representative institutions that seek to reach the outcome that the represented body would have reached if they deliberated and voted, then we may identify two evaluative criteria: *fit*, or the tendency to arrive at results that the represented group would have reached and
reliability, the absence of bad surprises. In this context, they rely on the Condorcet Jury Theorem and emphasize accuracy. Good and Tullock (1984), by contrast, emphasize offer a representation model of supreme court collegiality in which fit is the relevant value.

3.2.2 Consistency and Coherence.

In the first model of collegiality, Easterbrook (1982) offered a simple application of Arrow’s Theorem to Supreme Court adjudication. Easterbrook assume that each case presents the Court with a choice between two legal rules to govern a particular doctrinal realm. When more than two legal rules are possible and no rule is a Condorcet winner, the Court’s case law will cycle as successive cases challenged the prevailing rule with an alternative that a majority of the Court preferred.

We might, however distinguish between consistent and coherent patterns of decisions. A consistent court decides identical cases identically. The definition of coherence is less clear; a court that decides coherently creates a body of law that a system of law that exhibits the quality of conceptual unity. A panel of judges, each of whom had a consistent view of the law would produce a consistent body of law; but a panel of judges, each of whom had a coherent conception of the law, need not yield a coherent body of decisions. (Kornhauser and Sager 1986, Kornhauser 1992a).

Landa and Lax (2006) provide a formal structure and precise conception of coherence. They show that, if each judge on a collegial court decides cases on the basis of a base rule, the court, proceeding case-by-case by majority rule, may not produce a body of law that can be stated as a base rule. Thus, the development of the law may not be coherent in the sense that no judge on the court endorses the legal rule that emerges from their decisional practice.

3.2.3 Voting on Collegial Courts.

Collegial courts present several interesting questions. Most obviously, the judgment of the court aggregates the judgments of each judge on the court. Positive political theory usually resolves complexities that arise from voting by assuming that each judge has spatial preferences over a one-dimensional policy space. As a consequence, the median voter theorem applies and the aggregation of views of the panel is unproblematic. Courts with a fixed personnel render judgments that are stable if not consistent.

A similar result may be obtained in case-space rather than policy space. In the model in Lax (forthcoming), each judge decides on the basis of well-behaved, simple rules that he calls ‘proper.’ Lax shows that if all judges have proper rules, then the body of law announced by that court is, in a sense he clearly specifies, the median of the proper rules of the judges. This result parallels the median vote rule for one-dimensional policy spaces but Lax’s formulation shows that stability is stronger in multidimensional case spaces than in multidimensional policy spaces.
Interestingly, however, the median rule of the court may differ from the rule of decision used by each judge. There is thus no single swing justice as in the policy space model.

Common-law courts do not function in the simple fashion postulated in the PPT model. The views of each judge are not aggregated through a simple vote. Actual aggregation procedures vary from common-law jurisdiction to common-law jurisdiction. In nineteenth-century England, for example, no aggregation occurred. Judges announced their views seriatim and subsequent courts and litigants had to infer the court’s rule from these seriatim opinions.

In the United States, a court generally offers an opinion of the court but the aggregation process is not well defined. Kornhauser and Sager (1986) contrasts two modes of aggregation: issue-by-issue and case-by-case. Unfortunately, these two aggregation methods do not always yield the same outcome. Specifically, they considered a case that presented two distinct issues for decision. Legal doctrine determines the relation between the decisions on each issue and the decision on the case. In some circumstances, the procedure the court adopts for aggregating votes will determine the outcome of the case. In case-by-case adjudication, each judge registers her view of how the case should be decided and the court aggregates these votes to reach a majority judgment. In issue-by-issue adjudication, each judge registers her view on each issue in the case should be decided; the court then aggregates the votes on each issue and applies the legal doctrine to the issue-by-issue results to reach a judgment in the case.

In fact, judicial practice in the United States is even less settled than this conflict suggests. The Supreme Court of the United States not only does not adhere to a single voting protocol, it does not have a centralized or self-conscious procedure for choosing the aggregation method. Rather, in practice, each judge counts votes as he wishes; the Court as a whole generally ignores or suppresses discussion of the aggregation procedure.

This conflict creates a ‘doctrinal paradox’ (Kornhauser 1992b). A single judge decides a case by deciding each legal issue in each cause of action. To prevail on a cause of action, plaintiff must prevail on each issue; to prevail in the case, she must prevail on at least one cause of action. On a multi-member court, the two different aggregation methods may lead to different results. The doctrinal paradox is distinct from the Condorcet cycle. When the judges’ orderings of outcomes (described as the vector of outcomes on each issue) yield a Condorcet cycle issue-by-issue and case-by-case voting might not conflict. Conversely, when the judges’ orderings produced a Condorcet winner over outcomes, the issue-by-issue result might differ from the case-by-case result. (Kornhauser 1992b provides examples; Landa and Lax 2006 derives the paradox in a formal setting.)

Analysis of the doctrinal paradox assumed that each judge voted ‘sincerely’ on each issue regardless of the method of aggregation of the votes on the court. (Defining ‘sincerity’ in the context of multiple-issue cases presents difficulties
addressed in a different voting context in Benoit and Kornhauser (1995). An assumption of sincerity comports well with a team model; it does not easily fit into a political model. In a political model, a self-interested, rational judge should foresee the results of sincere votes that might be detrimental to the realization of her interests.

In the agency context, one would expect judges to be sophisticated. If a court includes both sincere and sophisticated judges, the former can be manipulated by the latter. Moreover, sincere courts would be subject to frequent legislative overrulings. As these phenomena are not generally observed, we may infer judicial sophistication. (Spiller and Spitzer 1995).

4 Conclusion

This survey has sketched three areas in which economic analysis of law has made a distinctive contribution to the study of law and politics. Economic analysts have embedded the study of the development of the law more fully into the complex phenomena that give rise to disputes and litigation and that characterize adjudicatory institutions. Second, economic analysts have given formal structure and content to at least some of the ‘legal model’ often caricatured in the political science literature. Specifically, they have investigated how treating judges as a team rather than as political actors with conflicting interests. Finally, and most importantly, economic analysts have grounded their models of adjudication in the institutional details of adjudication. They thus start not from policies but rather from judgments in individual cases that are aggregated into rules. This case-space approach has significant implications for both principal–agent and team models.

Another author, faced with similar space limitations, might emphasize either three other distinctive contributions of economic analysis of law to the study of law and politics or the important contributions that economic analysts of law have made to the positive political theory. As a partial remedy to the limited, parochial scope of this review, I conclude with a series of references to other, related surveys of the literature in economic analysis of law.

Daugherty (2000) and Spier (forthcoming a, forthcoming b) survey the literature on the choice between settlement and litigation. Cooter and Rubinfeld (1989) and Spier (forthcoming a) survey the literature on the trial process. Rubin (2004) surveys the literature on the evolution of the common law. Rubin (2000) and Kornhauser (2000a) provide surveys of different aspects of the development of the law. In addition, there is a large and rapidly growing literature on the importance of law in development.
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