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CHAPTER 28

Legal Reasoning

Phoebe C. Ellsworth

For more than a century, lawyers have written about legal reasoning, and the flow of books and articles describing, analyzing, and reformulating the topic continues unabated. The volume and persistence of this “unrelenting discussion” (Simon, 1998, p. 4) suggests that there is no solid consensus about what legal reasoning *is*. Legal scholars have a tenacious intuition – or at least a strong hope – that legal reasoning is distinctive, that it is not the same as logic, or scientific reasoning, or ordinary decision making, and there have been dozens of attempts to describe what it is that sets it apart from these other forms of thinking. These attempts generate criticism, the critics devise new formulations that generate further criticism, and the process continues. In this chapter, I describe the primary forms of legal reasoning, the most important schools of thought about legal reasoning, and some of the major differences between legal reasoning and scientific reasoning.

The first question is, “Whose legal reasoning are we talking about?” Jurors are given instructions on the law at the end of every trial and are asked to apply that law to the

evidence they’ve heard to reach a verdict. They are asked to engage in “legal reasoning.” Clients approach their attorneys with rambling stories and a strong, if somewhat vague, sense of injustice, and it is the attorney’s job to figure out the laws, precedents, and facts that most favor the client and to integrate them into a persuasive case. This task involves legal reasoning, but the reasoning is driven by the desired outcome. The goal is not to reach the right decision but to make the best argument for one side. The evidence, as orchestrated by the lawyers and the legal arguments they make, form the raw materials for the judge’s decision, although judges (like juries) may also draw on their own background knowledge and experience and their own interpretations of the evidence and (unlike juries) their own understanding of the law.

When scholars write about “legal reasoning,” they are writing about judges. The lawyer does not have to decide the case, but only to make the strongest appeal for one side; lawyers’ reasoning is discussed in courses and writings on advocacy. Jurors interpret the evidence to decide what actually

happened and apply the law given to them in the judge's instructions to reach a verdict. The judge must also seek out the appropriate legal authority, deciding which laws and previous cases are applicable. Jurors are not supposed to reason about the law itself; that is the task of the judge. Judges are trained in the law, they know the statutes and precedents, and they have the experience of judging many cases and reading the decisions of other judges. Jurors do not provide reasons for their verdicts; judges often do. Finally, much of what is written about legal reasoning is about appellate court decisions, in which judges are primarily concerned with legal procedure and the law itself, not about who wins and loses, and in which they almost always must provide legal explanations for their decisions.

In the subsequent historical section, I describe how basic visions of the nature of legal reasoning have changed over time. Most judges, if they thought about their thought processes at all, have probably accepted the commonsense background theory prevalent in the legal culture of their era. Some, however, including some of the greatest judges, have recognized that they really can't explain how they reach decisions (Holmes, 1897; and cf. Nisbett & Wilson, 1977). In 1921, Benjamin Cardozo began his classic work, *The Nature of the Judicial Process*, with the observation that "[A]ny judge, one might suppose, would find it easy to describe the process which he had followed a thousand times and more. Nothing could be farther from the truth" (1921, p. 9).

But that does not mean there are no commonly accepted characteristics of legal reasoning. There are. The problem that vexes legal scholars is that they are incomplete. Although they undoubtedly *influence* judicial reasoning, they are insufficient either to predict future outcomes or to provide a fully satisfactory account for past ones. The two most common reasoning strategies, taught in every law school course on legal reasoning and writing, are the deductive method (rule-based reasoning) and the analogical method (case-based reasoning). These strategies are not unique to legal rea-

soning. They are commonly described in relation to scientific reasoning as well. What is distinctive about these forms of reasoning in the legal context is not so much the process but the context, the raw materials to which the processes are applied, and the nature of the rules.

Deductive and Analogical Reasoning in Law

Deductive (Rule-Based) Reasoning

In deductive scientific reasoning (see Dunbar & Fugelsang, Chap. 29), there is a general law or theory, and the scientist uses that theory to infer what will happen in some particular fact situation, makes a prediction, and designs an experiment to test it. If the prediction is not confirmed, there are three possibilities: The deduction was flawed, the experiment was flawed, or the theory is flawed. In deductive legal reasoning, the decision maker begins with a specific set of facts, looks at the law that applies to those facts, and reaches a verdict. If Joe's Liquor Store sells beer to 16-year-old Richard, and there is a law prohibiting the sale of alcohol to anyone under the age of 21, then Joe's Liquor Store is guilty. The reasoning is basically syllogistic, and in many cases the application of the law is unproblematic (see Evans, Chap. 8). These are called easy cases.

In practice, there are many ways in which ambiguity can creep into this apparently clear logical process. First, the decision maker is faced with a specific set of facts. If he or she is a judge, there are almost always two versions of the facts. It is the attorneys' job to organize the facts in a way that fits the legal outcome they wish to achieve, and they do this by emphasizing different facts and, often, different legal precedents. "[T]he law determines which facts are relevant while at the same time, the facts determine which law is relevant" (Burton, 1995, p. 141). There may be more than one law that is potentially applicable. There may be several statutory provisions that might be relevant, and the two opposing counsel may argue that a

different rule is the one that should control this case. The statute itself may violate a higher rule, such as the state or federal constitution. The rule may be ambiguous, as in a ban on "excessive noise," or the application of the "reasonable person" standard ("Would a reasonable person have believed that her life was in danger?").

In preparing a case, an attorney will go back and forth between developing a coherent version of the facts that fits the law and conducting legal research to find out which laws frame the facts in the best possible way. The judge, faced with two competing arguments, may choose one of them, or may bring in additional factual interpretations or legal considerations not mentioned by either of the parties. Thus, even the apparently simplest form of legal reasoning – deciding whether the law covers the specific fact situation – is often quite complicated in practice. The commonsense idea that there is a behavior, there is a law, and the question is "Does the behavior conform to the law?" is much too simple to apply to interesting cases.

Analogical (Case-Based) Reasoning

In the Anglo-American common law tradition,¹ cases are decided by examining the patterns of decisions in earlier, related cases. No case has meaning in isolation, and general rules and propositions are useless without "the heaping up of concrete instances" (Llewellyn, 1930, p. 2), except in very simple cases. A somewhat similar form of reasoning occurs in science when a scientist examines a series of studies with apparently inconsistent results and tries to come up with a general principle that will explain the inconsistencies. In research on social facilitation, for example, some researchers found that people performed better on a task when other people were around, but other researchers found that people performed better when they were alone. In 1965, Robert Zajonc resolved this controversy by showing that the emotional arousal caused by the presence of others enhanced performance on well-learned tasks but impaired

performance on tasks that were less familiar. He applied a more general principle that explained the apparently contradictory results of past research and made sense of the field. He then went on to devise a situation in which the new principle could be tested.

The judge begins where the scientist ends, with a specific situation in which the outcome must be decided – not predicted and tested but decided by examining the similarities and differences between this new case and the previous cases and choosing an outcome that corresponds to the holdings of the cases it most resembles. In the adversarial system, the lawyers emphasize the prior cases that were decided the way they want this one to be decided, finding crucial differences in the prior cases that went the "wrong way" so as to argue that their holdings are inapplicable in the present context. The lawyers have a certain leeway in their selection of which facts to emphasize, in their interpretation of the facts, and in their description of the legal significance of those facts (Llewellyn, 1930, p. 70). Like the scientist, the lawyer may identify some principle that explains why the current case should be considered an example of the first group rather than the second. The judge examines the strengths and weaknesses of the arguments of the two parties and either chooses between them or develops a different principle for placing the present case in the context of the past ones.

When legal educators claim that the basic mission of the first year of law school is to train the student to "think like a lawyer," it is this sort of analogical reasoning they generally have in mind – the ability to spot the factual and legal similarities and (more important) differences between the case under study and related previous cases and to recognize which similarities and differences are relevant (e.g., the defendant's state of mind) and which are not (e.g., the defendant's name). This entails defining the universe of possibly applicable cases and deciding which ones match the current case most closely and which, although apparently similar, do not apply. The focus is on the particular cases, and the reasoning is more

like feature matching than like the application of a general principle (Sunstein, 1996, p. 67; see Holyoak, Chap. 6, for further discussion of analogical reasoning).

Finally, as with deductive reasoning, the significance of a particular fact depends on its legal significance, and the significance of a particular law or previous holding depends on the exact fact pattern of the case. The legal reasoner must consider both simultaneously.

Theories of Legal Reasoning

*Formalism*²

That “legal reasoning” is considered to be a distinctive form of reasoning worthy of being included as a separate topic in the *Cambridge Handbook on Thinking and Reasoning* is attributable in large measure to Christopher Columbus Langdell, who became the first Dean of the Harvard Law School in 1870, and who revolutionized legal education. He introduced the case-based technique of teaching law; he created the image of the law faculty as a group of permanent scholars devoted to legal research, explicitly promoting the analogy to the faculty of a science department; and he advocated a view of legal reasoning known as “legal formalism.”

The essence of legal formalism is the idea that “a few basic top-level categories and principles formed a conceptually ordered system above a large number of bottom-level rules. The rules themselves were, ideally, the holdings of established precedents, which upon analysis could be seen to be discovered from the principles” (Grey, 1983, p. 11). In other words, there is a pyramid of rules with a very few fundamental “first principles” at the top, from which mid-level and finally a large number of specific rules could be derived. The legal decision maker, faced with a case to be decided, would study the body of law and discover the rule that determined the correct result.

In 1870, science represented the pinnacle of human intellectual achievement,

and in his effort to make law an academic discipline rather than a mere trade, Langdell embraced the idea that law is a science (Langdell, 1880). He did not originate this view, which can be found in Blackstone’s *Commentaries* and earlier (Kennedy, 1973), but he promulgated it enthusiastically. An obvious problem with this analogy is that in law there is no means of experimentation, no access to previously unknown data. The “data” consisted of the writings of earlier judges: “We have constantly inculcated the idea that the *library* is the proper workshop of professors and students alike; that it is to us all that the laboratories of the university are to the chemists and physicists, the museum of natural history to the zoologists, and the botanical gardens to the botanists (Langdell, 1887, p. 124; emphasis added). The data were what judges had said, and new data were what new judges said, based on their readings of their predecessors. Langdell did not argue that law as it existed actually achieved the beautiful hierarchical organization from clear, highly abstract principles down to lower levels that would finally allow precise derivations that would fit any new set of particular facts; creating such an arrangement was a *goal* of legal science.

Of course this view of science as a closed deductive system strikes most modern scientists as unrealistic and simplistic – a view of science that we were taught in eighth grade but that rarely seems like a description of what we actually *do* or how we actually think. The behavioral sciences especially (and it seems natural to us that if law is to be considered a science at all it should be a behavioral science) seem a poor fit for such an abstract deductive model of reasoning. Even in 1870, the excitement of observation, empiricism, and induction were rapidly replacing earlier deductive views of science.

Langdell’s model of science was more like the taxonomic system of Linnaeus than like empirical science. Families of plants and animals were organized under phyla (the fundamental principles), genera under families, and species under genera. During the explorations of the eighteenth and nineteenth centuries, an astonishing variety of new plant

and animal species was discovered, and each one could be compared with others at the species level and classified appropriately in its place in the ruling structure. In the same way, each new legal case could be examined for its similarities and differences to previously decided cases, which in turn had been classified according to the general taxonomy, and so could be decided accurately. In law, "the fundamental principles of common law were discerned by induction from cases, rules of law were then derived from principles conceptually, and, finally, cases were decided, also conceptually, from rules" (Grey, 1983, 19).

There were critics of legal formalism from the very beginning. The alternative view is illustrated in two famous remarks by Oliver Wendell Holmes, Jr.: "The life of the law has not been logic: It has been experience" (Holmes, 1881, p. 1), and "general principles do not decide concrete cases" (dissenting opinion in *Lochner v. New York*, 1905, p. 76). Holmes and, later, critics such as Pound, Llewellyn, and Cardozo argued that legal principles were not "discovered" by careful research into the rules and principles, and that such research, however diligent, would not yield definite and incontrovertible answers in any but the easiest cases. Instead of clear distinctions between the cases decided in one way and those decided in the other (for the plaintiff or the defendant in a medical malpractice case, for example), there is overlap and fuzziness at the boundary and, in the end, the judge *creates* the defining distinction rather than discovering it (Cardozo, 1921, p. 167). The distinctions were often arbitrary, not logical, and influenced by the judge's own sense of what the right outcome *should* be. The fundamental principles and legal rules were important and provided considerable guidance to the judge but, in most cases, they were insufficient to determine the outcome. The certainty and sense of inevitability expressed in judicial opinions was quite unjustified. As time goes by and the legal landscape becomes dense with more and more intermediate cases, the failures of formalism become increasingly apparent. As Holmes put it

Two widely different cases suggest a general distinction which is a clear one when stated broadly. But as new cases cluster around the opposite poles, and begin to approach each other, the distinction becomes more difficult to trace; the determinations are made one way or the other on a very slight preponderance of feeling, rather than articulate reason; and at last a mathematical line is arrived at by the contact of contrary decisions, which is so far arbitrary that it might equally well have been drawn a little further the one side or the other (Holmes, 1873, p. 652).

Although the idealistic theory behind formalism has largely been abandoned (cf. Kennedy, 1973; Gordon, 1984; Grey, 1983; Simon, 1998), its categories and its analytic methods persist. Its classifications are still robust – substantive versus procedural law; contracts, torts, property. They determine how the first year of law school is structured. No comprehensive new organizational scheme has replaced the categories of formalism, and they therefore continue to "influence judgment much as the agenda for a meeting influences the results of its deliberations" (Grey, 1983, p. 50).

The tenets of legal formalism still exercise a strong influence on the way judicial opinions are written. Decisions typically are presented as the inevitable consequence of a careful analysis of the facts and the applicable law based on the classification of this case in relation to previous cases. The correct decision and the governing principles are described as discovered, not created, by the judge (Schauer, 1995, p. 642, note 23), and are expressed with great certainty, as though there were no room for doubt. "It seems that this neo-formalist form of jurisprudence – typified by a self-reported experience of constraint, high confidence and singular correctness, all couched in the rhetoric of closure – is the predominant, albeit unofficial, mode of judicial reasoning in current American legal culture" (Simon, 1998, p. 11). In part, this persistence is attributable to the strong belief that the law requires stability. For people to have faith in the legal system, judges'

decisions must be predictable, and for judges to make predictable, logical decisions there must be a fixed framework from which those decisions are derived. A major difference between law and science, as discussed subsequently, is that uncertainty and change are a sign of a healthy scientific climate; they would definitely not signal a healthy legal climate.

Legal Realism

Legal realism arose in opposition to formalism and can be seen as an extension and elaboration of Holmes's early skepticism. Legal realists rejected the formalist ideas that the law was a self-contained logical system providing for the scientific, deductive derivation of the right answer in all new cases. They regarded this view as a vain daydream disconnected from the real world influences on legal decision makers – hence the label “legal realism.”

In a strict formalist analysis, two different judges should always judge the same case in the same way unless one of them was mistaken in his³ understanding of the facts or the law. Clearly this was not the case. In the nineteenth century, as now, courts were often divided. There were judges in the majority and there were dissenters, and no one seriously argued that the dissenters were incompetent or in need of retraining. Of course the formalists did not believe this was the way the world really worked, but they did believe that the legal system could approximate that ideal and that it was an ideal worth striving for. The legal realists believed that it was an impossible ideal and that it was a waste of time to strive for it.

According to the legal realists, instead of reflecting an abstract set of nearly immutable principles, the law reflects historical, social, cultural, political, economic, and psychological forces, and the behavior of individual legal decision makers is a product of these forces. It therefore is not surprising that different judges, with different goals and backgrounds, should decide cases differently, and contrary decisions do not imply that some judges must be “wrong.”

The first move toward legal realism was “Sociological Jurisprudence,” which was expounded most explicitly by Roscoe Pound (1912). Like Holmes, Pound felt that the “mechanical jurisprudence” of the formalists was out of touch with social reality and that legal scholarship and judicial norms were standing still, out of touch with exciting developments in philosophy and, particularly, the social sciences. “Jurisprudence,” he argued, “is the last in the march of sciences away from the method of deduction from predetermined conceptions” (Pound, 1909, p. 464). The strict doctrinal approach blinded legal writers to two essential considerations: first, the *purposes* of the law – the goal of doing justice rather than following the letter of the law; and second, the social, cultural, and psychological factors that influenced behavior, including the behavior of lawmakers and judges. Blind adherence to the abstract law-on-the-books might make for greater certainty and predictability, but “reasonable and just solutions of individual cases” were “too often sacrificed” (Pound, 1912, p. 515). The law treated all individuals as equivalent regardless of their social background or position. Thus, for example, the right of an employee to quit was legally the same as the right of the employer to fire him. Both were free agents enjoying the “liberty of contract.” But of course the employer could easily find another employee, but the employee would have lost his livelihood and might have a very hard time finding another job. The law's refusal to acknowledge these obvious social truths was a major stimulus to sociological jurisprudence.

Pound argued that legal scholarship and judicial decisions should “take more account, and more intelligent account, of the social facts upon which law must proceed and to which it is to be applied” (1912, p. 513). The focus should not be on the abstract content of the laws but on how they actually work. It is important to consider the purpose of laws and to modify them if these purposes are not being achieved. And judges should regard the law as suggestive rather than determinative of their decisions: If strict application of the law would result in an outcome that is unjust or contrary to

the purpose of the law, then flexibility in the cause of justice is appropriate.

The basic views of Holmes and Pound were quite similar – pragmatic and open-minded. Pound, however, was a far stronger proponent of an interdisciplinary solution to the problems of formalism. The social sciences were very much on the rise at the beginning of the twentieth century and seemed “progressive” in a way that law was not. Their ideas stretched the imaginations of the more intellectually curious law professors and challenged some of the most fundamental assumptions of the law. The sociologists (the most influential group) suggested that the equality of all assumed by the law (e.g., the “liberty of contract”) was a myth because status and power significantly affected a person’s choices, the anthropologists revealed a wide range of peaceful societies with entirely different kinds of legal systems, and psychologists raised questions about the essential legal concepts of free will and responsibility, suggesting that behavior was determined by psychological and social factors beyond the control of the individual (Green, 1995).

The period identified as the flowering of legal realism was the period between the wars (Fisher, Horwitz, & Reed, 1993). Holmes and Pound were the inspirational figures from the past,⁴ but now there were enough like-minded scholars so they could legitimately be called a “school” or a “movement,” although never an organization. Like the cognitive psychologists who shook off the shackles of behaviorism in the 1960s and 1970s, they were an eclectic group united mainly by their opposition to the old ways. Some tried to do empirical research, some were political activists (and some eventually became part of the New Deal government), some continued as legal scholars but preaching a new faith, and some were articulate gadflies. Some were and are highly respected figures in the history of legal scholarship, some were but are no longer, and some were always seen as fringe elements.

As with their predecessors, their primary unifying theme was a rejection of the old ways and a passionate belief that legal doctrine played a limited role in legal decision

making – and that that was how it should be. Karl Llewellyn, one of the most important figures in the group, argued that law was about “disputes to be settled and disputes to be prevented” (1930, p. 2), not about rules; about what legal decision makers *do*, not what they say. Legal rules were regarded as, at best, post hoc justifications and, at worst, criteria that could lead judges to unjust decisions. Advocates in a trial could usually describe the facts *and the law* so as to produce coherent, complete, persuasive arguments for two diametrically opposite conclusions. Llewellyn even wrote an article on statutory interpretation showing that each of 28 basic legal propositions could be argued either way: “A statute cannot go beyond its text”/“To effect a purpose a statute may be implemented beyond its text”; “Where design has been distinctly stated no place is left for construction”/“Courts have the power to inquire into real – as distinct from ostensible – purposes” (Llewellyn, 1950, pp. 401, 403).

The agenda of the legal realists was both descriptive and prescriptive. According to Felix Cohen, “Fundamentally, there are only two significant questions in the field of law. One is, ‘How do courts actually decide cases of a given kind?’ The other is, ‘How ought they to decide cases of a given kind?’” (1935, p. 824). The answer to the descriptive question was that courts do not decide cases on the basis of laws because the law always allows for multiple answers. In considering what sort of forces *do* influence case outcomes, different scholars emphasized social and cultural forces (Cohen, 1935; Lasswell, 1930; Yntema, 1928), unconscious psychological drives (Frank, 1930), or just a process of intuition that eventually culminated in a Gestalt-like “Aha effect” after long rumination (Hutcheson, 1929). These influences affect the assessment of the actual facts of the case – the credibility of the witnesses, the plausibility of the stories, as well as the judge’s “sense of how the law ought to respond to these facts” (Fisher, Horwitz, & Reed, 1993, p. 165). Legal realists were ridiculed as believing that judicial decisions depended on what the judge ate for breakfast. However, the realists generally

did not believe that judicial decisions were idiosyncratic or unpredictable. "Law is not a mass of unrelated decisions nor a product of judicial bellyaches. Judges are human, but they are a particular breed of humans, selected to a type and held to service under a potent system of governmental controls" (Cohen, 1935, p. 843). Because most judges come from the same social class, receive the same legal education, and are subject to the same social and historical influences and the same role demands, their decisions will resemble each other.

The intellectual enterprise of legal scholarship, therefore, should be to describe the actual behavior of courts, taking account of the broader social context. The realists were confident that this behavior would not be predictable from written legal doctrine or statutes. Instead, the legal rules and concepts would turn out to be consequences, rather than causes, of judges' behavior. To understand how judges reach their decisions, it is important to analyze their social backgrounds, previous experience, and role demands and the general political, social, and economic pressures of the times. Because these same forces affected the behavior of the parties of the case, the relation between the judge's position in society and that of the litigants should also be explored. This general set of ideas was easy to demonstrate in particular cases. Then, as now, the opinions of individual judges on particular issues were often easy to predict. Defense lawyers "shop" for judges known to be sympathetic to offenders who resemble their client (judges who believe that drug laws are too harsh, for example). On some issues, it is easy to predict Supreme Court Justices' positions based on their previous opinions and their general ideology. Coming up with a more general mid-level theory, something between vague abstract statements about "social forces" and predictions of what a particular judge would say in a particular case, was a much greater challenge and one the realists never actually accomplished.

The description of what courts actually do was supposed to explore not only the causes of judicial decisions but also their consequences. A study of consequences is es-

sential to answer the second question, "How ought [courts] to decide cases of a particular kind?" Judicial decisions affect human behavior, often favoring one group's interests over another, and they affect future judicial decisions. Careful study of these consequences would allow for better-informed judicial decisions and better laws.

Prescriptively, the realists argued first that in applying the law, judges ought to consider the *purpose* of the law and, second, that they should focus on the particulars of the case and compare it with the particulars of preceding cases, rather than looking for broad general principles. Consideration of the purposes of the law was supposed to enhance the fairness and the consistency of decisions, and blind application to the rule without considering its purpose would lead to bad decisions (Llewellyn, 1942). To facilitate this approach, legislators and judges should make the reasons for the law explicit; to provide appropriate guidance to future judges: "Only the rule which shows its reason on its face has ground to claim maximum chance of *continuing effectiveness*" (Llewellyn, 1942, p. 260). Because social conditions were constantly changing, however, judges should be free to revise and reject even rules with clearly stated purposes; the development of law, like the development of science, should be a never-ending process of examination and re-examination.

Specific comparisons of the particular case to be decided and the facts of related cases, through analogical reasoning, was the preferred method. Just as a case read by itself is meaningless (Llewellyn, 1930, p. 49), a case read with reference to the law and without reference to other cases was also meaningless. Close factual comparisons will reveal the empirically grounded rules and cultural beliefs that actually explain legal decisions because "legal rules are simply formulae describing uniformities of judicial decision" (Cohen, 1935, p. 848). Some of the realists believed that close examination of the prior body of cases required more than a reading of the cases alone. Some felt that an education in social science was necessary to fully understand the social forces influencing

the parties and the judge. Others felt that legal researchers should create databases on the background of judges and their decisions, the frequency with which laws on the books were actually enforced, whether they are enforced against some groups more than others, whether patterns of enforcement have changed over time (e.g., obscenity laws), and so on.

The legal realists have been identified with a "social science" point of view, but this meant different things to different scholars. Most of them probably shared Pound's belief that, although other scientific disciplines were making huge progress, law was stagnating, backwards looking, and clinging to a static, deductive model that had been abandoned by other sciences. The law, because it deals with ever-changing values, opportunities, and norms of behavior should keep pace with these changes. Most also were somewhat shaken by the ways in which sociology and psychology were undermining the notion of free will central to the law (Green, 1995). Most of them agreed that the focus of attention should be on how judges think, not on the written rules. They were fairly unified in describing what was *wrong* with formalism but never fully agreed on the remedies and, indeed, proposed very few.

Beyond this general sense that the law should develop as society develops and take general account of progress in the social sciences, the realists followed different paths. Some more or less stopped there. For others, the "critical realists" in Horwitz's (1992) terminology, social science mainly meant a concern with social policy. Politically they were progressives, and flourished under the New Deal. Cardozo, Brandeis, Frankfurter, and Douglas followed Holmes to the Supreme Court, and several others moved to important positions in the New Deal administration. For them, the social science that mattered was the sociologists' emphasis on social class and a generally socialist view of what should guide the government and the courts. For them, as for many of the social scientists of the time, social science meant social activism.

Another group, the "constructive realists" (Horwitz, 1992), believed that legal

scholars should collect detailed statistical information about the causes and consequences of various rules, conducting interdisciplinary empirical research, and that courts should consider social science data in deciding cases. The method of marshaling social scientific evidence in arguing a case was pioneered by Louis Brandeis and Josephine Goldmark in the famous "Brandeis brief" in *Muller v. Oregon* (208 U.S. 412). In arguing that it was constitutionally permissible to restrict women's working hours to ten hours a day, they presented hundreds of excerpts from various articles and reports claiming that long working hours were damaging to women's health. Most of these were not actually scientific reports, but they were an effort (successful) to force the court to consider the social facts involved in the legal question and the social consequences of the decision. The "Brandeis brief" is legendary, and the inclusion of social science research in legal arguments is now common. Modern trial and appellate courts routinely consider social science data, although their actual influence is probably less than most social scientists would like to believe (Ellsworth & Getman, 1986).

There were some efforts to compile databases (Pound and Frankfurter, 1922; and cf. Schlegel, 1980) and a few attempts to actually carry out systematic research projects. However, these attempts generally failed to achieve the grand purposes their authors had in mind. In writing a traditional law review article, the author typically knows what the conclusion is at the beginning; empirical research, as any honest scientist knows, often forces agonizing rethinking and sometimes produces data so ambiguous that nothing can be concluded. So, in 1928, the future Supreme Court Justice William O. Douglas conducted a study of business failures designed to produce revolutionary insights but ended up with two small, inconclusive articles (Fisher, Horwitz, & Reed, 1993, p. 233). Underhill Moore, a Yale law professor in one of the three experimental law and social science interdisciplinary programs, attempted a behaviorist (Hullian) analysis of the effects of parking tickets (Moore and Callahan, 1943) that provoked intense ridicule even

from other realists [Llewellyn later called it "the nadir of idiocy" (1956, p. 400)]. Empirical research by legal scholars has slowly increased over the past 50 or 60 years, but at the time, the admonishments of the legal realists only produced a brief spate of attempts, nothing like a major change in orientation. It is still the case that some law professors regard empirical research as mindless and mechanical with data a crutch for those whose mental capacities are insufficient to reach the truth on their own.

Although the excesses of Legal Realism are still parodied in well-worn clichés (such as the "what the judge had for breakfast" cliché), in the main, it has been absorbed into American legal thought; thus, only the excesses stand out as distinctive. Close comparison of cases is the standard method of legal education, and consideration of the social context, purposes, and policy implications of the law is common. The challenge posed by the realists – the relative role of law versus social and personal considerations – still looms over the study of law and defines the questions. Databases are everywhere, especially in the criminal justice system, but also in the civil arena. The American Bar Association regularly proposes guidelines based on statistical data as do government commissions. No one still believes in strict Langdellian formalism, although many law courses are an uneasy blend of formalism and the considerations raised by the legal realists, and judicial opinions are written in formalist language. And the later developments of legal realism, although never quite mainstream, are thriving. In 1935, Felix Cohen wrote that "It is reasonable to expect that some day even the impudencies of Holmes and Llewellyn will appear sage and respectable" (1935, p. 847), and that prophecy has certainly come true.

Critical Legal Studies, Law and Economics, and the Law and Society Movement

Although many of the ideas of the legal realists have been incorporated into the mainstream of law, there are three direct de-

scendants that persist as independent currents. One, called Critical Legal Studies, is a reincarnation of the Progressive political themes of Legal Realism, and the other two (the Law and Economics movement and the Law and Society movement) are developments of the interdisciplinary social science endeavor.

Law and Economics scholars are fairly traditional in terms of economic theory [e.g., Tversky, Kahneman, and the behavioral economists so far have had minimal influence (Kahneman & Tversky, 2000; Kahneman, Slovic, & Tversky, 1982; Thaler, 1992)], taking as given the assumption that people rationally assess their circumstances and do what will maximize their own welfare. The potential criminal calculates the probabilities of getting caught, being punished, and the potential severity of punishment and weighs these considerations against the beneficial consequences of the crime (money, the extermination of a goal-blocking person) and accordingly decides whether or not to commit the crime. They attempt to fit legal decisions into a standard economic framework and, if they do not fit, to argue that they should.⁵ Although they are often described as descendants of the legal realists, in some ways the Law and Economics movement bears a closer resemblance to the formalists. It has a formal model with a set of first principles: "Behavior always takes the form of constrained maximization. The actor chooses from some specified set of options, selecting the option that maximizes some objective function. In orthodox theory, consumers have *preferences* that are represented by a *utility function*, and they choose in a way that maximizes their utility..." (Kreps, 1990, p. 4, cited in Hanson & Yosifon, 2003). Explanations and recommendations follow deductively from the basic premises. Law and Economics has little to say about what is distinctive about *legal* reasoning; it is primarily another example of the economic model of reasoning in general.

By contrast, the Law and Society scholars are open-minded, eclectic, and devoid of any theoretical mission. Instead, they are committed to the social science method of

inquiry and to the idea that history, culture, and social context matter. Friedman (1986) has proposed that Law and Society is a field like "Area Studies" in which scholars from many disciplines study law the way scholars from many disciplines study Latin America or Southeast Asia. Their concern with context and actual behavior means that they are relatively uninterested in "purely *intellectual* forces – the role of legal thinkers, formal doctrine, philosophy and theory of law; the role of abstract *ideas*" (Friedman, 1986) because such forces are mainly epiphenomena, not fundamentally causal. A great deal of important and interesting work has come from this school, but it is not really about legal reasoning in general. In fact Law and Society scholars would reject the idea that there is such a thing as legal reasoning in general.

Critical Legal Studies is the bad boy of the bunch, and in this regard it is more obviously connected to the Legal Realists in their role as iconoclastic rebels. Like the realists, they argue that interpretation of the law is subjective, and they emphasize the role of power and political ideology more strongly than most of the realists. Like the realists, they have been more effective as critics than as authors of an alternative vision (Kennedy, 1997), and some of them have glorified "trashing" as a sufficient contribution (Tushnet, 1984). In some ways, they resemble the postmodernists of other disciplines, insisting that there is "no there there," that all legal concepts, like all other social concepts, are socially constructed (except of course for power and dominance).

However, some of their analyses of legal reasoning went beyond what the legal realists had produced. In arguing that the legal realists' decisions were based on personal and social values, not law, the legal realists didn't quite get at the process by which a judge's *preference* is turned into a legal justification. Is the judge's reference to the law or precedent a "noble lie" in Dworkin's (1986) terms, resorted to because personal preferences or partisan political preferences could never be publicly stated as good reasons for justifying a decision? Are judges simply unquestioningly follow-

ing the requirement that all decisions must be justified by legal authority and precedent? Or are they totally unaware of their own biases?

Duncan Kennedy, one of the founders of Critical Legal Studies, draws on the psychology of Kohler, Lewin, and Piaget to explore the thought processes of judges in a way that is less fuzzy and more nuanced than the general realist point of view (Kennedy, 1986). His hypothetical judge is a political reformist, of course, who is faced with a conflict between what the law seems to require and "how I want it to come out": "imagine that I think the rule that seems to apply is bad because it strikes the wrong balance between two identifiable conflicting groups, and does so as part of a generally unjust overall arrangement that includes many similar rules, all of which ought in the name of justice to change" (Kennedy, 1986, p. 519). The judge may reinterpret the facts, reinterpret the legal precedents, reinterpret the basic purpose of the law in the light of social policy, or make other moves. Judges will *also* consider how the public and other judges will view their decision, and finally, they really do care about the law and precedent; thus, the dilemma is a real cognitive dilemma, not just a matter of imposing their personal political motives. The decision will become part of the law that other judges must consider when they decide cases, so the judge also must worry about its future ramifications. "Legal argument is the process of creating the field of law through restatement rather than rule application" (Kennedy, 1986, p. 562). The thought process evolves in time, beginning as a conflict and ending as certainty. Once a strategy is chosen, the judge no longer can imagine any compelling counterargument. Simon recently updated this analysis in the light of more recent research in social and cognitive psychology and showed that it has considerable power even in cases in which the judge has no particular political motivation: An incoherent mass of contradictions develops into a coherent decision in which *no* opposing argument carries any weight, but *all* turn out upon close examination to support the decision (Simon, 1998).

Of course these biases – hindsight, hypothesis confirmation, motivated information processing, ultimate overconfidence, and others – are not unique to legal reasoners. They are true of us all, including scientists. Still, there are several important differences between legal reasoning and scientific reasoning.

Differences Between Scientific Reasoning and Legal Reasoning

As Llewellyn said, legal reasoning is not scientific reasoning, although it shares some analytic strategies, most notably the “method of comparison and difference” (Llewellyn, 1930, p. 43) or, as we might say, “convergent and discriminant validity” (Campbell & Fiske, 1959) and the technique of simultaneously considering alternative explanations or “multiple working hypotheses” (Chamberlin, 1890; Campbell & Stanley, 1966). In fact, the legal decision maker in an adversarial system is *forced* to consider at least two competing hypotheses proposed by the parties. In this sense, the judge has some marginal protection against the thoughtless hypothesis confirmation to which scientists occasionally fall prey. This is not to say that judges are immune from hypothesis-confirming biases, only that at the *beginning* of the process they are forced to consider at least two rival hypotheses.

Nonetheless, the judge and the scientist have different tools available to them, different constraints, and different goals. Science demands no final decisions; it is an ongoing process. If the evidence is murky, scientists can wait, can reserve judgment until they can conduct further research. And they can figure out what further research needs to be done to answer the question, and do it. Judges can neither reserve judgment nor go beyond the data presented in court, however ambiguous those data might be. They cannot carry out further research, nor wait until others have done so; they must decide.

And the judge’s decision, whether the evidence is conclusive or completely inade-

quate, has the same precedential force. It is final. The scientist’s conclusions are never final, always tentative.

The judge must also decide for one side or the other; the scientist’s decision that the truth lies somewhere between the extreme points of view is typically not available to the judge. As I will argue, these role constraints in legal reasoning encourage categorical thinking and a corresponding distrust of probabilistic reasoning, overconfidence, and a strong dispositional bias in which situational factors and attributional biases are overlooked, and the idea of free will is preserved.

Lack of Opportunity for Empirical Testing

Scientists and judges must both decide between competing explanations. But when scientists are trying to decide among rival hypotheses, or even when testing a single hypothesis, sooner or later they put the question to nature. They design a study that will create new information, information that is not already in the system, that will help them to answer the question and to move forward in the way they think about the issues. In legal reasoning, there is no empirical option. Judges must work with the information given to them, and that information consists entirely of what other people have said and the judge’s own knowledge. Judges listen to testimony and arguments and read the law, scholarly works, and the opinions of other judges; they arrange and rearrange these elements, selecting, interpreting, and looking for a rule that “holds good for the matter at hand” (Llewellyn, 1930, p. 72). The conclusion that the judge finally reaches is not empirically tested and cannot be disconfirmed.

Of course, the judge may consider empirical data as part of the factual evidence in a case. Most cases involve experts of one sort or another – some who present the results of diagnostic tests (e.g., of bullets, blood, dangerousness, mental illness, almost anything you can think of), some who present the results of empirical work specifically related to the case (e.g., contamination of the jury pool through pretrial publicity, evidence of

racial discrimination in a company's promotion policies), some who describe the results of general research that is germane to the issue (e.g., evidence that some substance increases the risk of cancer, or of factors affecting the reliability of eyewitness testimony). The legal realists would be pleased about this increasing prevalence of social science evidence in legal decision making, but the judge does not collect new evidence.

The scientist is searching for truth. The judge wants to get the facts right, but that is not the whole task. The judge also wants to settle the dispute in a way that is consistent with the law and the decisions in previous disputes and that is just. So it could be argued that the whole concept of an empirical test of the final decision is irrelevant, that there is no empirical test of justice. If two scientists make opposite predictions, someone will do a study to try to choose between them or otherwise clarify the question. If a judge makes a decision, it is final unless it is appealed. If it is appealed, the appellate court rarely re-examines the facts and certainly does not invite new evidence but decides whether the lower court made a legal (procedural) error (Mathieson & Gross, 2004). The final decision is the decision of the majority, and a five to four decision in the Supreme Court has the same precedential authority as a unanimous decision. When the Court is split four to four, the views of the ninth, "swing" Justice decide the case and can have precedential force – even if those views are quite idiosyncratic (e.g., *Johnson v. Louisiana*, 1972; *Regents of the University of California v. Bakke*, 1978).

Need for an Immediate, Final Decision

Unlike the judge, the scientist can reserve judgment and can say that, given the muddled state of the current evidence, there are many questions that we can't answer yet and that further research is necessary. The judge has to decide, and usually he has to decide one way or the other, without the range of compromise solutions that are often available to the scientist. Just as judges cannot create new information by conducting em-

pirical research, they cannot wait for new information before making a decision.

When the courts use available scientific data in reaching a decision, this finality can be a source of frustration to scientific researchers. In 1970, the Supreme Court held that the size of a jury (six versus twelve members) does not affect its functioning (*Williams v. Florida*, 1970), and in 1972, it held that deliberation would be just as thorough in juries that were not required to reach a unanimous verdict as in those that were (*Johnson v. Louisiana*, 1972; *Apodaca et al. v. Oregon*, 1972). In the early 1970s, when these decisions were handed down, there was almost no research on the effects of group size or the unanimity requirement. Social scientists were stunned that such important decisions could be made on the basis of so little information, and a flood of studies and commentaries quickly followed, many of them suggesting that twelve-person, unanimous juries deliberate more thoroughly than six-person or nonunanimous juries (Lempert, 1975; Saks & Ostrum, 1975; Zeisel, 1971, on jury size; Hastie, Penrod, & Pennington, 1983, on unanimity). However, the Court had *already held* that neither the size of the jury nor the unanimity requirement affected deliberations, and that six-person and nonunanimous juries were constitutional. Although it is certainly true that in science bad research can exert a baleful influence on the field for far longer than it should (because the finding is exciting, or because it is what people want to believe, or because the researcher is very famous, or for various other reasons), it doesn't have the same force as legal precedent. It is more acceptable and less costly for a scientist to reject a theory than for a judge to overturn a previous precedent. Authority matters in law; in science nothing enhances a career more than a convincing refutation of authority.

Still, there have been cases in which the Supreme Court has expressed a more provisional, scientific point of view. In *Witherspoon v. Illinois* (1968) the Court had before it sketchy evidence based on three unpublished studies suggesting that

excluding opponents of the death penalty from juries in capital cases (the common practice known as “death qualification”) biased the jury toward a guilty verdict, and so when a defendant’s life was at stake he would face a greater risk of conviction than he would if the prosecutor had not asked for the death penalty. The Court decided that the research was, as yet, “too tentative and fragmentary” to reject death-qualification as unconstitutional but that future data might justify such a move. From a scientific point of view, such a holding is far more acceptable than a holding that said, “We have reviewed the evidence and we conclude that death-qualification does not create a bias and therefore is constitutional,” which would be analogous to the *Williams* holding on jury size. From a practical point of view, however, leaving a question open invites more litigation, and if the practice later is found to be unconstitutional, there is the problem of retroactivity – that is of what to do about all those people who were convicted by biased, death-qualified juries.

Categorical Thinking, Lack of Compromise, and Certainty

The need to decide the particular case one way or the other also pushes legal reasoning toward categorical thinking: A person is either sane (guilty) or insane (not guilty); an unfit parent (someone else gets the child) or fit (he or she *may* get the child); a future danger to society (execution permitted) or not (execution not permitted, barring other aggravating factors). Psychologists consider sanity, fitness, and dangerousness to be continuous variables with no great gulf between the sane and the insane, the fit and the unfit, the safe and the dangerous, and many intermediate cases. But a legal case has to be decided for one party or the other, and so variables that are continuous are forced to become dichotomous. Sometimes there are more than two categories (first-degree murder, second-degree murder, and manslaughter), but a line must always be drawn.

The fact that the decision must be categorical very likely exercises an influence on the process of legal reasoning itself.

Compromise decisions are usually impossible, and in an adversary system, the judge is faced with two attorneys, each making the strongest possible case for diametrically opposed outcomes and thus minimizing any ambiguities.⁶ Experts may agree on most of the data in their field, but those are not the data that make for effective adversarial persuasion; thus, they are not likely to be presented in court, and the judge or jury is not likely to get a sense of how much consensus actually exists. The attorneys do their best to make every fact and every precedent fit their argument, trying to make it look as though the field is “impacted” (Kennedy, 1986), with little room for doubt, and that everything about this case places it clearly on one side of the line. The combination of adversarial presentation and the need for a dichotomous decision may eventually make the legal reasoning of judges resemble that of advocates. The facts and law may begin by seeming to be a mass of contradictions, and the judge may be plagued by “the doubts and misgivings, the hope and fears” (Cardozo, 1921, p. 167) common in significant enterprises that are fraught with uncertainty and ambiguity; however, judicial opinions almost never suggest that there was *ever* any uncertainty. Once the judge realizes which way he will probably decide the case and the rudiments of the justifications, “one of the effects . . . is a kind of tunnel vision: One is inside the strategy, sensitive to its internal economy, its history of trade-offs, attuned to developing it further but at least temporarily unable to imagine any other way to go” (Kennedy, 1986, p. 543). As in normal memory processes, strong pressures toward consistency and coherence arise, and the arguments and evidence that initially seemed to favor the other side evaporate. “This sense of unequivocal support for the one decision generates a sense of inevitability, of singular correctness” (Simon, 1998, p. 84), and judicial opinions are generally written as though *all* arguments support the conclusion, and there is no uncertainty whatever. Simon attributes this movement toward certainty to basic cognitive processes, and certainly this form of thinking is not unique to law; it is however exaggerated, I think, by the

adversarial presentation of evidence (with little or no attention to the ambiguous, in-between facts and law) and by the necessity of always having to choose one side.

The feeling that there must be a certain outcome, and that expressions of uncertainty by a judge are a sign of weakness or incompetence (Simon, 1998, p. 12) seem quite bizarre in a world in which the basic insights of the legal realists are widely accepted. But it is real. Despite the fact that majority and dissenting justices are perfectly certain (so presumably either one side is dead wrong or there is some uncertainty), and despite the fact that everyone knows that as soon as the next case comes along "the legal materials lose their recently acquired character, and return to their ambiguous existence within the world of multiple meanings" (Simon, 1998, p. 127), nonetheless certainty is still valued as some sort of mastery and uncertainty as a sign of indecisiveness at best and incompetence at worst. The decision must be justified in terms of the law, and it would be dangerous, in law as in chess or sports, to suggest that the law itself is ambiguous.

Mistrust of Probabilistic Thinking and Aggregate Data

This concern with certainty and the need to make dichotomous judgments may help explain why judges and legal scholars are often uncomfortable with probabilistic statements and probabilistic data. Scientists regularly make explicit quantified probability judgments; lawyers and judges do not – certainly not about the ultimate issues. For example, they strongly resist placing a numerical value on the "reasonable doubt" standard: Is it 95% certainty, 99% certainty? Jurors are generally just given the stock phrase, sometimes supplemented by other phrases, such as "to a moral certainty" or "firmly convinced."

This hesitation to consider probabilities is not unreasonable given that the judge has to make a yes or no decision about a particular individual. The judge's task is more analogous to that of a doctor or clinical psychologist than to that of a research scientist, and it

is no accident that psychiatrists and clinical psychologists had close ties to the legal system long before research psychologists did. Explaining (or predicting) the behavior of a specific individual in a specific set of circumstances is not what most scientists do and not what statistics are designed for. Experts willing to testify to the exact probability that a given defendant will commit a future crime are viewed as charlatans by the scientific community. However, statistical probabilistic data may be quite useful in illuminating other questions that judges must consider, such as whether a company is guilty of discrimination in hiring or whether a particular drug causes birth defects. These questions are typically addressed with aggregate data in which the results of many different studies involving many different people are provided by an expert. Judges have become far more receptive to statistical, empirical, aggregate studies over the past fifty years, but there is still a core reluctance. Experts who testify about the factors affecting eyewitness reliability often have to overcome a certain judicial skepticism about the value of their testimony because they have not examined *this particular* eyewitness but are only talking about the circumstances that affect most eyewitnesses most of the time. Large-scale studies of pervasive racial discrimination in capital sentencing (Baldus, Woodworth, & Pulaski, 1990; Gross & Mauro, 1989) were rejected by the Supreme Court in *McCleskey vs. Kemp* (1987) in part because the appellant had not shown that the particular jury that tried McCleskey was influenced by racial bias. The Court held that in order to succeed with a claim of racial discrimination, an appellant must prove either (1) "that the decision makers in *his* case acted with discriminatory purpose" [emphasis in original], or (2) "that the Georgia legislature enacted or maintained the death penalty statute *because of* an anticipated racially discriminatory effect" [emphasis in original] (*McCleskey vs. Kemp*, 1987, p. 1769).

Free Will and the Dispositional Bias

Aggregate data are threatening in another way; they imply that many people in the

same circumstances would behave in the same way and thereby threaten the notion of autonomy and free will so deeply rooted in the minds of legal thinkers. The law sees behavior as caused by people's beliefs, desires, and preferences. Ideas of free choice and free will are still fundamental to legal thinking and largely unquestioned. This emphasis creates another source of tension between law and the social sciences because social science takes a much more deterministic point of view, emphasizing cultural, sociological, psychological, biological, and, especially in psychology, situational forces on behavior (Ross and Nisbett, 1991). The fact that economics is the social science that has been most successful in law schools is not surprising given this model; of all the social sciences, economics is the one most wedded to a free choice theory of behavior.

The law has developed a highly elaborate set of definitions of various degrees of personal responsibility, including deliberation, intention, knowledge, recklessness, and negligence, but has been relatively untouched by psychological research on attributional biases and particularly by the research on the dispositional bias (fundamental attribution error) or by social psychological research demonstrating that situations play a far greater role than personal preferences and dispositions in determining people's behavior (Ross & Nisbett, 1991). When situational forces *are* considered, such as in the concepts of necessity and duress, the situations are generally so extreme as to be irrelevant to everyday life – a person breaks into a lonely cabin in a blizzard because he is freezing to death or signs a contract because someone is holding a gun to her head – and can be taken as the exceptions that prove the rule that the pervasive power of the situation in *all* aspects of our lives is largely ignored by the law (Hanson & Yosifon, 2003; Ross & Shestowsky, 2003). The validity of the concept of free will has in fact troubled a sprinkling of legal scholars for a century (Pound, Green, Hanson), and these doubts have occasionally influenced sentencing practices but have rarely affected the basic attribution of guilt or lia-

bility. Even when exceptions are made, they generally are made on the basis of internal, dispositional factors (e.g., insanity, youth) and rarely on the basis of situational forces.

Conclusions and Future Directions

Legal reasoning is a form of expert reasoning. Einstein argued that expert reasoning – in particular, scientific reasoning – is “nothing but a refinement of our everyday thinking” (1936, in Bargmann [trans.] 1954, p. 290). Like everyday problem solving and scientific reasoning, legal reasoning begins by examining a set of facts and figuring out what happened and why. Of course, some of the “facts” may be fictions, and the judge must decide which to believe and which to reject, but that is true of all natural problem solving. Information is selected and rejected as part of the process of creating a coherent story.

It is the “refinements” that make one form of expert reasoning different from another. Like other forms of expert reasoning, the law has its own terminology, its own universe of acceptable data, and its own rules. In law, the rules are more flexible than they are in some domains and more central than they are in most. They are more flexible than the rules of chess, for example, because in complex cases there are often many possible rules and precedents from which to choose, and both the facts and the rules can be interpreted and reinterpreted in relation to each other until the judge is satisfied with the total combination – satisfied with the fitness or coherence of the overall picture, and satisfied that the decision is just.

The rules are more central in that every decision *must* be justified by explicit discussion of the relevant rules: The rules are not just a framework for decision making; they are an essential part of the process. The *sine qua non* of empirical scientific research is a clear description of the research method. The judge has a mass of materials to work with, ranging from the incoherent, self-serving blabbering of a witness to the

decisions of other judges to the Constitution itself, and the *sine qua non* of legal reasoning is the explanation of why this decision is the right one (Schauer, 1995), an explanation ultimately expressed as argument. This explanation "is meant not only to justify the judgment in terms of an authoritative past but to constitute an authority to be referred to in the future" (White, 1985, p. 240).

Despite the major developments in legal scholars' *interpretations* of legal reasoning over the past century and a half, legal reasoning itself has not changed substantially, and it is unlikely to do so in the near future. Law is a socially defined and socially constructed system that is generally seen as serving its purposes well. Undoubtedly there will be further changes in the nature of the factual evidence judges consider relevant with increasing attention to general scientific research, but the form of legal reasoning, the rules of the game, cannot change without major changes in the system itself, and there is no indication of any such changes in the near future.

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Notes

1. European civil law systems differ from common law systems in many respects, such as a more active role for the trial court judge, less emphasis on precedent, and reconsideration of the facts at the appellate level. They are beyond the scope of this chapter.
2. This section owes much to the work of Robert Gordon (1984), Duncan Kennedy (1973), and, especially, Thomas C. Grey (1983).
3. In the era of formalism, judges were men, so I refer to them as "he." For the sake of balance, I refer to scientists as she.
4. By this time, Holmes had been on the Supreme Court for many years, and Pound had become more conservative and more prosaic.
5. Of course there are exceptions, and a brief description like this one must always be, in some ways, a caricature.
6. In actuality, compromise is pervasive in the legal system, because most civil cases are resolved by settlement and most criminal cases by plea bargain. The study of legal reasoning, however, focuses on the small minority of cases that are litigated and decided by judges.

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