FREEDOM AND CONSTRAINT IN ADJUDICATION: A LOOK THROUGH THE LENS OF COGNITIVE PSYCHOLOGY*

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INTRODUCTION

One of the most apparent benefits of *A Clearing In The Forest: Law, Life, and Mind* is the wealth of insights that emerge from its novel introduction of cognitive science as the prism through which to analyze law. This tour de force of the interrelationship between human cognition and the legal system settles and redefines some old questions, as it spurs new ones. Throughout the book, Steven Winter presses the vital and oft-ignored point that law is, and cannot be anything but, the creation of human minds; legal materials do not answer legal questions, people do.[1] To better understand the legal system, we are advised to relax the conventional fascination with *what* the law is or should be, and start examining more seriously (inter alia, empirically) *how* we do what we do when we engage in legal thinking. This is a shift in focus away from legal and theoretical *meta*structures (or the lack thereof) to the cognitive and cultural *infra*structures that facilitate the creation and operation of law.[2]

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[1] STEVEN L. WINTER, A CLEARING IN THE FOREST: LAW, LIFE, AND MIND 153, 317 (2001).

[2] *Id.* at 3, 11.

A Clearing In The Forest devotes special attention to the question of freedom and constraint in adjudication, offering both critical and constructive headways in this perennially befuddling conundrum. Foremost, the cognitive perspective demonstrates the infeasibility of strong forms of rationality that dominate much of legal thinking. Legal reasoning cannot be objective, literal, linear, propositional or hierarchical, nor can it be the product of top-down reasoning. This "rationalist model"[3]—the book's principal, but by no means only, foil—does not capture the way the mind works and it does not correspond to the types of legal questions that warrant serious attention. However, Winter insists, repudiating the conventional model of rationality is no reason to endorse its antithesis, radical indeterminacy. Thus Winter criticizes the "excluded middle" in legal scholarship,[4] and attempts to pour content into this void. His project aspires to free legal scholarship from the deadlock of objectivist and subjectivist claims, striving instead towards an understanding of law as a relatively regular, systematic and, in some senses, predictable social practice. Judged from this third position, legal reasoning is viewed as neither an instantiation of rationalism nor as an utter failure to measure up to that untenable standard. Indeed, critical legal scholarship fares no better under Winter than does Langdellian formalism.

In chapter 6 of *A Clearing In The Forest*, Winter offers a re-conception of the debate over freedom and constraint in adjudication. He discusses a Supreme Court opinion in which the majority concludes that a string of precedent "speaks with one voice" while the dissent insists that the conclusion mischaracterizes the law.[5] Winter criticizes these types of all-or-nothing clashes as a malady of the judicial culture, a distortion borne by the adherence to the model of rationalism. He argues that this seemingly irreconcilable indeterminacy can be viewed as more orderly and predictable through the lens of *idealized cognitive models* grounded in an experientially

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[3] *Id.* at xiv, 43.

[4] *Id.* at 158.

[5] The case discussed is *Lassiter v. Dep't of Soc. Servs.*, 425 U.S. 18 (1980). The case pertains to the right to appointed counsel in proceedings to terminate parental rights.

meaningful gestalt.[6] While I disagree with Winter's conceptualization of the debate and the corresponding application of cognitive research, one cannot overstate the value of showing that freedom and constraint are not essential characteristics of the legal materials. The debate is better understood once we incorporate the implicit models of human cognition and cast it as a lack of fit between the "professed and experienced"[7] accounts of the judicial process. As Winter correctly observes, legal reasoning is unavoidably influenced by the structure and functioning of the mind: "because law is a product of human minds, it displays all the regularities both of the structure and of context-dependence predicted by cognitive theory."[8]

In this Article, I follow Winter's endeavor of identifying the imprints the cognitive system leaves on legal reasoning. This approach should be distinguished from a familiar view in legal scholarship that places a premium on the actors' internal accounts of their performance rather than on external observations. For example, H.L.A. Hart contests that it is only from the internal perspective of the judge that one can comprehend the judicial practice. The external perspective precludes a true understanding of the "whole distinctive style of human thought, speech and action" involved in the practice.[9] Along similar lines, Ronald Dworkin insists that a valid

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[6] WINTER, *supra* note 1, at 140-44.

[7] *Id.* at 165.

[8] *Id.* at 314.

[9] Hart points out that one can observe a practice from the outside, as in watching a traffic light changing colors and patterns of traffic flow, or one can participate in the practice from within, sitting behind the driving wheel and reacting to traffic light signals out of a sense of conformity and obligation to the rules of the road. Hart depicts the external view as one that is

> like the view of one who, having observed the working of a traffic signal in a busy street for some time, limits himself to saying that when the light turns red there is a high probability that the traffic will stop. He treats the light merely as a natural sign that people will behave in certain ways, as clouds are a sign that rain will come. In so doing he will miss out a whole dimension of the social life of those whom he is watching, since for them the red light is not merely a sign that others will stop: they look upon it as a signal for them to stop, and so a reason for stopping inconformity to rules which make stopping when the light is red a standard of behaviour and an obligation.

H.L.A. HART, THE CONCEPT OF LAW 89-90 (2d ed. 1994) (emphasis omitted).

account must be constructed entirely from within the internal perspective of law, based on "the truth of certain propositions that are given sense only by and within the practice."[10] Like the perspective adopted in *A Clearing In The Forest*, the research reported here is decidedly inconsistent with this view. It focuses on the decision-maker's mental processes and examines them through the lens of cognitive psychology.

The first part of the Article is primarily expository. It identifies two accounts of a legal question decided by a court: the one observed by an onlooker and the other conveyed by the judges through the narratives of the opinion. I characterize the former as *openness* and the latter as *closure*.

The second part of the Article offers an empirical explanation of the closure professed in judicial opinions. I agree with Winter that legal materials are mentally represented in a cognitive model that ultimately directs the decision in the case. Winter portrays a supple cognitive system that can embody any number of cognitive mechanisms, including basic-level categorization, conceptual metaphor, metonymy, image-schemas, idealized cognitive models and radial categories.[11] Missing from his account, however, are the processes or mechanisms by which multiple, conflicting, and ambiguous arguments are integrated into discrete models. I present experimental work in cognitive psychology that addresses this missing link. The results of this research manifest general cognitive phenomena that have important implications for judicial reasoning. Most notable is the observed bi-directional reasoning processes that tend to impose coherence on the mental representation of the task, so that while the legal materials do in fact influence the choice of the verdict, coherence-driven processes generate global pressures that apply back onto the legal materials thus creating coherence with the emerging verdict. In other words, the cognitive mechanisms operate to create a lopsided view of the case that provides stronger argumentative support than the legal materials would otherwise provide. As a result, judges genuinely report a sense of closure that seems spurious to the

[10] RONALD DWORKIN, LAW'S EMPIRE 13, 14 (1986).
[11] WINTER, *supra* note 1, at 6.

critic. In the third part of the Article I will briefly discuss some important issues that emerge from the experimental findings.

I. IDENTIFYING FREEDOM AND CONSTRAINT

This part provides a descriptive framework intended to offer a particular vantage point of the debate over freedom and constraint in adjudication. The framework is based on a close and detailed examination of the arguments that constitute the opinions.[12] The purpose of this micro-analysis is to provide two accounts of an appellate legal case: the first demonstrates the existence and extent of the contrariness inherent in appellate cases, that is, the openness of the legal materials; the second demonstrates the absolute lack of contrariness conveyed in the opinions, in other words, the strong sense of closure professed by judges. Closure is manifested by the uniform and abundant argumentative support for the chosen decision, in the sense of inevitability of the outcome, the strong confidence in the outcome and, as discussed below, in the implicit sense of *unidirectionality*—that is, that the inferences flow exclusively *from* the legal materials *towards* the judicial conclusion. In other words, unidirectionality implies that the decision is determined by the materials, and the decision has no effect on the way the legal materials are selected, interpreted, or applied. I suggest that the discrepancy between the accounts of openness and closure is key to the proposed understanding of the freedom and constraint debate.

The case that will serve as an example is *Rogers v. Tennessee,* recently decided by the U.S. Supreme Court.[13] The

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[12] It should be noted that this analysis does not depend on the assumption that the written judicial opinion is (or should be) an actual account of the mental processes involved in reaching the decision. Over and above presenting the legal arguments that support the decision, opinions are written also to persuade readers, co-opt other judges into joining the decision, develop legal doctrine, and establish judicial reputations. I have argued elsewhere that, however imperfect, judicial opinions provide an adequate and rich source of information for the purpose of this kind of analysis. *See* Dan Simon, *A Psychological Model of Judicial Reasoning*, 30 RUTGERS L.J. 1, 34-38 (1998) [hereinafter *Psychological Model*].

[13] 532 U.S. 451 (2001). It is important to note that the following analysis can be made of virtually any appellate case. *Rogers* is a convenient example because of its relative simplicity and brevity. This case is also suitable for the current purposes in that it cuts across the paradigmatic ideological line that divides the Court. The

case concerned the conviction of the petitioner for second degree murder for stabbing a person with a butcher knife. Following surgery, the victim fell into a prolonged coma and died fifteen months later from a kidney infection, a common complication for comatose patients. Rogers appealed his conviction, arguing that under Tennessee common law, a murder charge cannot be sustained if the victim does not die within a year and a day from the time of the assault. Affirming the conviction, the Supreme Court of Tennessee abolished the "year and a day" rule over Rogers' claim that this abolition infringed upon due process and violated the Ex Post Facto clauses of state and federal constitutions. Affirming the state court's decision, Justice O'Connor was joined by Chief Justice Rehnquist, and by Justices Kennedy, Ginsburg, and Souter. The principal dissent was written by Justice Scalia, joined by Justices Stevens and Thomas. The dissent was joined in part also by Justice Breyer.

A. *Openness*

The first observation concerns the extent of conflict and ambiguity that pervade the legal materials discussed in this case. The decision revolved around five principal issues: whether the Ex Post Facto doctrine is separable from due process; whether the Ex Post Facto prohibition is limited only to "unexpected and indefensible" changes; whether the Ex Post Facto prohibition is applicable to changes by the judiciary; whether the "year and a day" rule was valid law in Tennessee; and whether appellant Rogers was actually deprived of fair warning. Each of these five issues had some inferential implication for the outcome of the decision. As depicted in Figure 1,[14] every one of these issues contains two opposing propositions, each of which supports either one of the decisions.

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observations made from this case are typically more pronounced in longer and more complex cases. For a similar analysis of a slightly longer case of *Ratzlaf v. U.S.*, see Simon, *Psychological Model*, *supra* note 12, at 62-72.

[14] In these diagrams, each boxed statement represents a proposition; solid arrows represent positive inferences; dashed arrows denote contradictory propositions.

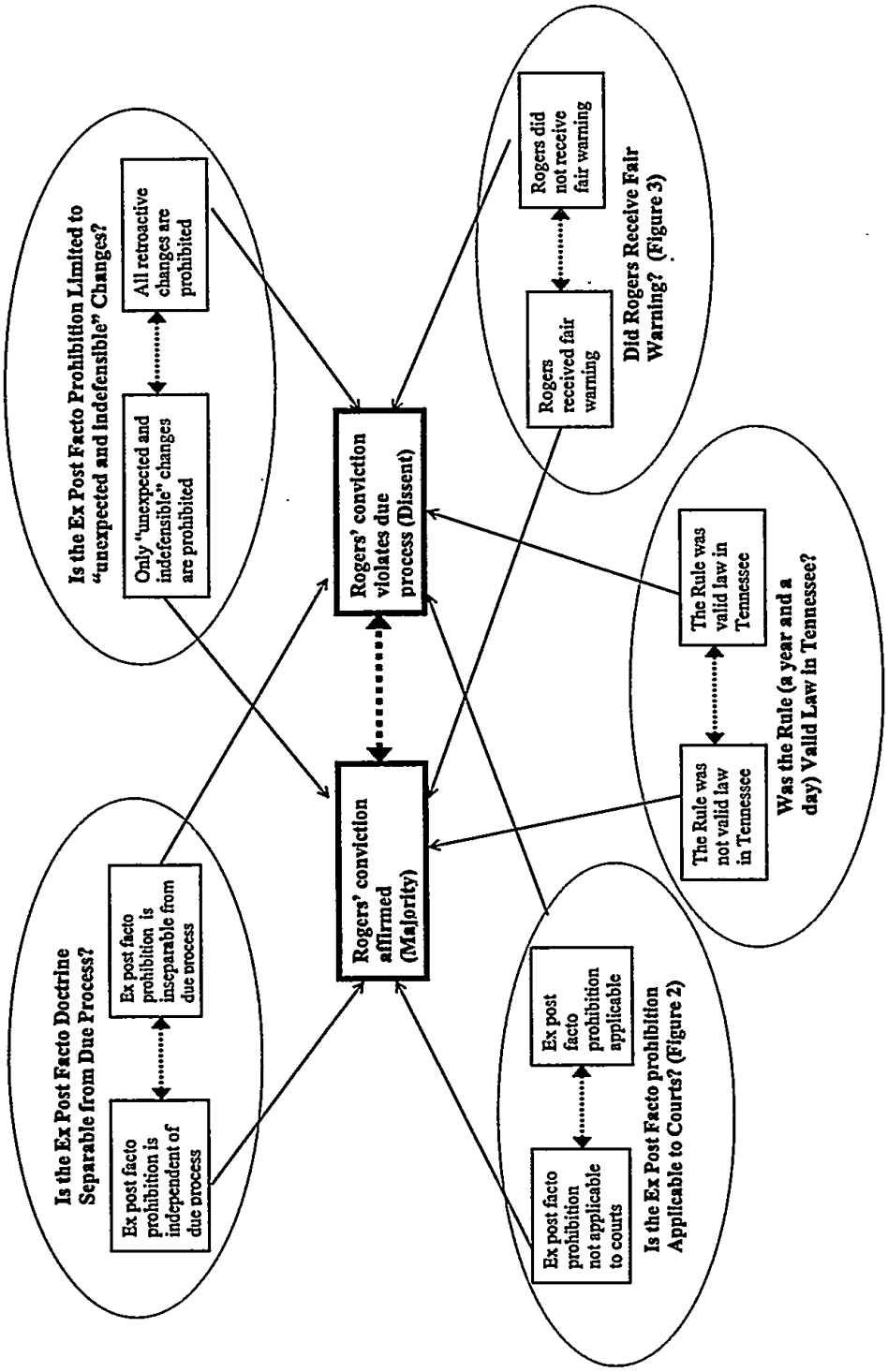

Figure 1. Five issues involved in *Rogers v. Tennessee*, 532 U.S. 451 (2001).

For example, the proposition "Ex Post Facto prohibition is not applicable to courts" has a supportive implication for the decision to affirm Rogers' conviction, whereas the contradictory proposition "Ex Post Facto prohibition is applicable to courts" has a supportive implication for overturning the conviction.[15]

To be sure, each of the five conclusions depicted in Figure 1 is based on a more detailed set of arguments. Figure 2 depicts the important parts of chains of argumentation that are presented in both the majority and the dissenting opinion with respect to one of the five issues—the applicability of the Ex Post Facto prohibition to courts. The chain on the left part of the diagram contains some of the arguments made by Justice O'Connor in support of the proposition that the prohibition does not apply to courts, and by implication, that Rogers' conviction should be affirmed.[16] The chain on the right side of the chart presents the dissenting justices' central arguments in support of the proposition that the prohibition is indeed applicable to courts, which in turn, also supports the conclusion to overturn Tennessee's judgment.[17]

The contrariness between the two opinions pervades a wide range of issues, including numerous weighty ones that extend well beyond the particular case. Amongst other points of disagreement, the opinions offer discrepant readings of the history of common law jurisprudence,[18] and they differ also on the correct reading of the constitutional language—where one

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[15] It is important to appreciate the centrality of the two decision alternatives. The five issues are weakly related to one another, or not directly related at all. However, they are all connected indirectly through their implicational links with either one of the central decision alternatives.

[16] *Rogers*, 532 U.S. at 455-59.

[17] These diagrams include most, but not all, of the arguments that are included in the respective opinions. It is important to acknowledge that there is no precise way to dissect a case and to distinguish the various components. Alternative ways will always be possible; they should not, however, deviate substantially from mapping presented here.

[18] Justice Scalia offers a detailed historical analysis of the status of common law adjudication in the time of the framing, leading to the conclusion that courts were not perceived then as being capable of "changing" the law. *Rogers*, 532 U.S. at 472-77. Justice O'Connor's historical conclusion, on the other hand, is that due process did not prohibit judicial evolution at the time of the framing any more than it does so today. *Id.* at 462. Justice Scalia's historical analysis is too intricate and detailed to be included in the diagram.

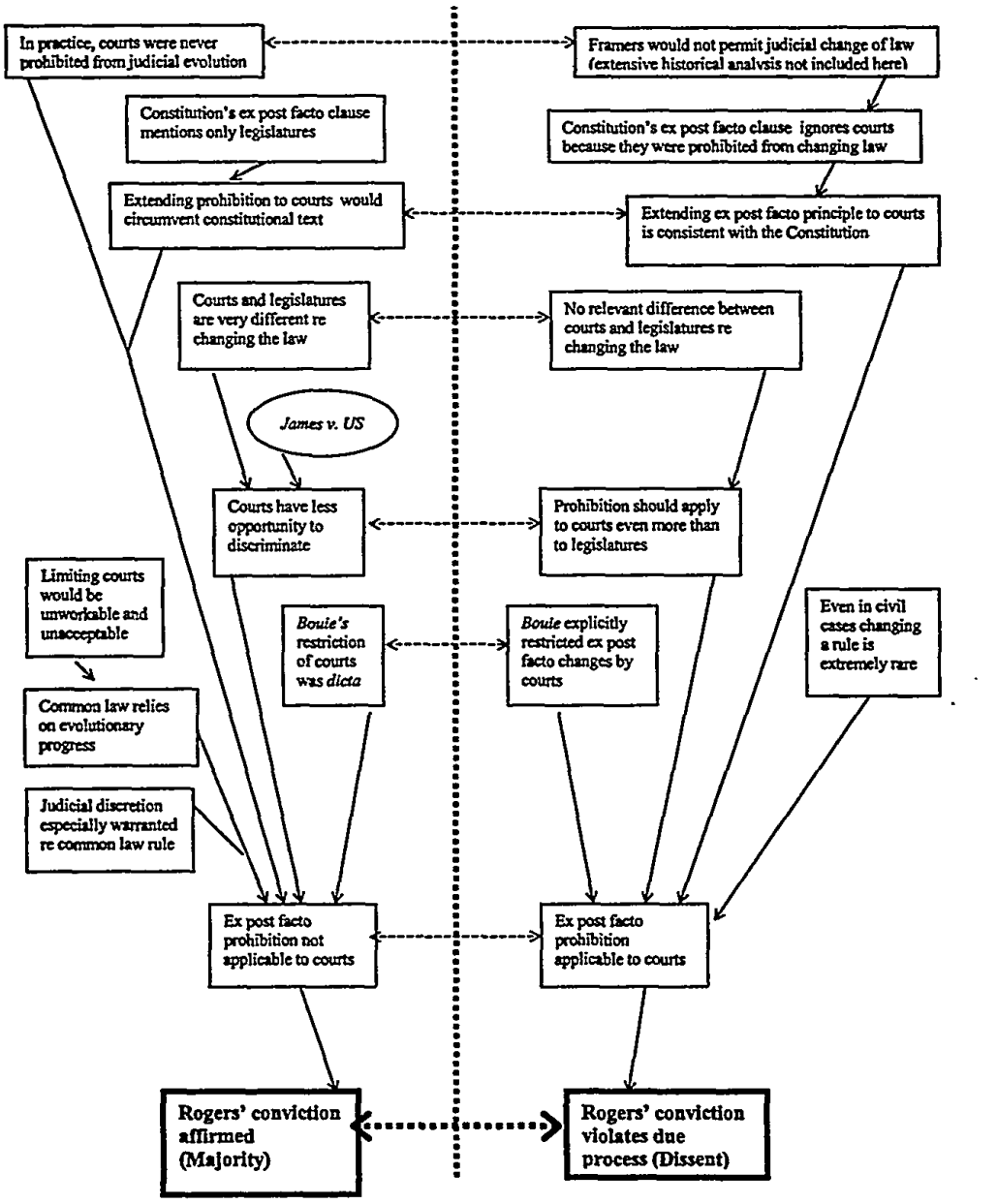

Figure 2. Is the Ex Post Facto Prohibition Applicable to Courts? *Rogers v. Tennessee*, 532 U.S. 451 (2001).

opinion sees circumvention of the constitution, the other sees consistency with it.[19] The opinions also reach contradictory conclusions on the institutional differences between courts and legislatures;[20] on the reading of a crucial statement in the central precedent of *Bouie v. City of Columbia* as either ratio decidenci or as dicta;[21] and on the appropriateness of evolutionary progress through retroactive change in common law adjudication.[22]

Similarly, Figure 3 depicts the chains of argumentation pertaining to another one of the five issues—whether appellant Rogers was actually deprived of fair warning. The chain on the left contains most of the arguments made in Justice O'Connor's majority opinion while the opposite chain contains arguments made by the dissenting justices in support of overturning Tennessee's judgment.[23]

Here, too, the diagram conveys distinct conflict and contradiction. Justice O'Connor follows the Tennessee court's observation that the "day and a year rule" (abbreviated in the diagrams as the "Rule") had been abolished in the "vast majority" of states that had addressed it.[24] Commenting that common law courts frequently look to the decisions of other

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[19] Justice O'Connor points out that because the Constitution explicitly applies the Ex Post Facto prohibition only to legislatures, extending it to courts would amount to a circumvention of the constitutional language. *Id.* at 460. Justice Scalia, on the other hand, explains that such an extension would be consistent with the Constitution; given the historical argument just mentioned, the omission as irrelevant to the current issue. *Id.* at 477.

[20] The majority emphasizes the differences between courts and legislatures in the context of changing law, suggesting that courts have less opportunity to abuse their powers. *Id.* at 460-61. The dissent finds no difference between the institutions and suggests that the powers of courts should be limited more than that of legislatures. *Id.* at 478.

[21] The dissent insists the precedent of *Bouie v. City of Columbia*, 378 U.S. 347 (1964), explicitly restricted Ex Post Facto changes by courts, whereas the majority justices found this statement to be mere dicta. *Rogers*, 532 U.S. at 459, 469.

[22] *Rogers*, 532 U.S. at 460. Justice Scalia criticizes the majority for failing to distinguish between applying the common law to new factual situations and changing the law itself. He also points out that even in civil cases changing the rules retroactively is extremely rare. *Id.* at 471.

[23] *Id.* at 460-64.

[24] *Id.* at 463.

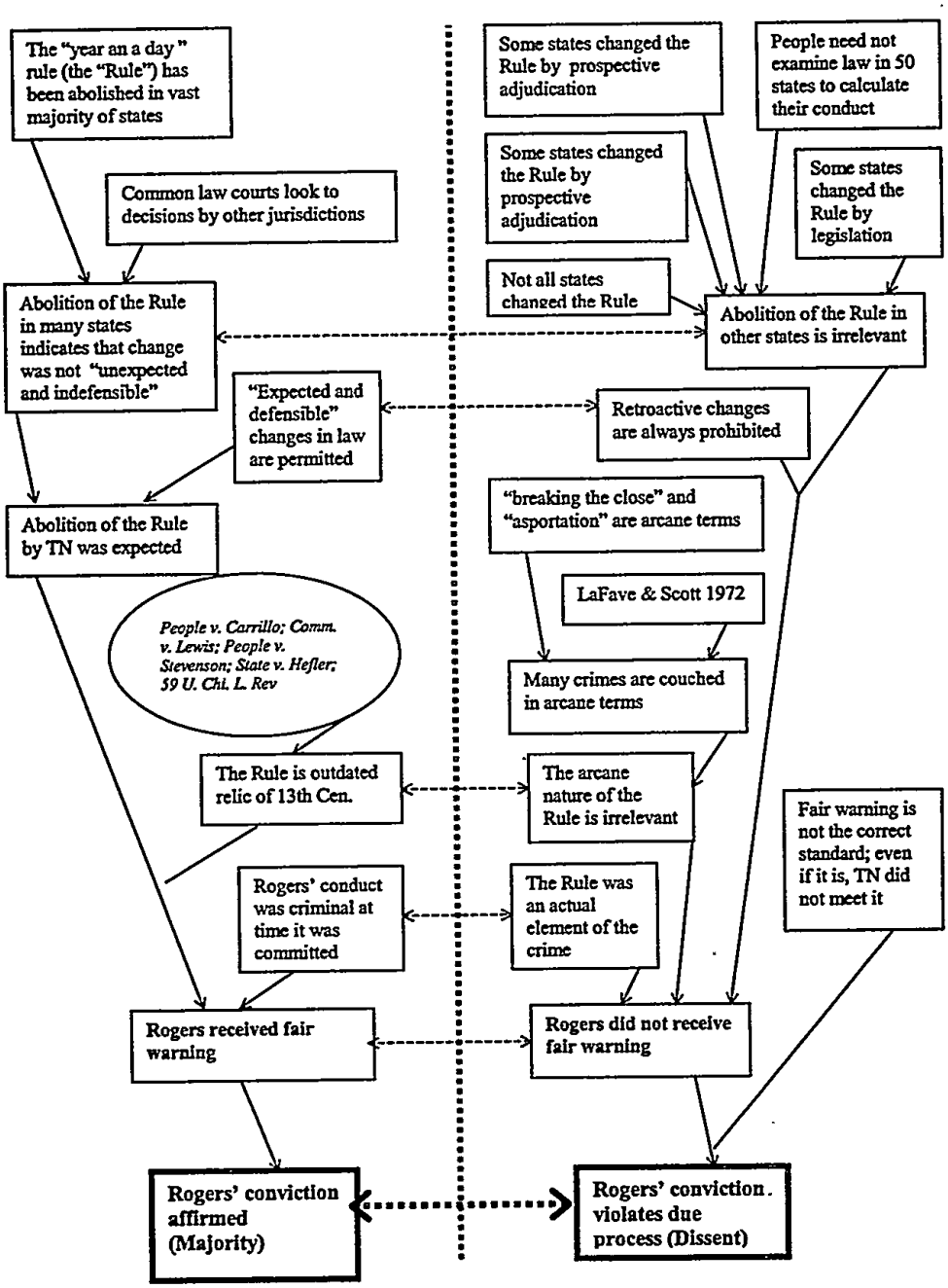

Figure 3. Did Rogers Receive Fair Warning? *Rogers v. Tennessee*, 532 U.S. 451 (2001)

jurisdictions in determining the fate of their own common law,[25] Justice O'Connor concludes that the Rule's sweeping erosion is "surely relevant to whether the abolition of the rule in a particular case can be said to be unexpected and indefensible."[26] Displaying skills of a devoted legal Realist, Justice Scalia mocks the majority for the way the inter-jurisdictional comparison was framed. He questions whether it should not count in the petitioner's favor that some states chose not to address the Rule, some states addressed it but elected not to change it, some states changed it legislatively, and yet others changed it prospectively.[27] Commenting that people need not apprise themselves of the status of the common law in all fifty states in order to ensure that their conduct is legal, Justice Scalia finds this comparative analysis irrelevant.[28] The majority opinion justifies the abolition of the "year and a day" rule in that it is an arcane and outdated legal principle.[29] In response, Justice Scalia reminds the Court that there are many valid provisions of criminal law that are couched in arcane terms.[30] Justice Scalia also characterizes the Rule as an actual element of the crime,[31] whereas Justice O'Connor points out that it was never specified in the Tennessee criminal code and that it was not really law at the time Rogers committed the crime.[32]

In addition to the contrary propositions found in the two issues already discussed above, the opinions also reveal wide gaps in interpretations on a relevant body of precedent;[33] the relationship between due process and the Ex Post Facto prohibition;[34] the principal elements of the doctrine governing the prohibition of retroactive change;[35] the precedential status

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[25] *Id.* at 464.

[26] *Rogers*, 532 U.S. at 464.

[27] *Id.* at 479.

[28] *Id.*

[29] *Id.* at 463.

[30] *Id.* at 479.

[31] *Rogers*, 532 U.S at 468.

[32] *Id.* at 466.

[33] *Compare Rogers*, 532 U.S. at 458-59, *with Rogers*, 532 U.S. 469-70 (Scalia, J., dissenting).

[34] *Id.*

[35] *Compare Rogers*, 532 U.S. at 457, 461, *with Rogers*, 532 U.S. 469-70 (Scalia, J., dissenting).

of the "year and a day" rule in Tennessee;[36] and—absent any mention of the *Bush v. Gore*[37] decision rendered four months earlier—the validity of a state court's interpretation of its state law.[38]

To sum up the first observation, real conflict and contradiction pervade the legal question decided in this case. On every turn, one finds inconsistent and even contradictory understandings of the law, all of which seem somewhat plausible in their own right.

B. *Professed Closure*

The second observation concerns the remarkable sense of closure conveyed in the opinions. As already seen from Figures 2 and 3, each of the opinions endorses arrays of arguments (in psychological terms, "inferences") all of which support the respective result, and rejects or ignores all other arguments that support the opposite decision.[39] The sheer number of arguments incorporated in the opinions and the uniformity of support they lend to the respective decisions is astounding. As depicted in Figure 2, the majority's conclusion that Ex Post Facto prohibitions are inapplicable to courts is supported by all of the ten arguments that pertain to this issue, whereas the opposite conclusion is supported by all eight arguments offered in the dissenters' opinion.[40] The arguments supplied in each opinion are distinctly inconsistent with those supplied by the other, and there are no less than five direct contradictions (denoted by the dashed arrows) between the two sets. Similarly, Figure 3 displays eight arguments offered by the majority and thirteen arguments offered by the dissent,

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[36] *Compare Rogers*, 532 U.S. at 466, *with Rogers*, 532 U.S. 469, 480 (Scalia, J., dissenting).

[37] 531 U.S. 98 (2001).

[38] *Compare Rogers*, 532 U.S. at 465-66, *with Rogers*, 532 U.S. at 469, 480 (Scalia, J., dissenting).

[39] The fact that the justices disagree on virtually every issue raised in the opinions does not mean that they agreed about nothing. One of the conventions of legal argument is not to dwell on points that are in agreement. Still, the range of disagreement is broad and deep.

[40] There is more than one way to count the arguments. While objective measures are unavailable, they are essential for the current discussion.

again, all providing uniform support for the respective conclusion.

Recall that these two figures capture only two out of the five issues discussed in the case. The other three issues reveal similar patterns of reasoning. Based on a conservative count, the majority opinion—holding a mere seven pages in the *Supreme Court Reporter*—includes no less than thirty-seven arguments and twenty citations to case law that provide the argumentative basis for the five basic conclusions that ultimately support the respective decision. The most stark fact is that every one of the inferences supports the respective decisions. The opinion also repudiates, rejects or ignores virtually every one of the arguments made by the dissenters. In a similar fashion, the dissenting opinion presents a compelling composition—at least thirty arguments and three cites to precedents[41]—every one of which supports the respective decision.[42]

The incompatibility of the opinions is not lost on the Justices. Rejecting the dissent's conclusion of a due process violation, the majority emphatically states that there is "nothing" to suggest that this occurred in this case.[43] What the majority portrays as a routine decision that brings the common law into conformity with "logic and common sense,"[44] the dissent criticizes as a conclusion that no reasonable person would imagine.[45] The dissent also characterizes the decision as "fundamentally unfair," a violation of "one of the most widely held value-judgments in the entire history of human thought,"[46] and contrary to "the first principles of the social compact, and to every principle of social legislation."[47] While the majority

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[41] The dissent holds some eight pages in the Supreme Court Reporter, three of which are devoted exclusively to the historical analysis. The historical analysis has not been included in this discussion.

[42] It is true that the number of arguments (or, inferences) identified here is most likely larger than the number of arguments that were actually considered by the justices as part of their decision-making process. Judges tend to "pad" or otherwise embellish the written opinion after having made up their minds. This suggests that the numbers noted here are inflated in relation to the arguments that "actually" counted.

[43] *Rogers*, 532 U.S. at 467.

[44] *Id.* at 462.

[45] *Id.* at 478, 467 (Scalia, J., dissenting).

[46] *Id.* at 468 (Scalia, J., dissenting) (quoting JEROME HALL, GENERAL PRINCIPLES OF CRIMINAL LAW 59 (1960)).

[47] *Id.* at 478 (Scalia, J., dissenting) (quoting THE FEDERALIST No. 44, 282

touts the decision as an instantiation of good policy, the dissent fears that it could open the floodgates by validating "the retroactive creation of many new crimes."[48]

The professed closure, then, conveys a strong sense of constraint. The sheer quantity and perfect alignment of the arguments in support of the chosen decision, coupled with the implicit or explicit rejection of the arguments supporting the alternative decision, do indeed make the decision seem obviously correct, even inevitable.

C. *Openness v. Closure*

In sum, the legal issues involved in *Rogers v. Tennessee* harbor a considerable degree of openness, yet this openness is entirely absent from the opinions.[49] This discrepancy, I suggest, lies at the heart of the contentious debate about freedom and constraint, and it is a likely source for the critical energy driving the controversy surrounding this jurisprudential question. Critics are jarred, correctly I believe, by the coexistence of openness and closure. How is it possible, one might well wonder, that judges report being so strongly constrained by the legal materials when this professed inevitability dissipates—indeed, is turned on its head—as soon as one turns the page (or shifts the glance to the other side of the diagram) and notices that the opposite opinion reports inevitability and constraint based on an equally compelling array of contradictory arguments. Furthermore, how is it possible that every single one of the arguments cited in each opinion is taken to support the corresponding decision? When making decisions in our personal lives, we should be so lucky to have thirty arguments line up in support of one course of action with no good reason opposing it. Upon close review of the professed closure, one sees that there is no scheme of principle underlying the alignments of arguments; rather, they appear to be an ad hoc assortment of propositions bound only

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(James Madison)).

[48] *Rogers*, 532 U.S. at 480 (Scalia, J., dissenting).

[49] There is nothing unique in this regard about *Rogers v. Tennessee*. Virtually every non-unanimously decided appellate case contains a high degree of openness while the opinions convey a distinct sense of closure.

by the superficial feature that they happen to lend argumentative support to the same outcome in a specific case. Indeed, the sense is that something is amiss in the constraint judges report: it seems that the professed constraints are somehow *imposed* upon the legal materials.

This suspicion has been exaggerated, if not misinterpreted, by the judiciary's critics. First, critics tend to charge that to some degree at least, judges are conscious of their misrepresentation.[50] I argue below for an alternative understanding of the professed constraint, based on the observation that closure is imposed by the cognitive system and that judges are not aware of this phenomenon. Second, some critics charge that since legal questions like *Rogers v. Tennessee* are so fraught with gaps and ambiguities, judges are free to decide whatever they like. This, I believe, is an overstatement of judicial freedom. Rather than concluding that the range of choices is indefinite or even large, the more sustainable inference is that there is much contradiction among the few (usually two) plausibly available alternatives.[51] Thus, the observation of wide openness should be taken to stand only for the claim that there is considerable room for judicial discretion in choosing between the two alternative decisions ultimately available for consideration.[52]

The explanation offered here is that professed constraint is a phenomenon of the cognitive processes that make such decision making tasks feasible. However brief and straightforward by comparison to most Supreme Court cases, *Rogers* contains a fair degree of complexity. It requires evaluating and integrating five different and incommensurable

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[50] For more on these phenomenological aspects, see *infra* Part III. B.

[51] This view, rather than unfettered discretion, is the more powerful of the Realists critiques. *See* Gregory Keating, *Fidelity and Pre-Existing Law and the Legitimacy of Legal Decision*, 69 NOTRE DAME L. REV. 1, 51 (1993); Joseph W. Singer, *Legal Realism Now*, 76 CAL. L. REV. 465, 467-75 (1988). Similarly, Richard Posner explains that legal materials that do not lean so strongly in one direction so as to make one decision unreasonable, "merely narrow the range of permissible decision, leaving open an area within which the judge must perforce attempt to decide the case in accordance with sound policy." RICHARD A. POSNER, PROBLEMS WITH JURISPRUDENCE 131 (1990).

[52] In other words, the term *in*determinacy is better understood as a form of *under*determinacy. The taxonomy of indeterminacy and underdeterminacy is borrowed from Lawrence B. Solum, *On the Indeterminacy Crisis: Critiquing Critical Dogma*, 54 U. CHI. L. REV. 473 (1987).

issues, each of which contains conflict and ambiguity. This is a daunting task for any computational system. The human cognitive system should be appreciated for its capability to engage in such tasks and bring them to conclusion; however, it must also be appreciated that the process does not occur by the grace of an invisible mind. Rather, it requires arduous processing by cognitive mechanisms, and these processes leave their imprints on the result. The most notable phenomenon is that during the process, the cognitive system dynamically changes the evaluations of the arguments leading towards a strong endorsement of one set of arguments and a rejection of the competing set. These changes are the cause for the strong dominance that emerges at the end of the decision.

In psychological terms, the observations of closure are captured by the term *coherence*, that is, a mental state in which concepts that "go together" are similarly activated. Thus, a coherent state is one in which the arguments that support the chosen conclusion are strongly endorsed while those that support the rejected decision receive weak or negative endorsement. As used here, coherence is a positive term that describes the relationship amongst parts of a set, rather than as a desideratum of a jurisprudential theory.[53] The phenomenon of coherence, I would argue, plays an important role both in the way judges make legal decisions and in the way their work is understood by their audiences—proponents and critics alike.

II. EMPIRICAL SUBSTANTIATION OF COHERENT EFFECTS

In this part of the Article I will describe a series of experiments in cognitive psychology performed by Keith Holyoak and myself.[54] The experiments were designed to examine the process that governs mental tasks that require

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[53] *Cf.* DWORKIN, *supra* note 10, at 236-37; Rolf Sartorious, *Social Policy and Judicial Legislation*, 8 AM. PHILOSOPHICAL Q. 151 (1971).

[54] See Keith. J. Holyoak & Dan Simon, Bidirectional Reasoning in Decision Making by Constraint Satisfaction, 128 J. EXP. PSYCHOL. GEN. 3 (1999); Dan Simon et al., The Emergence of Coherence Over the Course of Making a Decision, 27 J. OF EXP. PSYCHOL.—LEARNING, MEMORY AND COGNITION 1250 (2001) [hereinafter Emergence of Coherence].

integrating multiple, ambiguous, and conflicting components into discrete choices.

A. *Theoretical Background: Connectionist Representations and Constraint Satisfaction Mechanisms*

Before presenting the experimentation, it would be helpful to spell out the theoretical underpinning of this project. The research reported here is theoretically based on *connectionist* systems for the cognitive representation of the tasks and on *constraint satisfaction mechanisms* for their processing.[55] These theories, deemed the new version of Gestalt theory,[56] are characterized by their fluidity, flexibility, and context sensitivity. These properties enable the connectionist framework to realistically capture the processes by which people perform a variety of complex mental tasks. Constraint satisfaction models have strong parallels with the family of theories of *cognitive consistency*,[57] which were developed in social psychology under the Gestalt influence.[58] The interactive activation model of letter and word perception[59] and subsequent computational constraint satisfaction models

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[55] For an excellent review of these concepts, see Stephen J. Read et al., Connectionism, Parallel Constraint Satisfaction Processes and Gestalt Principles: (Re) Introducing Cognitive Dynamics to Social Psychology, 1 PERSONALITY & SOC. PSYCHOL. REV., 26-53 (1997).

[56] *See* Steven Palmer, *Gestalt Psychology Redux*, *in* SPEAKING MINDS: INTERVIEWS WITH TWENTY EMINENT COGNITIVE SCIENTISTS 157 (Peter Baumgartner & Sabine Payr eds., 1995).

[57] Cognitive consistency theories, which were applied to attitude and belief revision, include balance theory, see Fritz Heider, *Attitudes and Cognitive Organization*, 21 J. OF PSYCHOL., 107-111 (1946); FRITZ HEIDER, THE PSYCHOLOGY OF INTERPERSONAL RELATIONS (1958); cognitive dissonance theory, see LEON FESTINGER, A THEORY OF COGNITIVE DISSONANCE (1957); and symbolic psycho-logic, see Robert P. Abelson & Milton Rosenberg, *Symbolic psycho-logic: A model of Attitudinal Cognition*, 3 BEHAV. SCI., 1-8 (1958).

[58] For a critical historical discussion of cognitive consistency theories, see Dan Simon & Keith J. Holyoak, *Structural Dynamics of Cognition: From Consistency Theories to Constraint Satisfaction*, ____ PERSONALITY & SOC. PSYCHOL. REV. ____ (forthcoming 2002).

[59] J. L. McClelland, & D. E. Rumelhart, An Interactive Model of Context Effects in Letter Perception: I. An Account of Basic Findings, 88 PSYCHOL. REV. 375-407 (1981).

developed by Holyoak and Thagard[60] provide the basis for the cognitive research presented below.

The representation of a complex task, such as deciding a legal dispute, can be imagined as an intricate electrical network, in which numerous facts, values, principles, and concepts are represented as elements, or nodes. This representation is determined by the rich and detailed background store of knowledge about one's legal, social, and conceptual worlds. Each element begins with an initial activation, that corresponds to the degree of the respective element's acceptability, in other words, the strength of the respective argument represented by these elements. Activation levels can be positive or negative and they vary in intensity. Elements are connected to other elements by inferential links. Links can be either positive or negative, denoting whether the connected elements support or contradict one another. The strength of the links varies according to the nature of the association between the elements. Thus, every linked element stands for an inferential relationship. At the central junctions of the network are a pair of vying alternatives (for convenience, assume only two alternatives). Option A is supported by some of the elements (a_1, a_2,...a_n), and some elements (b_1, b_2,...b_n) support the opposite option B. In all but the simplest of decisions, no one element is independently capable of determining the outcome of the process. Each inference is better viewed as a "constraint" on the system; the inferences constrain other inferences and are constrained by them in return.[61]

It is not difficult to see how a legal controversy can be represented as a connectionist network. Each one of the plausible arguments presented to the judge can be viewed as a constraint on the network. Numerous arguments lend argumentative support through chains of inference to either one of the alternatives. In the *Rogers* case, for example, the proposition that *Bouie*'s restriction of judicial change was mere

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[60] *See* Keith J. Holyoak & Paul Thagard, *Analogical Mapping by Constraint Satisfaction*, 13 COG. SCI. 295-355 (1989); Paul Thagard, *Explanatory Coherence*, 12 BEHAV. & BRAIN SCI. 435-67 (1989).

[61] Note that the term "constraint" as used in the context of constraint satisfaction mechanisms is conceptually dissimilar from the formulation of freedom and constraint as used in the debate about the judicial function.

dicta lends argumentative support to the majority's decision, while the proposition that it was ratio decidenci lends support to the dissent's conclusion, and both propositions inhibit one another. Likewise, the proposition that Rogers' conduct was criminal at the time it was committed supports affirming the conviction, while the proposition that the year and a day rule was an element of the crime supports the dissent, and both propositions negatively constrain one another. The daunting task of the cognitive system, then, is to process this complex and conflict-laden task in a way that will yield a discrete choice between the two vying verdicts.

Constraint satisfaction mechanisms operate through a process of cross-activation of the elements. Each element induces the activation of all other elements to which it is connected. The cross-activations depend on the elements' relative initial levels of activation, and on the strength and sign of the link that connects them. Supportive elements excite one another, whereas contradictory elements inhibit each other. Since each element is typically connected to a number of elements, activation spreads through adjacent elements and thus permeates the cognitive structure. As the process progresses, elements are influenced by other elements in parallel, resulting in changes in the levels of their activation, which in turn lead to slightly different cross-activations. Over time, elements that are not supported or are suppressed by other elements wane, and those that are supported become more active.

Ultimately, these repeated interactions asymptote at an equilibrium of maximal satisfaction, given the initial constraints. At this point of equilibrium, one subset of elements, say a_1, a_2...a_n, becomes highly activated and the other subset is inhibited. A state in which positively associated elements share similar levels of acceptability—with "winning" elements being positively activated and "losing" elements being negatively activated—amounts to a state of coherence. It is of crucial importance that since coherence is not spontaneously extant in the initial representation of a difficult decision, cognitive work must be performed to attain it. Thus, constraint satisfaction mechanisms *impose* a coherence-maximizing order on the sets. Cognitive forces push backwards, so to speak, from the global level towards the individual elements, forcing them

to change towards a state of coherence. A central tenet of this cognitive paradigm is that the attainment of coherence entails a reconstruction of the initial representation, a shift from a state of openness to one of closure.[62]

One way to explain the tendency towards coherence is that it serves the *simplification motive*—a ubiquitous feature of the cognitive system of promoting cognitive economy. Structuring complex cognitive sets into tightly-bound, coherent representations serves to reduce the quantity and complexity of the information involved in thought processes. Coherent structures are likely to be easiest to process, memorize, and communicate to others.[63] Indeed, our experiments made direct findings to this effect.[64]

B. *The Coherence Experiments – Quest v. Smith*

1. Method

The experiments were designed to examine the cognitive processing of a complicated decision that contains a high level of conflict and ambiguity. Participants in these experiments were asked to evaluate a set of arguments that share no apparent relationship, first in isolation, and later in the context of a legal case. The first phase consisted of a dozen vignettes, each of which was followed by a statement that could

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[62] See Barbara A. Spellman et al., A Coherence Model of Cognitive Consistency: Dynamics of Attitude Change During the Persian Gulf War, 49 J. OF SOC. ISSUES 147-65 (1993).

[63] *See, e.g.*, Steven Neuberg & Jason Newsom, *Personal Need for Structure: Individual Differences in the Desire for Simple Structures*, 64 J. PERSONALITY & SOC. PSYCHOL. 113, 113-14 (1993). In this regard, the tendency towards coherence seems to serve a similar function to the cognitive feature of categorization, by which people divide the world in a way that maximizes intra-category similarity and minimizes inter-category similarity. *See* Edward Smith, *Concepts and Reasoning, in* AN INVITATION TO COGNITIVE SCIENCE: THINKING 3 (Edward Smith & Daniel N. Osherson eds., 2d ed. 1995); *see also* Eleanor Rosch, *Principles of Categorization, in* COGNITION AND CATEGORIZATION 27, 28 (Eleanor Rosch & Barbara L. Lloyd eds., 1978).

[64] We found that coherence is imposed not only when participants engage in a decision-making task, but also when they process a case for the sake of mere memorization, learning, and preparation for communicating it to a third party. *See* Simon et al., *Emergence of Coherence*, *supra* note 54.

be inferred from the text. Participants were asked to rate their agreement with each of these seemingly unrelated inferences, using an 11-point scale ranging from -5 ("definitely disagree") to + 5 ("definitely agree"), with a rating of 0 indicating neutrality. For example, participants were given a technical definition of a telephone system and asked to what extent the Internet resembled a telephone system; in a separate vignette, they were given a definition of a newspaper and were asked the extent to which the Internet resembled a newspaper.[65] Participants were told they were not expected to have any expert knowledge, but were asked simply to use common sense in making their ratings. This first phase was completed before the participants were informed about the ensuing legal task.

After completing a distracter task, the second phase was administered. Participants were presented with a fictitious civil suit filed by a software company, Quest, against one of its investors, Jack Smith. The evidence, which was not in dispute, was that Quest's financial situation had been deteriorating for some time and its management was having difficulty in coping with the company's troubles. Smith, a dissatisfied shareholder, posted a message that contained negative assertions about Quest and its prospects for recovery on an electronic bulletin board that was directed at investors. Shortly thereafter, Quest's stock price plummeted and the company went bankrupt. It was later revealed that the company had been secretly developing a new product that could have saved the company. Quest was suing Smith for libel, claiming that his message caused the collapse of the company.

The case was designed to resemble the argumentative structure of a relatively uncomplicated Supreme Court case with six separate issues in dispute. Three issues involved matters of fact: Quest argued that Smith's negative assertions were untruthful, whereas Smith claimed they were all true; Quest asserted that the message caused the company's downfall, whereas Smith claimed that its collapse was caused by its mismanagement; Quest claimed that Smith's action was

[65] A telephone system was defined as "a network of interconnected lines used to transmit and receive voice or data from one extension to one or more other extensions." A newspaper was defined as "any publication intended for the distribution and dissemination of news, facts or opinions to broad audiences."

malevolent, whereas Smith claimed he aimed only to protect other innocent investors. The remaining three points of contention involved matters of law and legal policy: Quest argued that as a matter of public policy, it is in society's interest to regulate speech over the Internet, whereas Smith argued that society would benefit from free speech over the Internet; Quest claimed that in posting the message, Smith had violated a company bylaw requiring prior notification of management; Smith maintained that he had complied with the bylaw. On the last issue, participants were informed that as a matter of law, statements published in a newspaper are normally subject to libel law, whereas utterances expressed over a telephone are normally immune from liability for libel. The plaintiff argued that the Internet is analogous to a newspaper, whereas Smith argued that it is more like a telephone system. The parties used the same legal definitions of newspaper and telephone system as used in the vignettes.[66] In all, the case materials were designed to present sufficient ambiguity so as to enable plausible arguments to be made by both parties on each of the issues. The six points of dispute and their relationship to the alternative verdicts are depicted in Figure 4.

Participants were given as much time as they liked to read the case. They were then asked to render a verdict and to rate their confidence that they had made the best possible verdict on a 5-point scale ranging from 1 ("low confidence") to 5 ("high confidence"). Finally, participants completed the final post-test measurement in which they were asked to rate their agreement with each one of the arguments made by the parties. An important aspect of the experimental design was that the legal arguments were essentially identical in form and wording as those used in the previous measure of the vignettes, except that they were now embedded in the legal case.

[66] *See supra* note 65.

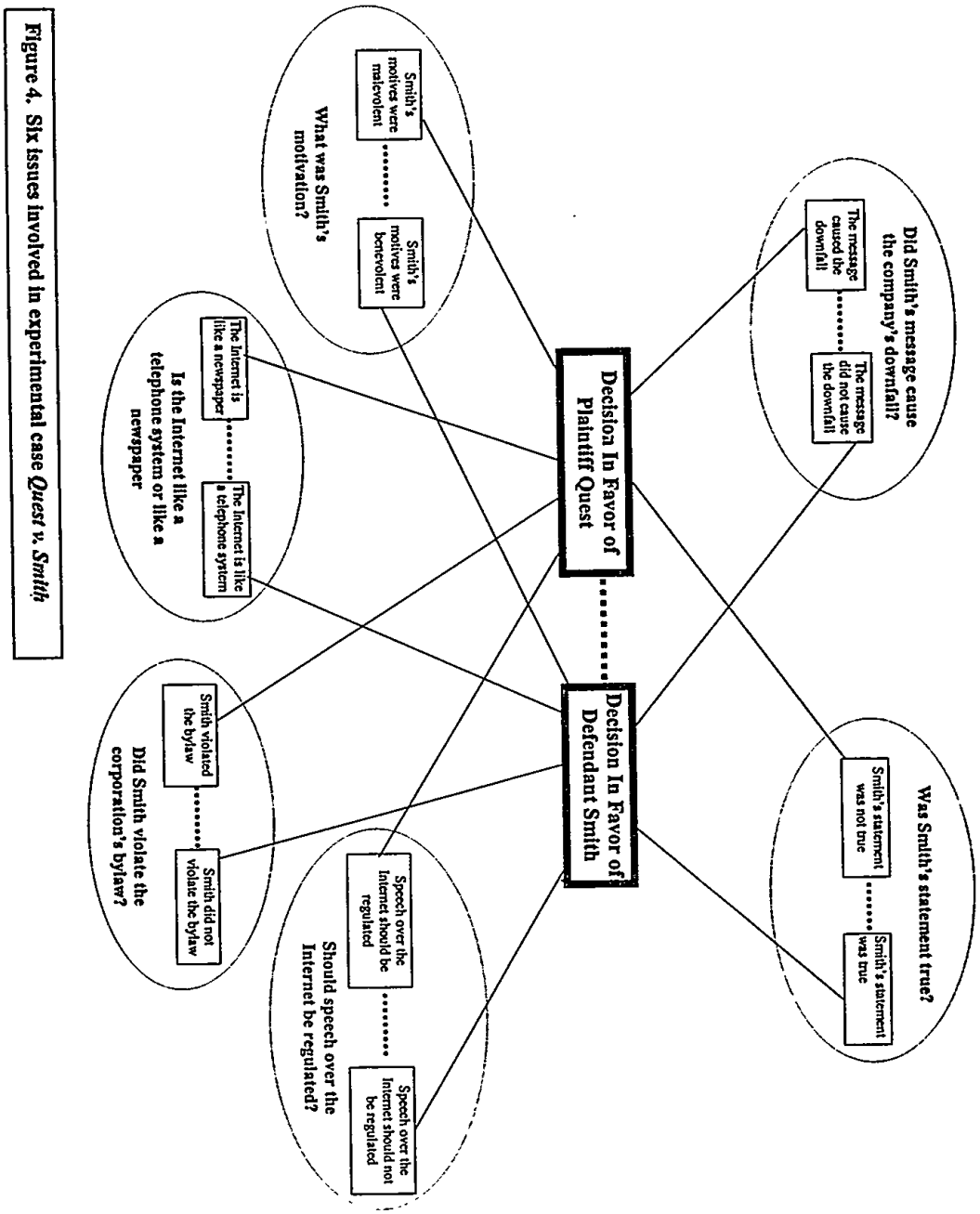

Figure 4. Six issues involved in experimental case *Quest v. Smith*

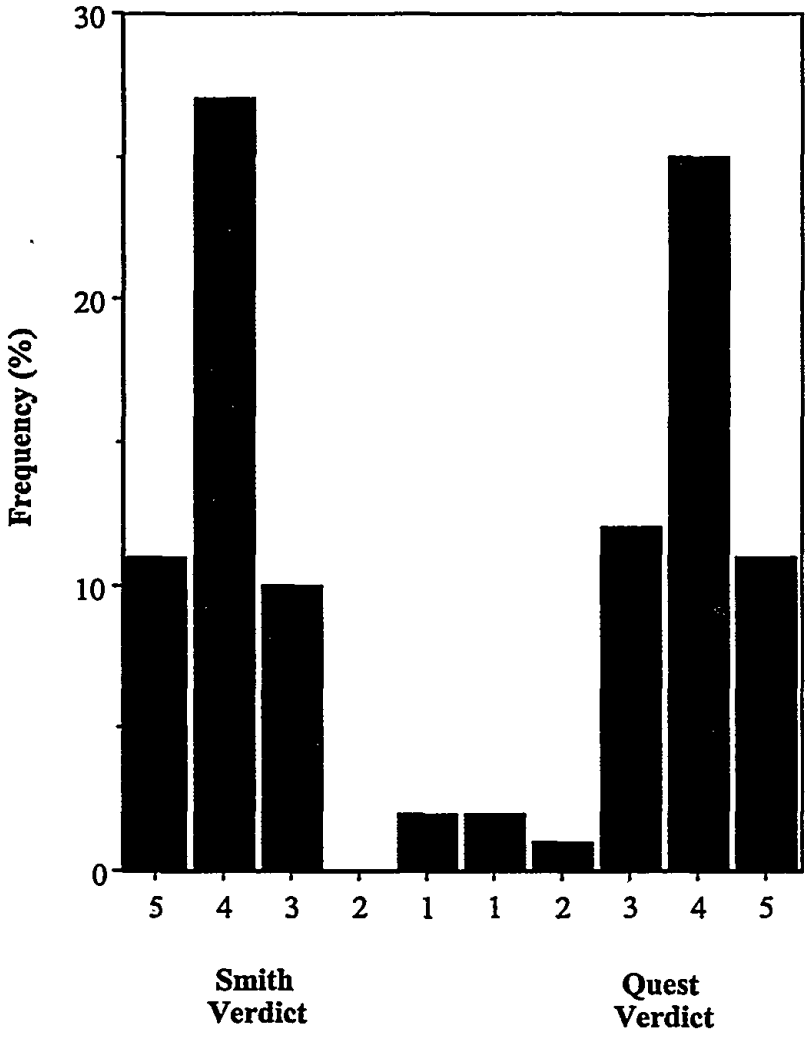

Figure 5. Confidence in Verdicts in experimental case *Quest v. Smith*

2. Results[67]

Participants were about evenly divided in their verdicts, with twenty-six deciding in favor of the plaintiff Quest, and twenty-two deciding in favor of the defendant Smith. Our first theoretical observation concerned the levels of confidence participants reported in their verdicts. One might have expected that given the complexity and ambiguity that pervaded the case (as evidenced by their evaluations at the vignette phase, as discussed below), the participants would encounter difficulty in deciding the case, and that they would report low levels of confidence. Yet, as seen in Figure 5, the distribution of reported confidence (along a scale ranging from maximal confidence in one verdict to maximal confidence in the other) follows a distinct bi-modal, rather than a normal dispersion. Regardless of which verdict they chose, the participants were highly confident that they had reached the best possible decision. Seventy-five percent of participants indicated that they had maximal (5) or next-to-maximal (4) confidence in their verdicts; conversely, only five percent indicated they had minimal (1) or next-to-minimal (2) confidence. This combination of ambiguity and high confidence in decisions is consistent with constraint-satisfaction models of decision making, which tend to resolve ambiguous situations by allowing one coherent set of beliefs to become highly activated, while the other set becomes more inhibited.

The second question we addressed was whether the process of reaching a verdict was accompanied by a change in participants' assessments of the six points of dispute involved in the case. Conventional theories of reasoning would predict that people's evaluations of arguments would not change in any systematic way from one measurement to the next. In contrast, constraint satisfaction models of decision making predict that an emerging decision will be accompanied by a general shift toward a coherent position across all the points of dispute. In other words, evaluations of the issues undergo

[67] Presented here are results from the first experiment, in which forty-eight people participated. These results have been obtained consistently in a number of variations of this experiment that have been run since, with a total of over 300 participants. *See* Simon et al., *Emergence of Coherence*, *supra* note 54.

change from the initial, spontaneous state that is coherent with neither decision, towards a state of coherence with the emerging decision. Figures 6 and 7 present the mean evaluations of the arguments separately for the participants who decided in favor of Smith and those who decided for Quest, respectively. Figure 6 shows a pattern of change in the evaluations that occurred between the vignette phase and the legal case: the arguments that support the preferred verdict (in favor of Smith) became stronger (mean agreement increasing from +1.32 to +1.9) and the arguments that supported the rejected verdict weakened (mean agreement decreasing from +0.8 to –0.66). Thus, by the time the participants have reached a verdict, the two argument sets are *spread apart*; the arguments that support a verdict for Smith dominate the arguments that support Quest's position. This dominance makes for an easy and confident decision in the defendant's favor.

Similar changes are found with participants who decided for Quest. Figure 7 shows the same pattern of the shift in evaluations towards coherence with the pro-Quest verdict. Here too, relative to the fairly close evaluation of the two sets of arguments at the vignette phase, by the conclusion of the legal decision, the arguments supporting the chosen verdict are deemed stronger (mean agreement increasing from +1.68 to

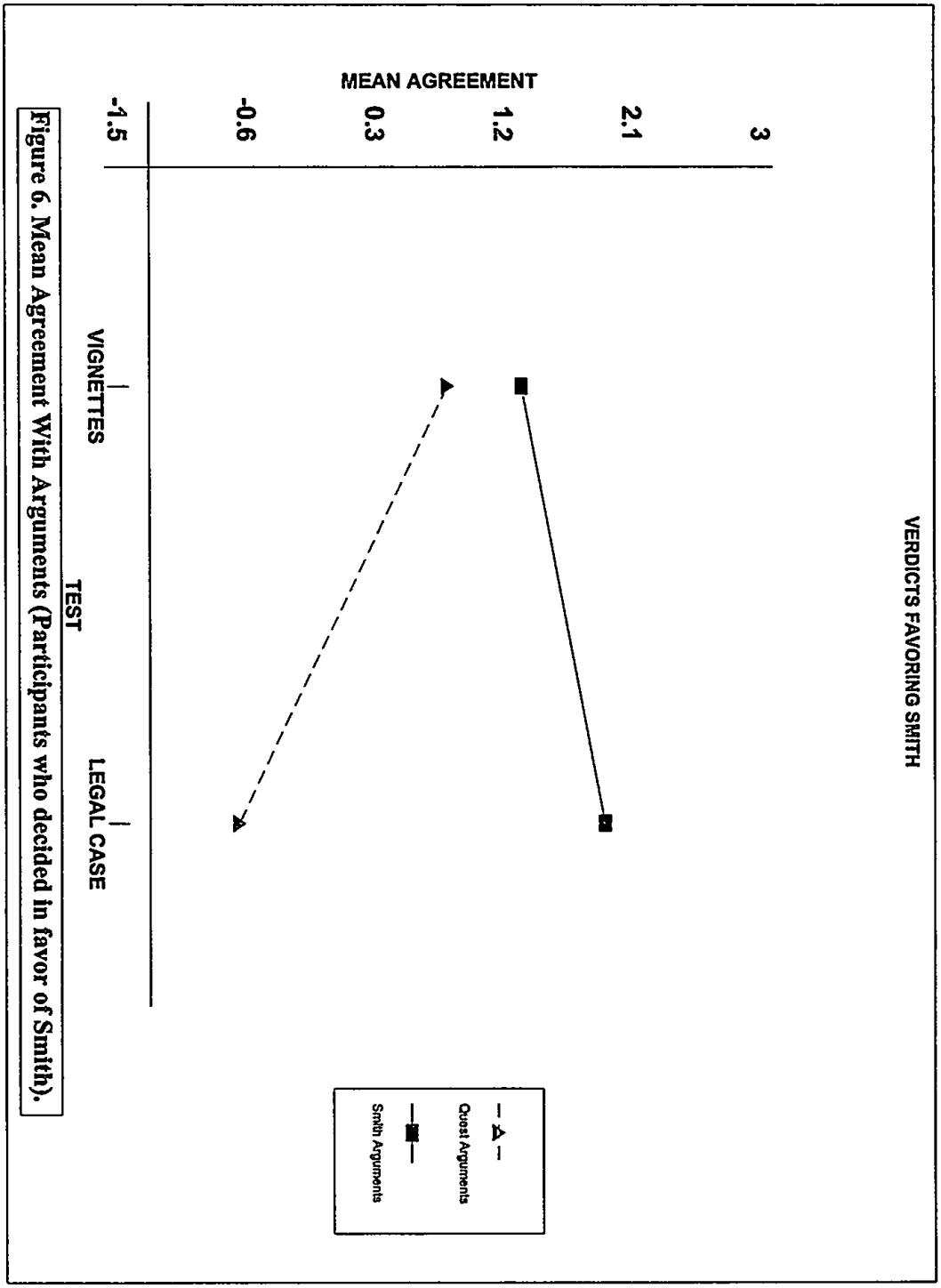

Figure 6. Mean Agreement With Arguments (Participants who decided in favor of Smith).

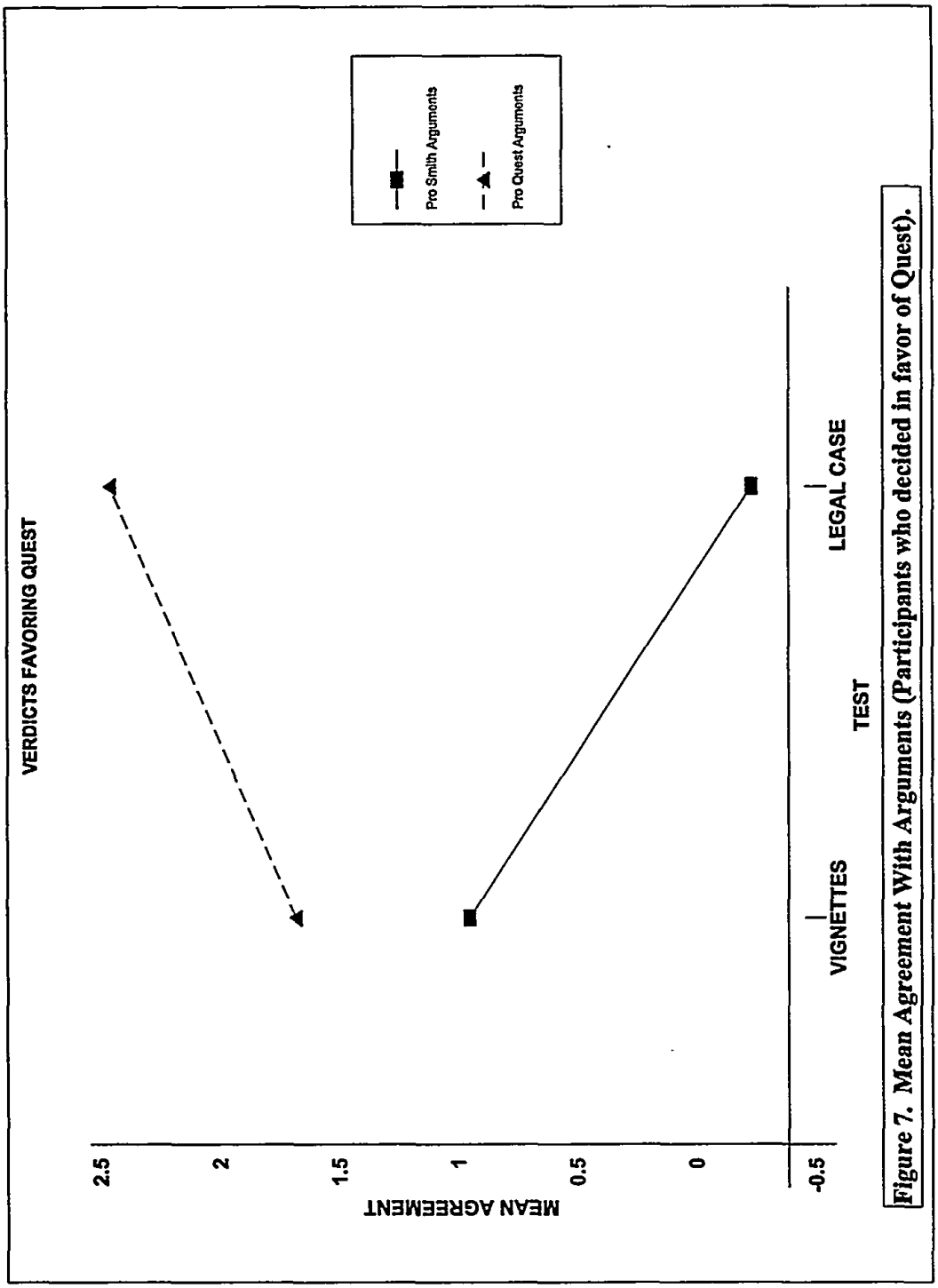

Figure 7. Mean Agreement With Arguments (Participants who decided in favor of Quest).

+2.46) and those supporting the rejected verdict are suppressed (mean agreement decreasing from +0.95 to -0.23).[68] The skewed inferences translate into firm dominance of the verdict in favor of plaintiff, accompanied by high levels of confidence.

To obtain a more detailed view of the coherence driven changes, one can observe the shift in the evaluations of the two analogy items: the similarity of the Internet to a telephone system (thus invoking a precedent that supports Smith's case) and to a newspaper (precedent cited by Quest). Figure 8 shows that at the vignette phase, most participants agreed with both analogies to approximately the same degree, and the evaluation was relatively positive (all within the range of +0.82 to +1.12 on a scale ranging from –5 to +5). However, when the same evaluations are made in the context of the case, participants' agreement with the analogies shifts in a predictable pattern: participants who decide in favor of Quest come to agree much stronger with analogizing the Internet to a newspaper and adopt a negative attitude towards the analogy to a telephone system. Conversely, participants who decided in favor of Smith displayed a slight increase in the analogy to a telephone system and a significant decrease in agreement with the analogy to a newspaper.

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[68] Although these analyses reveal a clear shift in participants' assessments of the six points of dispute in the direction of their verdict, they do not suffice to establish that individual participants reached a broadly coherent position across the disputed points. It remains possible that these mean effects were caused by a single argument rather than by imposition of coherence on the entire sets of arguments. However, if a constraint-satisfaction process was used to reach a decision, then individual participants would be expected to shift their assessments of most or all of the disputed points in the direction of their eventual verdict.

For this purpose, we also performed a correlational analysis of all of the twelve arguments and the eventual verdicts. We predicted that on the first measurement, participants' assessments of the six positions would not constrain one another, and hence would tend to be uncorrelated. Once the points are presented in the context of the case, however, a constraint network would be created, the effect of which will be to generate positive correlations among the disputed points, and between each point and the verdict. This is the pattern we observed. In the first measurement, we found very little correlation among the disputed points and verdict—only two of the twenty-one correlations were significantly positive, and several were negative. This further demonstrates that the materials created a genuine sense of complexity and ambiguity. In contrast, in the second measurement, all but one of the correlations were significantly positive, including all six correlations between disputed points and the verdict; the non-significant correlation was also positive.

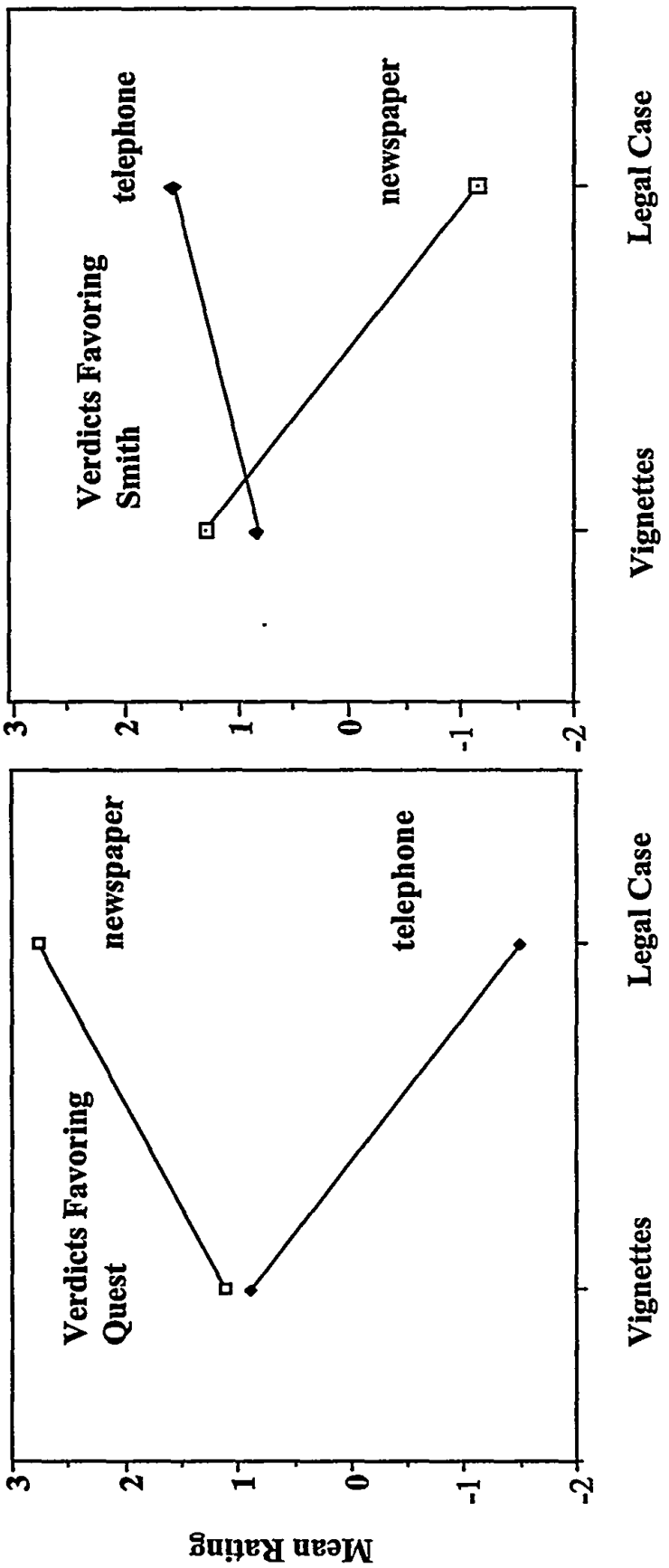

Figure 8. Mean Agreement With Analogies (Participants who decided in favor of Quest (Left Panel) & Participants who decided in favor of Smith (Right Panel)).

The third question we addressed concerned the participants' metacognition, specifically whether they were aware of these coherence-driven changes. Previous research on attitude change in social psychology has demonstrated that people have poor awareness of changes in their attitudes and beliefs. This conclusion is based on the finding that participants are generally incapable of remembering the original belief or attitude, thinking instead that the ones they hold at the end of the process are the same as the ones they initially held.[69] This finding was borne out by our results too. In some conditions, after participants completed the task of making the decision, they were asked to recall the ratings that they had given on the initial test in response to the vignettes.[70] We found that the recalled evaluations were somewhere between the evaluations on the vignettes and the evaluations made at the end of the process; the best single predictor of the recalled evaluations was those made at the end of the legal case, rather than the initial ratings.[71]

This finding supports the belief that people tend to perceive relative constancy in their cognitive states; they believe that the attitudes they hold at the end of the task were the same ones they held throughout the entire process. This phenomenology of constancy serves to minimize or even preclude a recognition that the positions underwent change on

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[69] Participants who are confronted with their original positions tend to be genuinely surprised. In some cases, they adamantly deny the occurrence of any change. *See* George R. Goethals & Richard F. Reckman, *The Perception of Consistency in Attitudes*, 9 J. OF EXPER. SOC. PSYCHOL. 491-501 (1973). Findings to this effect were first made by Asch. *See* Solomon Asch, *Studies in the Principles of Judgments and Attitudes: II. Determination of Judgments by Grouped and by Ego Standards*, 12 J. SOC. PSYCHOL. 433, 438-39 (1940), and have been replicated in the work of Daryl Bem & Keith McConnell, *Testing the Self-Perception Explanation of Dissonance Phenomena: On the Salience of Premanipulation Attitudes*, 14 J. PERSONALITY & SOC. PSYCHOL. 23, 30 (1970); Michael Ross & Ronald F. Shulman, *Increasing the Salience of Initial Attitudes: Dissonance Versus Self-Perception Theory*, 28 J. PERSONALITY & SOC. PSYCHOL. 138, 142 (1973); and Dennis Wixon & James Laird, *Awareness and Attitude Change in the Forced-Compliance Paradigm: The Importance of When*, 34 J. PERSONALITY & SOC. PSYCHOL. 376, 382 (1976).

[70] Specifically, the instructions stated, "For each question, your goal is to state the rating that you gave on the earlier test. Note that you should **NOT** give the rating you might now believe is correct (since your opinions might have changed). Rather, you should try your best to remember what rating you gave previously, and give that same rating again."

[71] *See* Holyoak & Simon, *supra* note 54.

their way to the firm and virtually uniform endorsement of subset of arguments.[72]

Two additional points about this research program are noteworthy. First, our evidence suggests that the coherence maximizing functions actually play an important part in driving the process, rather than being merely ex post consequences of it.[73] Second, coherence effects are not limited to legal tasks of this nature. The same overall effects have been found in a broad range of cognitive tasks.[74]

III. DISCUSSION

In this Article I have offered a way both to conceive and understand the debate over freedom and constraint in adjudication. The key to the proposed conception is the discrepancy between the openness that is apparent in the legal materials and the judicial claim of being constrained by them, as manifested in the example of *Rogers v. Tennessee.* Central to the proposed understanding of the debate is the recognition that closure is, to a large degree, a natural outcome of the cognitive process involved in decision making; indeed, it is inherent to the mechanisms that enable the decision.

A basic claim of this Article has been that the experimental results provide insight into a better understanding of freedom and constraint in judicial reasoning. As described above, the coherence professed in the *Rogers* opinions is quite implausible. The five topics discussed in the case—the separability of the Ex Post Facto doctrine from due

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[72] See Timothy D. Wilson & Nancy Brekke, Mental Contamination and Mental Correction: Unwanted Influences on Judgments and Evaluations, 116 PSYCHOL. BULL. 117 (1994).

[73] This finding is a departure from cognitive dissonance theory. *See* Simon et al., *Emergence of Coherence*, *supra* note 54.

[74] Similar findings of constraint satisfaction processes have been observed in the making of a job choice decision in a Multi Attribute Utility decision paradigm, Dan Simon et al., *Making Multi Attribute Decisions by Constraint Satisfaction*, presented at Meeting of Society For Judgment And Decision Making (Oct. 2000); making social judgments about the fate of an interpersonal relationship, C. Snow, D. Simon, & S. Read, Social Judgment by Constraint Satisfaction; (work in progress, on file with author); and mock criminal decision tasks that require the integration of a number of pieces of circumstantial evidence, D. Simon, C. Snow, & S. Read, Constructing Facts by Constraint Satisfaction, Address before the Convention of American Psychological Association (Aug. 2001).

process; the scope of the Ex Post Facto prohibition; the applicability of the Ex Post Facto prohibition to the judiciary; the status of the "year and a day" rule in Tennessee; and the fairness of the warning awarded to appellant Rogers—are essentially separate legal questions. For the less than naïve reader, it seems striking that both opinions claim that all five questions support the respective decisions; it is much harder to accept that every one of the dozens of arguments aligns perfectly to support the corresponding decisions. Implicit in the judicial opinions is the claim that the endorsed arguments consist of accurate, correct, and objective readings of the legal materials, rather than ad hoc judgments made to suit the case at hand. However suspicious this portrayal might appear, it is difficult to devise an empirical method capable of directly validating or refuting this crucial feature of the judicial function. The controlled environment of a psychological experiment, on the other hand, can provide some insight into this question.

It cannot be taken for granted that experimental findings are automatically applicable to the actual practice of judicial decision making. Indeed, one might reject the applicability of these general models of cognition to the judicial setting and adhere instead to an approach that presumes the autonomous nature of legal decision making. This, of course, lies at the heart of the *internal* perspective towards judicial reasoning.[75] By the terms of this approach, any *external* position is required first to lift the onus and demonstrate that it is superior to the internal perspective. But this default position is, of course, contestable. One could well argue that given the generality of the cognitive processes discussed here, the burden should be on those who claim that the mental processes employed in the judicial context are unique.

I propose that the cognitive psychology presented here generally succeeds in capturing some important features of judging. The research program of coherence driven decision-making addresses the very kind of tasks that judges face: making discrete choices between competing courses of action that are influenced by a complex multitude of ambiguous inferences. The fact that these findings have been replicated

[75] *See supra* notes 9, 10.

successfully in a range of cognitive tasks,[76] gives good reason to believe that it captures general and basic aspects of this type of decision making process. It is almost too obvious to mention Robert Cover's reminder that judges, after all, are "quite like the rest of us."[77] While there is no doubt that the judicial practice entails a great deal of discipline-specific expertise,[78] it is not at all obvious that the underlying cognitive processes are any different. The reasoning processes of the jurist, John Dewey argued, are similar to those of the engineer, banker, farmer, and merchant.[79] As Richard Posner notes, "there is no distinctive methodology of legal reasoning."[80] I have elsewhere pointed out that many of the cognitive phenomena discussed here can be found in the introspective writings of legal thinkers such as Cardozo, Holmes, Posner, Hand, and Llewellyn.[81] The applicability of this psychological theory to the judicial practice is further confirmed, albeit indirectly, from its correspondence to the actual behavior of judges.

The participants in the experimental case of *Quest* reported coherence that is not unlike the state of closure found in judicial opinions. They strongly endorsed the arguments that supported their respective decisions and rejected the arguments that were consistent with the rejected position. The main advantage of the experimental design is that it also provides the same participants' evaluation of virtually the same arguments before they became involved in deciding the

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[76] *See supra* note 74.

[77] Robert Cover, The Supreme Court, 1982 Term: Forward: Nomos and Narrative, 97 HARV. L. REV. 4, 67 (1983). See also LEARNED HAND, How Far Is a Judge Free in Rendering a Decision?, in THE SPIRIT OF LIBERTY 103, 107 (1960). Morris Cohen explained: "we must not forget that actual law is a human product—made and administered by judges who are not free from human limitations in intelligence and goodwill." MORRIS R. COHEN, LAW AND SOCIAL ORDER: ESSAYS IN LEGAL PHILOSOPHY 337 (1933).

[78] As Gary Blasi suggests in his important discussion of legal expertise, legal experts have advantages in both the quantity of knowledge they hold and their organization of that knowledge. Experts are better than novices in their perception and memory of patterns and structures, and they can use their superior capabilities of "forward" reasoning to solve problems faster. *See* Gary L. Blasi, *What Lawyers Know: Lawyering Expertise, Cognitive Science, and the Functions of Theory*, 45 J. LEGAL EDUC. 313 (1995).

[79] *See* John Dewey, *Logical Method and Law*, 10 CORNELL L.Q. 17, 18 (1924).

[80] *See* Richard A. Posner, *The Jurisprudence of Skepticism*, 86 MICH. L. REV. 827, 859 (1988).

[81] *See Psychological Model*, *supra* note 12, at 102-21.

legal case. Not surprisingly, no coherence is observed at that spontaneous stage. At that point, the arguments provided mixed support for both decisions. By the end of the decision making process, however, participants report distinct coherence. In other words, the participants' evaluations of the arguments changed from incoherence to a final state of coherence; a state in which one decision dominates the other, resulting in a confident choice. The best explanation for this shift is that it is the imprint of the coherence-driven cognitive processes that make the decision possible. It follows that the tendency towards closure is a general cognitive feature, not a particular quirk of the judicial profession, though I suggest below that it is compounded with features that are specific to the legal culture and particularly to the judicial function.[82] In this final part of the Article I offer preliminary discussions about three aspects of the experimental findings that are especially significant for legal theory.

A. *Bi-Directional Reasoning*

The observed shifts towards greater coherence with the eventual verdict manifest the principal phenomenon associated with Gestalt theory and its progeny, constraint satisfaction theories. Structural pressures spread throughout the network, forcing all the elements towards a point of equilibrium at which the arguments cohere with the chosen decision. These shifts, borne by a global coherence with the emerging result, are what give the reasoning process its bi-directional character. The decision is presumably driven by the inferences made from the materials, but the materials, in turn, are changed by the coherence-driven mechanisms. As a result, the materials lend the decision far greater argumentative support than they would have had absent these changes. This mental state of exaggerated support is then reflected in the sense of closure presented in the judicial opinion. I suggest that the source of the critics' discontent is the claim of exaggerated closure.

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[82] *See infra* Part III. C.

From a normative perspective, this criticism is quite justified. Theories of reasoning in both law and psychology have been heavily influenced by a number of assumptions derived from formal accounts of deductive logic.[83] A central principle of these models is that the flow of inferences is exclusively unidirectional. This assumption can be traced to the logic of deductive argument, in which the task is to infer conclusions from premises, while the premises themselves are to be accepted as binding. Unidirectionality rules out "reverse" inferences in which conclusions have any effect on the evaluation of the premises. Violations of this assumption are generally viewed as signs of the frailty of human reasoning or of unprincipled decision-making; in the legal context, this amounts to a violation of an avowed tenet of judicial reasoning. Yet, to some degree, reverse influences are inherent to the processing constraint satisfaction mechanisms.

Constraint satisfaction mechanisms bare a resemblance to the mechanism of reflective equilibrium that is central to John Rawls' *Theory of Justice*.[84] In searching for an interpretation of the initial situation that accommodates one's reasoned judgment, Rawls suggests working "from both ends," gradually bringing both the initial condition and the judgment derived from it into harmony.[85] At the end of the process, the justification of a conception of justice is a matter of the "mutual support of many considerations, of everything fitting together into one coherent view."[86] Gestaltian dynamics are observed also in Frank Michelman's view of a "two way traffic" flow in

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[83] *See* Ruggero J. Aldisert, Logic For Lawyers: A Guide to Clear Legal Thinking (3d ed. 1977); Evans, J. St. B. T., Bias in Human Reasoning: Causes and Consequences (1989); L. J. Rips, The Psychology of Proof: Deductive Reasoning in Human Thinking (1994).

[84] John Rawls, A Theory of Justice (2d ed. 1999).

[85] Rawls explains:

> By going back and forth, sometimes altering the conditions of the contractual circumstances, at others withdrawing our judgments and conforming them to principle, I assume that eventually we shall find a description of the initial situation that both expresses reasonable conditions and yields principles that match our considered judgments duly pruned and adjusted. This state of affairs I refer to as reflective equilibrium.

RAWLS, *supra* note 84, at 18.

[86] *Id.* at 19.

the relationship between moral theory and legal thought.[87] The empirical findings made in the coherence experiments seem quite consistent with these philosophical theories.

It must be acknowledged, however, that while reflective equilibrium might be regarded as an accurate account of decision making and a desirable methodology for resolving questions of moral philosophy, its suitability as a theory of judging is less than obvious. The strength and integrity of reflective equilibrium are in its forthright acknowledgment of its inherent bi-directionality. As Rawls explains, the process is as much about justifying one's convictions of social justice as it is about conceptualizing the original position.[88] This avowed bi-directionality is patently inconsistent with the current conventions of judicial reasoning. Whether it can be conceptually made to fit into the judicial function is a question left for further examination.

B. Judicial Phenomenology

As discussed above, the coherence experimentation suggests that constraint satisfaction mechanisms operate absent conscious control and without awareness. Specifically, people do not notice that their evaluations of the materials change throughout the process from an initial state of conflict and ambiguity towards a final state of coherence and certainty. As stated above, these findings are consistent with previous research on attitude-change in social psychology.[89] They are consistent also with a recent body of research that shows that higher level mental processes—including goal pursuit, judgment, and interpersonal behavior—can occur in the absence of conscious choice, deliberation, or guidance.[90] This

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[87] *See* Frank I. Michelman, *Legalism and Humankind, in* THE GOOD LIFE AND THE HUMAN GOOD 190 (Elen Frankel Paul et al. eds., 1992). Michelman suggests the "two way traffic" models apply also to the relationship between high-level prescription and specific understandings of human nature. For another application of similar notions, see Richard H. Fallon, Jr., *A Constructivist Coherence Theory of Constitutional Interpretation*, 100 HARV. L. REV. 1189 (1987).

[88] RAWLS, *supra* note 84, at 17.

[89] *See supra* note 69 and accompanying text.

[90] For a review, see John A. Bargh & Melissa J. Ferguson, *Beyond Behaviorism: On the Automaticity of Higher Mental Processes*, 126 PSYCHOL. BULL. 925 (2000).

lack of awareness suggests that, from a phenomenological perspective, people's reports of closure are largely genuine.

This point is of particular importance for an understanding not only of the judicial function, but also of the judiciary's critics. It suggests that the professed dominance of the chosen verdict is not necessarily contrived or otherwise disingenuous; it can be assumed that in some—perhaps most—situations, judges describe the arguments as compelling because that is the way they actually perceive the materials at the end of the decision-making process. Sensitivity to the judges' subjective experience thus puts into question one of the most persistent and acerbic criticisms of judging. The dubiousness of the professed closure in light of the apparent openness need not lead to the conclusion of judicial bad faith; it can be better understood as a phenomenologically genuine modification of the materials. In this context, I am in complete agreement with Winter's effort to fill in the excluded middle.[91] While the judicial account of closure is largely incorrect, judges are not bad faith actors. To criticize the judicial function, one need to examine the phenomenology of judging in light of what the research teaches about the consciousness of mental processing.

C. *Confidence, Credibility, and Persuasion*

One possible conclusion from the research is that the very features of constraint satisfaction processes that make them an effective way of executing the decision-making task, might hinder the subsequent task of communicating the decision to other audiences. In other words, the concern is that the internal experience of dominance and the ensuing confidence could be unpersuasive to third parties.[92] As it turns out, this concern has little effect outside the limited circle of judicial critics, as evidenced, inter alia, by the prevalence and persistence of this style of reasoning. The legal profession as a whole, not to mention the broader citizenry, show no aversion to the judicial claims to closure. Most readers of judicial

[91] WINTER, *supra* note 1, at 158.

[92] On the important connection between the cognitive processes and their persuasiveness, see WINTER, *supra* note 1, at 152-53.

opinions are apparently willing to accept the professed constraint and inevitability even though it is quite apparent that the legal materials do not compel the chosen decision. They are willing to accept it even in the face of a dissenting opinion that is diametrically opposed on virtually every argument, and professes to be inevitably constrained by the same legal materials.

There is preliminary empirical evidence that people in general are not particularly insistent on well-reasoned elaborations, and that they even display a preference for one-sided arguments of complex issues.[93] Thus it is quite possible that the judicial style of closure has persisted because the imprints of the judges' cognitive processes are compatible with the inclinations of their audiences. Indeed, there might be more than a mere coincidence here. Given the central role played by judicial reasoning in forging the argumentative conventions of the legal culture,[94] it should not be surprising that the legal community has come to perceive closure as the normal and proper style of judicial argument. Indeed, the occasional admissions of openness in an opinion seem to be met with overt dissatisfaction,[95] whereas criticism of closure is

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[93] In an experiment by Jonathan Baron, participants were presented with texts containing arguments supporting different positions on the topic of abortion. Some of the texts contained only arguments supporting one side of the issue, while other texts contained two-sided arguments. The participants were asked to "evaluate the thinking" of the person who wrote those arguments. Participants were specifically admonished to focus on the quality of the reasoning. The interesting finding was that participants gave significantly higher rating to texts containing one-sided arguments than to those that offered arguments supporting both sides of the issue. This finding was true regardless of the participants' own opinions on the topic. *See* Jonathan Baron, *Myside Bias in Thinking About Abortion*, 7 THINKING AND REASONING 221-35 (1995).

[94] On the centrality of the judicial opinion in the development of legal discourse, see James Boyd White, *Rhetoric and Law: The Arts of Cultural and Communal Life*, *in* HERACLES' BOW: ESSAYS ON THE RHETORIC AND POETICS OF THE LAW 110 (1985); JAMES BOYD WHITE, JUSTICE AS TRANSLATION: AN ESSAY IN CULTURAL AND LEGAL CRITICISM 101-02 (1990).

[95] For example, in *Denver Area Educational Telecommunications Consortium, Inc. v. FCC*, 518 U.S. 727 (1996), Justice Breyer concluded that none of the available paradigmatic standards of free speech—broadcast, common carrier, or bookstore—seemed to fit the case of a local cable television system. *Id.* at 741-42. Noting the rapid changes taking place in the world of communications, Breyer stated that it would be "unwise and unnecessary definitively to pick one analogy or one specific set of words," *id.* at 742, and proceeded to decide the case on narrower grounds. The interesting point here is that this admission of openness evoked reactions from his brethren justices and legal commentators. His position was congratulated by three justices (Souter, Stevens,

rarely found outside the limited circle of critical academics.[96] It is quite plausible, then, that the imprints of the cognitive process influence not only the way opinions are written, but also the way in which we generally perform legal argument.[97]

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and O'Connor), *see id.* at 768, 777, 779-80, but criticized by Justices Kennedy and Ginsburg for being standard-less, for losing sight with the doctrine—in short, for being "adrift." *Id.* at 780-81. All this could have been prevented, these Justices admonish, had the court had "the discipline" to adhere more closely to existing doctrinal propositions. *Id.* at 780. This frank, and rather mild, judicial statement by Justice Breyer sparked an article in the *New York Times*, entitled *When a Justice Suffers From Indecision*. The article included a comment by Floyd Abrams, a leading First Amendment practitioner, who found the decision "disturbing." Abrams explained: "[W]hen the Court deliberately avoids the use of legal doctrine, it means you don't know what the law is." *See* Linda Greenhouse, *When a Justice Suffers From Indecision*, N.Y. TIMES, July 14, 1996, at D5. Similar criticism was made by the former general counsel to the Federal Communications Commissioner, Bruce Fein. Writing for the American Lawyer News Service, Fein stated: "Only a judge whose mental faculties have fossilized could not smuggle in personal free speech predilections under Breyer's non-standard standard." TEX. LAW., July 22, 1996, at 25.

A similar response followed a recent case in which the Delaware Chancery Court issued an unusual order forcing one company to purchase its merger partner for a mere $3 billion. Explaining the decision in this high stake case, Judge Leo Strine Jr. admitted to have been "confessedly torn" and uncertain about a number of issues involved. One legal observer expressed concern to the *Wall Street Journal* over the decision "because equivocating in writing doesn't inspire confidence." *See* Robin Sidel, *Deals & Deal Makers: Leo Strine Issues Rulings, and Entertains His Audiences, as Judge on Takeover Case*, WALL STREET J., June 26, 2001, at C1.

[96] To be sure, there must also be instances of the opposite criticism. I have come across one such example. A report by the Chicago Council of Lawyers reviewing members of the bar's opinions of the Court of Appeals of the Seventh Circuit expresses serious criticism of one of the Court's judges, John L. Coffey. One of the central criticisms is that the Judge's opinions are "almost invariably written forcefully in favor of a particular result and they also typically treat that result as being clear and beyond dispute. . . . Judge Coffey's opinions rarely acknowledge serious factual or legal uncertainties, however. These problems are exacerbated by Judge Coffey's tendency to go too far in attempting to prove that a given result is the right one for every conceivable reason." *See* Chicago Council of Lawyers, *Evaluation of the United States Court of Appeals For the Seventh Circuit*, 43 DEPAUL L. REV. 673, 732 (1994). It should be noted that in this case, the council expressed concerns also with the apparent influence of Judge Coffey's "personal values and biases" on his performance as well as with his poor interpersonal relations. *Id.* at 734. It is not obvious that the criticism of the Judge's style would have been made had the council not had substantive complaints against him.

[97] I have elsewhere discussed the problems that are caused by this discursive style. *See, Psychological Model, supra* note 12, at 127-34.

CONCLUSION AND DIRECTIONS FOR FUTURE RESEARCH

The findings and conclusions presented in this Article might be somewhat disconcerting, even for the critical observer who agrees that excessive closure is hardly a desirable style of judicial reasoning.[98] Given that coherence effects occur absent conscious control and without awareness, recasting the jurisprudential debate as hinging on cognitive psychological phenomena might invite a pessimistic response. This depiction seems to leave little prospect for reform.

It must be emphasized, however, that the cognitive phenomena discussed here are not invariant nor completely insular. Gestaltian psychologists have long insisted that mental processing is always sensitive to environmental contexts, or the *psychological fields*, within which the behavior is performed.[99] Indeed, cognitive phenomena vary across cultures and contexts.[100] Thus, judicial coherence is a function not only of the basic cognitive mechanisms and of a number of task-related characteristics—including the need to make binary judgments[101] and the desire to terminate the state of indecision[102]—it is sensitive also to the legal culture and to judicial role expectations. In the current legal atmosphere, coherence seems to be exacerbated by the belief that closure is broadly seen as a factor that enhances the acceptability of the

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[98] I have elsewhere argued that excessive closure has a corrosive effect on the judicial decision making process in that it endorses too much and criticizes too much; it obfuscates rather than clarifies difficult legal questions; it dampens the tendency to fully explore the issues at stake; and it might also have an adverse effect on the type of people who join and excel on the bench. *See Psychological Model*, *supra* note 12, at 127-33.

[99] *See* Kurt Lewin, The Dynamic Theory of Personality (1935).

[100] *See e.g.*, Steven Heine & Darrin Lehman, *Culture, Dissonance, and Self-Affirmation*, 23 PERSONALITY & SOC. PSYCHOL. BULL. 389 (1997); *see also* Kaiping Peng & Richard E. Nisbett, *Culture, Dialectics, and Reasoning About Contradiction*, 54 AMERICAN PSYCHOLOGIST 741-54 (1999).

[101] Judges highlight the general fact that their task is "to decide, not to debate." HAND, *supra* note 77 at 131. Jerome Frank stated that legal argument is affected by the fact that "lawyers, more than most men, are compelled to reconcile incompatibles." JEROME FRANK, MODERN MIND, 33 (1930).

[102] Posner speaks of judges' aversion to wallowing in uncertainty and regrets. Following Pierce, he states "people hate being in a state of doubt and will do whatever is necessary to move from doubt to belief." Posner, *supra* note 80, at 873. On the effect of tension on decision making, see IRVING JANIS & LEON MANN, DECISION MAKING: A PSYCHOLOGICAL ANALYSIS OF CONFLICT, CHOICE, AND COMMITMENT 45-54 (1976).

decision and promotes the institutional legitimacy of the court.[103] This, however, need not be the case. One can imagine a different legal culture that would be conducive to a somewhat different style of reasoning.[104] For its part, cognitive psychology should facilitate reform by providing a richer understanding of the coherence effects, specifically, by identifying the conditions that would enable judges to be more responsive to both the freedom and the constraint involved in adjudication.

[103] For example, Posner suggests that, like all other people, judges want "to diffuse responsibility for their unpopular, controversial, or simply most consequential actions, and they do this by persuading themselves that their decisions are dictated by law, rather than the result of choice." Posner, *supra* note 80, at 873.

[104] I have offered a preliminary sketch of one possible cultural alternative. *See Psychological Model*, *supra* note 12, at 137-41.